



Virtual

2021 **AHFE** International

12th International Conference on Applied Human Factors and Ergonomics

jointly with

Global Issues Challenge: Human Factors in Disease Control and Pandemic Prevention
1st International Conference on Human Dynamics for the Development of Contemporary Societies

2nd International Conference on Creativity, Innovation and Entrepreneurship

3rd International Conference on Industrial Cognitive Ergonomics and Engineering Psychology

3rd International Conference on Human Factors for Apparel and Textile Engineering

4th International Conference on Human Factors in Artificial Intelligence and Social Computing

4th International Conference on Kansei Engineering

4th International Conference on Additive Manufacturing, Modeling Systems and 3D Prototyping

4th International Conference on Advanced Production Management and Process Control

4th International Conference on Interdisciplinary Practice in Industrial Design

4th International Conference on Human Factors in Aging and Special Needs

4th International Conference on Human Factors and Assistive Technology

5th International Conference on Human Factors and Wearable Technologies

5th International Conference on Human Error, Reliability, Resilience, and Performance

5th International Conference on Human Factors in Communication of Design

5th International Conference on Human Factors in Virtual Environments and Game Design

6th International Conference on Design for Inclusion

6th International Conference on Cognitive Computing and Internet of Things

6th International Conference on Human Factors and Simulation

6th International Conference on Human Factors in Management and Leadership

7th International Conference on Human Factors in Cybersecurity

7th International Conference on Human Factors and Systems Interaction

7th International Conference on Human Factors in Robots, Drones and Unmanned Systems

7th International Conference on Human Factors in Sports, Injury Prevention and Outdoor Recreation

7th International Conference on Human Factors, Business Management and Society

7th International Conference on Human Factors in Energy

7th International Conference on Human Factors in Training, Education, and Learning Sciences

8th International Conference on The Human Side of Service Engineering

8th International Conference on Human Factors, Software and Systems Engineering

8th International Conference on Architecture, Sustainable Urban Planning and Infrastructure

8th International Conference on Safety Management and Human Factors

9th International Conference on Affective and Pleasurable Design

9th International Conference on Human Factors in Transportation

9th International Conference on Ergonomics in Design

10th International Conference on Cross-Cultural Decision Making

10th International Conference on Human Factors and Ergonomics in Healthcare and Medical Devices

10th International Conference on Digital Human Modeling and Applied Optimization

12th International Conference on Physical Ergonomics and Human Factors

12th International Conference on Usability & User Experience

12th International Conference on Neuroergonomics and Cognitive Engineering

12th International Conference on Social & Occupational Ergonomics

22nd International Conference on The Human Aspects of Advanced Manufacturing: Managing Enterprise of the Future

Final Program

25-29 July, 2021

Virtual Conference, USA

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Opening Plenary Session and Keynote Address

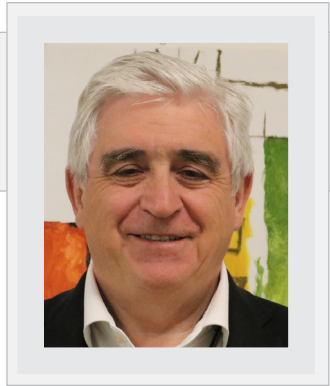
Monday 15:00-16:30 (EDT), July 26, 2021
Virtual Room: IBM Watson Digital

INTRODUCTORY REMARKS

Waldemar Karwowski - General Conference Chair

HUMAN SYSTEMS INTEGRATION: THE FLEXIBILITY CHALLENGE

Dr. Guy Andre Boy
France



Abstract: Human System Integration (HSI) is about orchestrating technology, organization and people in a flexible way. Flexible sociotechnical systems, called “FlexTech,” are based on anticipation, preparation, creativity and experience. These systems contrast with those stemming from technology-centered engineering that produces objects and machines with the immensely codified and rigid practices we know today. Most of the time, technologies are designed and developed for normal situations, leaving users to manage abnormal and emergency situations themselves, sometimes under unforeseen, extreme and/or dangerous conditions. Putting humans at the center of the design of flexible sociotechnical systems means imagining possible futures, modeling them, simulating them and leading them down the right paths. This keynote is for the designers who seek to better understand the roles of humans and organizations developing complex life-critical systems. It is also for those who train future human-centered designers who will have to take into account the well-being, safety, sustainability and efficiency of the actors of future sociotechnical systems. The aim of the flexibility challenge is to put the artificial at the service of the natural, and not the other way around.

Bio: Dr. Guy Boy is FlexTech Chair Institute Professor at Paris Saclay University (Centrale Supélec) and ESTIA Institute of Technology, France. He has worked for 40 years in the field of human-centered design (HCD) of complex systems, discovering repeatedly that automation leads to rigidity, especially when things go wrong. It is high time we had a new paradigm where flexibility is a major asset in human-system integration. HCD is seen here as the combination of practices and technologies for the future.

Virtual Conference program schedule is listed in
Eastern Daylight Time (EDT) - New York Timezone

**Access to the Virtual Conference Scientific and Technical Program
will be available through the AHFE 2021 Submission System**

Detailed access for all sessions will be sent to Registered Participants

Tutorials

Virtual Conference program schedule is listed in Eastern Daylight Time (EDT) - New York Timezone

PRE-CONFERENCE TUTORIALS

Half-day tutorials at introductory, intermediate, and advanced levels will cover the entire spectrum of the conference. Tutorials will be offered on Sunday, July 25 and Monday, July 26. Tutorials registration is required.

JULY 25, 2021

TUTORIAL GROUP A - 9:00 - 12:30 (EDT)		Room
T-1	Fundamentals in Data Visualization and Dashboard Design Presenter: Abbas Moallem, San Jose State University	AHFE 1
T-2	Design, User Experience and Usability Presenter: Javed Sheikh, University of Sialkot	AHFE 2
T-3	Prototyping HMIs for Partially and Highly Automated Vehicles: A Balanced Human Systems Integration Approach Presenter: Marcel Baltzer, Fraunhofer Institute for Communication, Information Processing and Ergonomics FKIE	AHFE 3

JULY 25, 2021

TUTORIAL GROUP B - 13:00 - 16:30 (EDT)		Room
T-4	Eye Tracking Methods and Applications Presenter:	AHFE 1
T-5	User-Centered Design: Creating Effective Personas Presenter: Everett McKay, UX Design Edge	AHFE 2
T-6	Human Factors and Cybersecurity Presenter: Abbas Moallem, San Jose State University	AHFE 3

JULY 26, 2021

TUTORIAL GROUP C - 9:00 - 12:30 (EDT)		Room
T-7	Towards Data Science: Modelling Techniques in Predictive Analytics with Python Presenter: Javed Sheikh, University of Sialkot	AHFE 1
T-8	Cognitive Neuroscience for the Human Factors Practitioner and Fundamentals of Brain Imaging Presenter: Adrian Curtin, Drexel University	AHFE 2

Virtual Conference program schedule is listed in Eastern Daylight Time (EDT) - New York Timezone

#	SESSION TITLE	ROOM	TRACK
Session Time: 9:00 – 10:30 (pages 10 - 14)			
1	Plenary: Neuroergonomics and Cognitive Engineering	AHFE 1	CN
2	How to Address Complexity in the Emerging Platform Society	AHFE 2	HSSE
3	HMI, ADAS and Electric Vehicles I	AHFE 3	RR
4	Applications and Implications of Automated Technologies for Performance Assessment in Aircrew Training	AHFE 4	TELS
5	Cognitive Assessment and Physical Strain of First Responders and Action Forces	AHFE 5	CCIoT
6	User Research and Product Design I	AHFE 6	ED
7	Complex Human-System Interactions	AHFE 7	SYSI
8	Safety, Integration and interaction for Aging Population	AHFE 8	HFAS
9	Health Care Strategies and Design during COVID-19 Era	AHFE 9	DCPP
10	Usability and User Experience Applications I	AHFE 10	UUE
11	Communication Between Human and Machine	AHFE 11	APD
12	Cross-Cultural Decision Making I	AHFE 12	CCDM
13	Digital Human Modelling and Applied Optimization I	AHFE 13	DHMAO
14	Ergonomics in Building and Architecture I	AHFE 14	SUPI
Session Time: 11:00 – 12:30 (pages 14 - 20)			
15	Systemic-Structural Activity Theory Session	AHFE 1	CN
16	Re-Balancing Benefits in the Digital Age: Public and Private Sector Resilience and Citizens Fundamental Rights	AHFE 2	HSSE
17	User Research and Product Design II	AHFE 3	ED
18	Usability and User Experience Applications II	AHFE 4	UUE
19	HMI, ADAS and Electric Vehicles II	AHFE 5	RR
20	Ergonomics in Building and Architecture II	AHFE 6	SUPI
21	Cognitive Living Spaces by Using IoT Devices	AHFE 7	CCIoT
22	Brain-Machine Interface (BMI) and Neuroinformatics	AHFE 8	ICEEP
23	Risk Assessment and Safety Training I	AHFE 9	SMHF
24	Wearable Sensing in Physical Ergonomics Assessment and Safety	AHFE 10	PEHF
25	Production Management in Industry	AHFE 11	MFG
26	Communication of Design I	AHFE 12	HFCD
27	Education	AHFE 13	CIE
28	Pandemic Impacts and Coping	AHFE 14	DCPP
Session Time: 13:00 – 14:30 (pages 20 - 24)			
29	Real-World Human State Assessment: Victories and Remaining Challenges	AHFE 1	CN
30	Emerging Research Innovations in AI, User Experience, New Technology, and Design: Industry, Business, and Education	AHFE 2	HSSE
31	User Research and Product Design III	AHFE 3	ED
32	Usability and User-Centered Design I	AHFE 4	UUE
33	Educational Design	AHFE 5	ED
34	Advanced Learning Technologies	AHFE 6	TELS
35	Human Technology Approach to Governance	AHFE 7	HFML

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#	SESSION TITLE	ROOM	TRACK
Session Time: 13:00 – 14:30 (pages 20 - 24)			
36	Human Error, Reliability, Resilience, and Performance in Aviation	AHFE 8	HERRP
37	Kansei Engineering I	AHFE 9	KE
38	Health Care Issues and Risk Assessment	AHFE 10	EHMD
39	Communication of Design II	AHFE 11	HFCD
40	Virtual Reality and Game Design in Education	AHFE 12	HFGD
41	Human Factors in Artificial Intelligence and Social Computing I	AHFE 13	AISC
42	Fashion and Apparel Design	AHFE 14	HFATE
Session Time: 15:00 – 16:30 (pages 25 - 30)			
43	Modeling and Monitoring Humans for Operational Task Performance	AHFE 1	CN
44	Augmenting Service Capabilities in the With/Post-Pandemic Era	AHFE 2	HSSE
45	Design and Evaluation Research for Enhanced Product Usability and User Experience	AHFE 3	ED
46	Design Issues in Research	AHFE 4	ED
47	Usability and User-Centered Design II	AHFE 5	UUE
48	Design for Inclusion in the Living Environment	AHFE 6	DI
49	Human Factors on Security and Crises Management	AHFE 7	YSI
50	Computational Modeling Approaches in Politics and Economics	AHFE 8	HFSIM
51	Human Factors and Assistive Technology I	AHFE 9	HFAT
52	Advanced Production Management and Process Control I	AHFE 10	APMPC
53	Sustainability and Ecodesign	AHFE 11	HDCS
54	Human Factors in Artificial Intelligence and Social Computing II	AHFE 12	AISC
55	Explorations in Industrial Design Education	AHFE 13	IPID
56	Human Performance and Variability	AHFE 14	HFAS
Session Time: 17:00 – 18:30 (pages 30 - 35)			
57	Design Strategy, Design Method - Interdisciplinary Methods of Research and Design for Experience Design	AHFE 1	ED
58	Human Factors and Unmanned Aerial Vehicles	AHFE 2	HFARDUS
59	Human Factors and Wearable Technologies I	AHFE 3	HFWT
60	Implementation of Learning Technologies in Education	AHFE 4	TELS
61	Designing for Inclusion: Methodologies and Future Trends	AHFE 5	DI
62	Decision Support System and Human Factors	AHFE 6	HFSSE
63	Human Performance improvement and Training	AHFE 7	HFAS
64	Sensory Engineering and Emotion	AHFE 8	APD
65	Applications in Interaction Design	AHFE 9	ED
66	Social, Occupational, Physical Ergonomics and Work-Related Musculoskeletal Disorders	AHFE 10	SOE
67	User Interface and Accessibility	AHFE 11	UUE
68	Automated Vehicles I	AHFE 12	RR
69	Implementation of Novel Technology and Gamification for Training and Certification	AHFE 13	TELS
70	Human Factors, Business Management and Society I	AHFE 14	HFBSM

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#	SESSION TITLE	ROOM	TRACK
Session Time: 9:00 – 10:30 (pages 35 - 40)			
71	Health and Neuroergonomics	AHFE 1	CN
72	Resilient Design for Service-Oriented Value Creation	AHFE 2	HSSE
73	Design for People. Design as Catalyst	AHFE 3	ED
74	Ergonomics Design and Evaluation in Transportation	AHFE 4	ED
75	UX Design and Evaluation	AHFE 5	UUE
76	Automated Vehicles II	AHFE 6	RR
77	Human Factors, Business Management and Efficiency	AHFE 7	SOE
78	Design for Inclusion in Learning Experiences	AHFE 8	DI
79	Human Factors in Software and Systems Engineering I	AHFE 9	HFSSE
80	Cognitive Neuroscience, Health Care and Artificial Intelligence (AI) Systems	AHFE 10	ICEEP
81	Risk Assessment and Safety Training II	AHFE 11	SMHF
82	Virtual and Augmented Reality	AHFE 12	HFSIM
83	Advanced Production Management and Process Control II	AHFE 13	APMPC
84	Human Factors in Artificial Intelligence and Social Computing III	AHFE 14	AISC
Session Time: 11:00 – 12:30 (pages 40 - 45)			
85	Cognitive State Assessment	AHFE 1	CN
86	Education, Training, and Technology Facilitating a Future Workforce	AHFE 2	HSSE
87	Anthropometry in Ergonomic Design I	AHFE 3	ED
88	Usability Evaluation	AHFE 4	UUE
89	Ergonomics in Urban Design I	AHFE 5	SUPI
90	Human Factors in Software and Systems Engineering II	AHFE 6	HFSSE
91	Kansei Engineering II	AHFE 7	KE
92	Intelligent Computing and Cognitive Computing in Healthcare	AHFE 8	CCIoT
93	Design, Human-Machine interaction and Learning Systems	AHFE 9	ICEEP
94	Education and Health Based on Accessible and Inclusive Technology	AHFE 10	SYSI
95	Human Interaction and Communication in Industry	AHFE 11	HDCS
96	Creativity and Thinking Styles	AHFE 12	CIE
97	Human Factors in Artificial Intelligence and Social Computing IV	AHFE 13	AISC
98	Innovative Health Care Technologies: Aging and Special Needs	AHFE 14	HFAS
Session Time: 13:00 – 14:30 (pages 46 - 51)			
99	Neurobusiness Applications	AHFE 1	CN
100	Ergonomics in Buildings and Living Spaces	AHFE 2	ED
101	Ergonomics in Urban Design II	AHFE 3	SUPI
102	Analysis of Learning Strategies and Learning Performance	AHFE 4	TELS
103	Robots in Transportation Systems	AHFE 5	HFRDUS
104	Human Factors in Cybersecurity I	AHFE 6	CYBER
105	Design for Inclusion in Everyday Life and Behaviors I	AHFE 7	DI

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#	SESSION TITLE	ROOM	TRACK
Session Time: 13:00 – 14:30 (pages 52 - 56)			
106	Human Capital Management and Applications in Industry	AHFE 8	MFG
107	Assistive Technologies, Accessibility and Human Systems Applications	AHFE 9	SYSI
108	Human Factors, Business Management and Society II	AHFE 10	HFBMS
109	Simulation and Human Factors for Nuclear Control Rooms	AHFE 11	HFSIM
110	Culture and Globalization	AHFE 12	CIE
111	Health Care Organization and COVID-19 Responses	AHFE 13	DCPP
112	Emerging Design Matter	AHFE 14	IPID
Session Time: 15:00 – 16:30 (pages 57 - 61)			
113	Visual Ergonomics and Interaction Design of Intelligent Networking	AHFE 1	ED
114	Creating Value in Teams, Organizations, Communities, and Societies I	AHFE 2	HSSE
115	Accessibility and User Experience Applications	AHFE 3	UUE
116	Social & Occupational Ergonomics	AHFE 4	SOE
117	Virtual Environments in Ergonomics and Design	AHFE 5	ED
118	Health Care Advancement and Patient Safety	AHFE 6	EHMD
119	Innovative Health Care Technologies	AHFE 7	EHMD
120	Safety and Human Factors	AHFE 8	SMHF
121	Physical Ergonomics and Human Factors: Case Studies and Job Analysis	AHFE 9	PEHF
122	Human Factors, Business Management and Society III	AHFE 10	HFBMS
123	Panel: Applications for the Use of Synthetic Crew Members in Aircrew Training	AHFE 11	HFSIM
124	Communication of Design III	AHFE 12	HFGD
125	Human Factors in Virtual Environments and Game Design	AHFE 13	HFGD
126	Knowledge and New Technology	AHFE 14	CIE
Session Time: 17:00 – 18:30 (pages 61 - 65)			
127	Resilience and Human Performance	AHFE 1	HERRP
128	Kansei Engineering III	AHFE 2	KE
129	Design Education Strategy	AHFE 3	IPID
130	Cross-Cultural Decision Making II	AHFE 4	CCDM
131	Digital Human Modelling and Applied Optimization II	AHFE 5	DHMAO
132	Anthropometry in Ergonomic Design II	AHFE 6	ED
133	Social Inclusion Through Products and Services	AHFE 7	DI
134	Advanced Production Management and Process Control III	AHFE 8	APMPC
135	Perception, Cognition and Emotion	AHFE 9	APD
136	UX in Healthcare and Aging I	AHFE 10	UUE
137	UX in Healthcare and Aging II	AHFE 11	UUE
138	Public Transport Systems	AHFE 12	RR
139	Ergonomics in Building and Architecture IV	AHFE 13	SUPI

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#	SESSION TITLE	ROOM	TRACK
Session Time: 9:00 – 10:30 (pages 61 - 65)			
141	Why Human Centered Service Design Needs an Architectural View	AHFE 1	HSSE
142	Emotional Design I	AHFE 2	APD
143	User Research: Education and Games	AHFE 3	ED
144	Road Safety I	AHFE 4	RR
145	Ergonomics in Building and Architecture V	AHFE 5	SUPI
146	Human Factors in Software and Systems Engineering III	AHFE 6	HFSSE
147	Advances in Medical Devices and Techniques: Diagnostics and Usability	AHFE 7	EHMD
148	Multimodal Measurements, Artificial Intelligence and Mental Structure	AHFE 8	CCIoT
149	Smart Manufacturing, Affordance and Technology	AHFE 9	SYSI
150	Human Factors, Business Management and Society IV	AHFE 10	HFBMS
151	Visualizing Team Trust and Cohesion	AHFE 11	HFSIM
152	Human Factors in Global Issues and Disease Control	AHFE 12	DCPP
153	Human Factors in Artificial Intelligence and Social Computing V	AHFE 13	AISC
154	Engineering Design and Strategy	AHFE 14	IPID
Session Time: 11:00 – 12:30 (pages 66 - 71)			
155	Artificial Intelligence Based Co-Creation	AHFE 1	HSSE
156	Digital Human Modeling by Women in Human Factors	AHFE 2	DHMAO
157	User Research	AHFE 3	ED
158	Maritime	AHFE 4	MAR
159	Usability and User Experience Application III	AHFE 5	UUE
160	Drones, Robots and Humanized Behaviors	AHFE 6	HFRDUS
161	Design for Inclusion in Everyday Life and Behaviors II	AHFE 7	DI
162	Health Care Innovation	AHFE 8	EHMD
163	Holistic Approach in Safety Management and Influencing Factors During a Pandemic	AHFE 9	PEHF
164	Human Factors, Business Management and Society V	AHFE 10	HFBMS
165	Usability, Applied Virtual Reality and Game Design	AHFE 11	HFGD
166	Human Dynamics for Social Cohesion	AHFE 12	HDCS
167	Interaction and xR Technology: Health and Well Being	AHFE 13	CIE
168	Aging and Wellbeing	AHFE 14	HFAS
Session Time: 13:00 – 14:30 (pages 71 - 75)			
169	Enhancing Interdisciplinarity in Service Innovation	AHFE 1	HSSE
170	Human Factors in the Design of Products for Health	AHFE 2	IPID
171	Ergonomics, Design and Ergonomics Interceptions I	AHFE 3	ED
172	UX in Wearables, Virtual and Augmented Reality Environments I	AHFE 4	UUE
173	Usability and User Experience Application IV	AHFE 5	UUE
174	Distance Learning and COVID-19	AHFE 6	TELS
175	Human Factors in Software and Systems Engineering IV	AHFE 7	HFSSE

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#	SESSION TITLE	ROOM	TRACK
Session Time: 13:00 – 14:30 (pages 71 - 75)			
176	Human Reliability Analysis	AHFE 8	HERRP
177	Aviation	AHFE 9	AVI
178	Cognitive Ergonomics in Virtual and Augmented Reality Applications	AHFE 10	CCIoT
179	Safety Perception & Safety Culture	AHFE 11	SMHF
180	Innovation and Entrepreneurship	AHFE 12	CIE
181	Pandemic Prevention and Management	AHFE 13	DCPP
182	Textile Design and Engineering	AHFE 14	HFATE
Session Time: 15:00 – 16:30 (pages 75 - 80)			
183	Creating Value in Teams, Organizations, Communities, and Societies II	AHFE 1	HSSE
184	Ergonomics, Design and Ergonomics Interceptions II	AHFE 2	ED
185	UX in Wearables, Virtual and Augmented Reality Environments II	AHFE 3	UUE
186	Driver Behavior and Vulnerable Road Users	AHFE 4	RR
187	Pedagogy and Competency Management in Education	AHFE 5	TELS
188	Robotic Systems and Users for Social Interactions	AHFE 6	HFRDUS
189	Design for Inclusion in Healthcare and Therapies	AHFE 7	DI
190	Human Sensing and Data Essential for HF Simulation Modeling	AHFE 8	HFSIM
191	Human Factors and Wearable Technologies II	AHFE 9	HFWT
192	Advanced Technologies and Manufacturing Processes for 3D Printing	AHFE 10	AMMSP
193	Human Factors and Assistive Technology II	AHFE 11	HFAT
194	Advanced Production Management and Process Control IV	AHFE 12	APMPC
195	Innovation and Creativity in Business	AHFE 13	CIE
196	Human Factors for Textile and Society	AHFE 14	HFATE
Session Time: 17:00 – 18:30 (pages 80 - 85)			
197	Information and Graphic Design	AHFE 1	ED
198	Human Factors and Behavior in Organizational Context and Work Environments	AHFE 2	HFML
199	Safety and Prevention Management	AHFE 3	SMHF
200	Communication of Design IV	AHFE 4	HFCD
201	Road Safety II	AHFE 5	RR
202	New Research and Design Applications for 3D Printing	AHFE 6	AMMSP
203	Teaching/Learning Interaction	AHFE 7	TELS
204	Aviation and Space	AHFE 8	AVI
205	Lean and Agility and Enterprise	AHFE 9	MFG
206	Modeling and Simulation for Human-Human and Human-Agent Teaming	AHFE 10	HFSIM
207	Emotional Design II	AHFE 11	APD
208	Ergonomics in Urban Design III	AHFE 12	SUPI
209	Human Factors in Cybersecurity II	AHFE 13	CYBER
210	Human Factors in Energy: Oil, Gas, Nuclear and Electric Power Industries	AHFE 14	ENERGY

Conference at a Glance

ACRONYM	TRACK
AISC	Human Factors in Artificial Intelligence and Social Computing
AMMSP	Additive Manufacturing, Modeling Systems and 3D Prototyping
APD	Affective and Pleasurable Design
APMPC	Advanced Production Management and Process Control
AVI	Transportation: Aviation
CCDM	Cross-Cultural Decision Making
CCIoT	Cognitive Computing and Internet of Things (IoT)
CIE	Creativity, Innovation and Entrepreneurship
CN	Neuroergonomics and Cognitive Engineering
CYBER	Human Factors in Cybersecurity
DCPP	Global Issues: Human Factors in Disease Control and Pandemic Prevention
DHMAO	Digital Human Modeling and Applied Optimization
DI	Design for Inclusion
ED	Ergonomics in Design
EHMD	Human Factors and Ergonomics in Healthcare and Medical Devices
ENERGY	Human Factors in Energy: Oil, Gas, Nuclear and Electric Power Industries
HDCS	Human Dynamics for the Development of Contemporary Societies
HERRP	Human Error, Reliability, Resilience, and Performance
HFAS	Human Factors in Aging and Special Needs
HFAT	Human Factors and Assistive Technology
HFATE	Human Factors for Apparel and Textile Engineering
HFBMS	Human Factors, Business Management and Society
HFCD	Human Factors in Communication of Design
HFGD	Human Factors in Virtual Environments and Game Design
HFML	Human Factors in Management and Leadership
HFRDUS	Human Factors in Robots, Drones and Unmanned Systems
HFSIM	Human Factors and Simulation
HFSSE	Human Factors, Software and Systems Engineering
HFWT	Human Factors and Wearable Technologies
HSSE	The Human Side of Service Engineering
ICEEP	Industrial Cognitive Ergonomics and Engineering Psychology
IPID	Interdisciplinary Practice in Industrial Design
KE	Kansei Engineering
MAR	Transportation: Maritime
MFG	The Human Aspects of Advanced Manufacturing: Manufacturing Enterprises in a Digital World
PEHF	Physical Ergonomics and Human Factors
RR	Transportation: Road & Rail
SIPOR	Human Factors in Sports, Injury Prevention and Outdoor Recreation
SMHF	Safety Management and Human Factors
SOE	Social & Occupational Ergonomics
SPACE	Transportation: Space
SUPI	Human Factors, Architecture, Sustainable Urban Planning and Infrastructure
SYSI	Human Factors and Systems Interaction
TELS	Human Factors in Training, Education, and Learning Sciences
UUE	Usability and User Experience

1	Plenary: Neuroergonomics and Cognitive Engineering Chair: Hasan Ayaz, USA	CN
9:00-10:30 AHFE 1	Preserving human performance under fatigue using advances in neuroergonomics Ranjana Mehta, USA	
2	How to Address Complexity in the Emerging Platform Society Co-Chairs: James C. Spohrer and Clara Bassano, USA/Italy	HSSE
9:00-10:30 - AHFE 2	Exploring new digital age challenges Sergio Barile, Clara Bassano, Paolo Piciocchi, Marialuisa Saviano, Jim Spohrer, Italy Ecosystems transformation for social change: How to challenge emergency through emergence Francesco Polese, Orlando Troisi, Mara Grimaldi, Italy The role of technological platforms in co-creating symbiotic relationships between firms and society Pierpaolo Testa, Luigi Cantone, Giuseppe Fabio Cantone, Jay Kandampully, Italy Reducing industry complexity with international standards: Current efforts for services, e-Commerce, artificial intelligence Stephen Kwan, Jim Spohrer, USA Digital transformation in the era of Covid-19 Marco Tregua, Cristina Mele, Tiziana Russo-Spena, Marialuisa Marzullo, Adriana Carotenuto, Italy Management of smart city in lens of viable system approach Leonard Wallezky, Luca Carrubbo, Frantiska Romanovska, Czech Republic	
3	HMI, ADAS and Electric Vehicles I Co-Chairs: Ralf Philippsen and Stewart Birrell, Germany/UK	RR
9:00-10:30 - AHFE 3	Behavioral indicators affecting driving performance in human machine interface assessments with simulation Yukun Xie, Tianyang Yue, Preben Hansen, Fang You, China An expert informed approach to assess challenges in automotive HMI-development and their implications on development processes Jan Bavendiek, Teresa Koch, Christopher Brockmeier, Lutz Eckstein, Germany Developing transferable route choice models using driving simulator experiments Chaojie Wang, Zhu Qing, Einat Tenenboim, Srinivas Peeta, USA Simulation models for electric mopeds: a study of the impact on traffic flow Evangelia Portouli, Niki Georgiou, Angelos Amditis, Greece The way you do things you do - fueling or charging cars as dealing with refillable resources Ralf Philippsen, Hannah Biermann, Martina Ziefle, Germany Look, no cables! An interview study into guiding the practical implementation of wireless chargers for electric taxis Arun Ulahannan, Matthew Knight, Robert Doel, Stewart Birrell, UK	
4	Applications and Implications of Automated Technologies for Performance Assessment in Aircrew Training Co-Chairs: Beth Atkinson and Joseph Mercado, USA	TELS
9:00-10:30 - AHFE 4	A heuristic-based approach to prototyping workbench Mitchell Tindall, Emily Rickel, USA Benefits and challenges of automated instructorless feedback for tactical radio communications training Emily Anania, Bill Schmermund, USA Advancing after action reviewing capabilities in next generation hypoxia training Beth Atkinson, Christopher Gilg, USA Increasing student proficiency through adaptive training: A systems integration challenge Brent Fegley, Michael Tolland, USA	

5	Cognitive Assessment and Physical Strain of First Responders and Action Forces Co-Chairs: Miloš Kostić and Lucas Paletta, Serbia/Austria	CCIoT
9:00-10:30- AHFE 5	<p>Physiological responses during simulated chemical-biological-radiological-nuclear scenarios with chemical protective clothing Thomas Hölzl, Gerald Bauer, Robert Enne, Oliver Kühn, Peter Wittels, Austria</p> <p>Electrotactile stimulation, a new feedback channel for first responders Matija Štrbac, Milica Isaković, Jovana Malešević, Gorana Marković, Strahinja Dosen, Nikola Jorgovanović, Goran Bijelić, Miloš Kostić, Serbia/Denmark</p> <p>Virtual reality-based human factors analysis for first responder training and flexible real-time support Lucas Paletta, Michael Schneeberger, Martin Pszeida, Amir Dini, Austria</p> <p>Multisensory wearable vital monitoring system for military training, exercise and deployment Alexander Almer, Anna Weber, Lucas Paletta, Michael Schneeberger, Stefan Ladstätter, Dietmar Wallner, Günther Grabher, Peter Süß, Philipp Klöckl, Patrick Fuchshofer, Thomas Hölzl, Austria</p>	
6	User Research and Product Design I Co-Chairs: Xiang Liu and Francisco Rebelo, China/Portugal	ED
9:00-10:30- AHFE 6	<p>The stability of headphones Ruyang Yu, Cao Yuan, Li Xinyi, Wang Haining, Renke He, China</p> <p>Green sustainable design of Chinese agricultural products Xiang Liu, Renke He, Tie Ji, China</p> <p>Visual analysis of sustainable product service system design based on bibliometrics Yongkang Chen, JieXuan Wang, Meng Gao, Renke He, China</p> <p>Application status and prospects of implicit interaction in the field of smart care for the elderly Yali Ling, Mengfei Liu, Ren-ke He China</p> <p>Experience of positive emotion caused by smell in driverless automobile technology Yunshuang Zheng, Yanan Chang, Huiyuan Han, China</p> <p>Design of jewelry deriving from Luodian lantern with topological property constrained: Example of Rabbit Lamp of Chinese Zodiac Junxuan Li, RongRong Fu, China</p>	
7	Complex Human-System Interactions Co-Chairs: Filipa Carvalho and Jorge Gil Tejada, Portugal/Mexico	SYSI
9:00-10:30- AHFE 7	<p>Client's quality assessment of digital transaction platforms interactivenesses in a Covid-19 e-commerce business environment Mohammed Aminu Sanda, Ghana</p> <p>Women's operational vulnerability and risk in Ghanaian business systems: A case study of kayayei in Accra, Ghana Majoreen Osafoadu Amankwah, Rosemond Asor Obeng, Eziaku Rasheed, Ghana/Sweden</p> <p>A post-mortem analysis of a merger and a rightsizing: The case of Ecobank Ghana Limited and The Trust Bank Limited Majoreen Osafoadu Amankwah, Joyleen Fayorsey Mante, Ghana</p> <p>The hierarchy in the temporary interaction micro-processes that precede the breaking points of focal attention in an object of the new media Lorena Olmos Pineda, Jorge Gil, Mexico</p> <p>Comparative studies of the variations in the spatial location processes generated by a weak-visual person in two work systems Jorge Gil Tejada, Lorena Olmos Pineda, Mexico</p> <p>Physical exertion and prevalence assessment of musculoskeletal disorders among brush cutter operators Filipa Carvalho, Teresa Cotrim, Rui B. Melo, Portugal</p> <p>Technology and growth: An agent based model of micro behaviors and meso technology networks for macroeconomic growth Mark Abdollahian, Yi Ling Chang, Yuan Yuan Lee, USA</p> <p>Automated trust modeling for increasingly autonomous aerial systems Sarkis Mikaelian, Li Liu, Nhut Ho, USA</p>	

8	Safety, Integration and interaction for Aging Population Co-Chairs: Oksana Kravchenko and Peter Schmid, Ukraine/Germany	HFAS
9:00-10:30- AHFE 8	<p>Electrotactile feedback to provide assistance to touchscreen interaction of the elderly Peter Schmid, Thomas Maier, Germany</p> <p>Elderly people's living space and well-being design based on ergonomic applications Xing Ji, China</p> <p>Virtual reality based system with a stationary bike to enhance lower limb training for elderly Yi Xiang Su, Chien-Hsu Chen, Taiwan</p> <p>Psychological and pedagogical support of students with special educational needs in a higher education institution Oksana Kravchenko, Natalia Koliada, Oleksandr Safin, Halyna Bondarenko, Katherine Chupina, Victoriia Boyar, Ukraine</p> <p>Rehabilitation for people with disabilities by means of art: Example of the international art symposium-plenary of people with disabilities Oksana Kravchenko, Inna Molochenko, Maksym Skochko, Ukraine</p> <p>Community landscape for the elderly based on health preservation Xinru Feng, Wuzhong Zhou, China</p> <p>Digitalization of later life: What prevents the care sector from meeting the rapid digitalization of older populations? Britt Östlund, Sweden</p>	
9	Health Care Strategies and Design during COVID-19 Era Co-Chairs: Doris Janssen and Jorge Guadalupe-Lanas, Germany/Ecuador	DCPP
9:00-10:30- AHFE 9	<p>Factors related to walking behavior of the elderly residents in urban residential green space during COVID-19 Yidan Cao, Chunrong Liu, Xiaomin Tang, China</p> <p>The impact of COVID-19 impact on students' economic life Jorge Guadalupe-Lanas, Jorge Cruz-Cárdenas, Hugo Arias-Flores, Ecuador</p> <p>An experiment of mobile application design course based on crises experiences in COVID-19 pandemic Zhen Qin, Jing Cui, China</p> <p>WIBCE – A Web application helping people to reflect their infection risk and psychological well-being and act accordingly during the COVID-19 pandemic Doris Janssen, Katharina Lingelbach, Sabrina Gado, Philipp Maurer, Daniela Piechnik, Martin Eichler, Dennis Knopf, Leopold Hentschel, Markus Schuler, Daniel Sernatinger, Matthias Peissner, Germany</p> <p>Green design of community public space in the context of the COVID-19 epidemic Hanyu Xu, China</p> <p>Application of aromatherapy in public space in the context of the COVID-19 pandemic Shixin Ni, Wuzhong Zhou, China</p> <p>Analysis of influencing factors of online performance's consumption experience during the epidemic of Corona Virus disease 2019 Seina Tasaki, Japan</p>	

<p>10</p>	<p>Usability and User Experience Applications I Co-Chairs: Junghyun Ahn and Michelle Burger, South Korea/South Africa</p>	<p>UUE</p>
<p>9:00-10:30- AHFE 10</p>	<p>Acceptance of occupational exoskeletons: Social and psychological factors Emese Papp, Jens Krzywinski, Christian Woelfel, Germany</p> <p>Inner city development for kids in South Africa: A Jewell City mixed use precinct case study approach Charles Pfungwa Malaila, Michelle Burger, Andries (Hennie) van Heerden, Gregory Chawynski, South Africa</p> <p>Interactive automatic refrigerator door for emotional satisfaction Dokshin Lim, Junghyun Ahn, South Korea</p> <p>Personalized video recommendation integrating user portrait and collaborative filtering Shuangni Cheng, Miao Liu, Wan Jing Cao, China</p> <p>Development and evaluation of a technical information sharing system for international remote medical education Shunta Tomimatsu, Kuriko Kudo, Shuji Shimizu, Shintaro Ueda, Tomohiko Moriyama, Yasuyuki Hirai, Japan</p> <p>Touch screen application in flight deck for civil aircraft Jiangping Chu, Lei Wu, Jian Xu, China</p> <p>A co-design approach for a smart cooking appliance. The application of a domain specific language Matteo Zallio, Paula Kelly, Barry Cryan, Damon Berry, UK</p>	
<p>11</p>	<p>Communication Between Human and Machine Co-Chairs: Shuichi Fukuda and Kazutaka Ueda, Japan</p>	<p>APD</p>
<p>9:00-10:30- AHFE 11</p>	<p>Movement-mediated communication between human and machine Shuichi Fukuda, Japan</p> <p>Neural dynamics involved in creative thinking in engineering design Fukashi Mikami, Kazutaka Ueda, Koji Koizumi, Masayuki Nakao, Japan</p> <p>Examinations of color emotions for average faces Keiichi Muramatsu, Yoshimasa Tawatsuji, Kazunori Kaede, Keiichi Watanuki, Japan</p> <p>Research on trust oriented interface design method of logistics robots in the post epidemic era Yutian Lei, Zhengyu Tan, Weihong Su, China</p> <p>Effect of aesthetic appeal on large scale brain networks Kazutaka Ueda, Japan</p>	
<p>12</p>	<p>Cross-Cultural Decision Making I Co-Chairs: Noriko Okabe and Toshihisa Doi, Japan</p>	<p>CCDM</p>
<p>9:00-10:30- AHFE 12</p>	<p>Understanding the value ranking of Chinese middle class Wenhua Li, Jiaying Huang, China</p> <p>Mechanism of improving performance by expressing human service employees' positive emotion Noriko Okabe, Japan</p> <p>The concept, development, evolution and practice of poverty alleviation design Jie Zhou, Wei Ding, Yuyao He, Yiran Zhang, Yisha Wang, Xinyi Yu, China</p> <p>Towards better working conditions for visually impaired: A pilot study on occupational risk assessment for visually impaired massage workers in China Linghong Li, China</p> <p>Examining the cultural differences of users' characteristics between the United States and Japan related to user interface design Toshihisa Doi, Atsuo Murata, Japan</p> <p>A comparison on the development mode of traditional and emerging cultural innovation: A case study of electronic sports-league of legends Huang Xinyao, Wei Ding, China</p> <p>Weakness of real estate collateral valuation policy in changed financial world Jukka Rantala, Atte Rantanen, Maria Yllikäinen, Timo Holopainen, Finland</p> <p>Micro loans to over-indebtedness, causes and consequences, perspective on youth spending Jukka Rantala, Maria Yllikäinen, Henri Untinen, Timo Holopainen, Finland</p>	

13	Digital Human Modelling and Applied Optimization I Co-Chairs: Lorenzo Vianello and Sofia Scataglini, France/Belgium	DHMAO
9:00-10:30- AHFE 13	<p>Data-driven personas: Expanding DHM for a holistic approach Ari Kolbeinsson, Jessica Lindblom, Erik Brolin, Sweden</p> <p>The relationship between the position of bicycle saddle and human comfort based on Jack Yu Yalan, Liu Litao, China</p> <p>Improving ergonomics at work with personalized multi-objective optimization of human movements Waldez Azevedo Gomes, Junior, Pauline Maurice, Eloise Dalin, Jean-Baptiste Mouret, Serena Ivaldi, France</p> <p>Probabilistic estimation of postures during human-robot collaboration: An ergonomics perspective Lorenzo Vianello, Serena Ivaldi, Alexis Aubry, Jean-Baptiste Mouret, France</p>	
14	Ergonomics in Building and Architecture I Co-Chairs: Jerzy Charytonowicz and Alicja Maciejko, Poland	SUPI
9:00-10:30- AHFE 14	<p>The synthesis of the arts and its influence on modern theatre architecture Pawel Amalowicz, Poland</p> <p>The multitude of adaptive reuse solutions in sustainable revitalization of historic post-military complexes Marta Rudnicka-Bogusz, Poland</p> <p>Meaning of senses in the perception and shaping of architecture Katarzyna Słuchocka, Poland</p> <p>Interior design and decorations of a house No 83 in Kemer in Turkey Alicja Maciejko, Jerzy Charytonowicz, Poland</p> <p>Possibilities for utilizing wooden structures for creating contemporary architectural forms in the context of sustainable development Alicja Maciejko, Poland</p>	
15	Systemic-Structural Activity Theory Session Co-Chairs: Inna Bedny and Alexander Yemelyanov, USA	CN
11:00-12:30 - AHFE 1	<p>Neurocognitive indicators of insight according to P300 and later visual ERP components Sergey Lytaev, Russia</p> <p>Systemic-structural activity theory and artificial intelligence Inna Bedny, Waldemar Karwowski, USA</p> <p>Applying web-based application ExpressDecision2 in patient-centered care Alexander M. Yemelyanov, Rahul Sukumaran, Alina Yemelyanov, USA</p> <p>Worker engagement in routinized structured activity circumvention: Using SSAT to understand the significance of involuntary cognitive intentionality Mohammed Aminu Sanda, Ghana</p> <p>Self-regulation approach for setting goals in problem solving Alexander M. Yemelyanov, Inna Bedny, USA</p>	

<p>16</p>	<p>Re-Balancing Benefits in the Digital Age: Public and Private Sector Resilience and Citizens Fundamental Rights Co-Chairs: Christine Leitner and Wojciech Cellary, UK/Poland</p>	<p>HSSE</p>
<p>11:00-12:30 - AHFE 2</p>	<p>The human-side of service engineering: Advancing technology's impact on service innovation Wojciech Cellary, Louis Freund, Stephen Kwan, Christine Leitner, Jim Spohrer, Poland/USA/UK</p> <p>New ecosystem based on big data for more digital impact Loris Schmid, Christoph Glauser, Switzerland</p> <p>New frontiers in cyberspace – recent European initiatives to regulate digital finance Christian Stiefmueller, UK</p> <p>emyConnect: Building a smart public service for young mobile Europeans Andreas Martin, Yuri Misnikov, Mohammad Allagha, Austria</p> <p>The engagement catalyst initiative: How one global organization activates and energizes employee engagement Laura C. Anderson, Michal Jacovi, Jonathan Lenchner, Jade Strattner, USA</p> <p>Lessons learned from EMY – A post-COVID perspective on student mobility and democratic participation in the EU Christine Leitner, Kristina Reinsalu, Britta Breser, Mohammad Allagha, Christian Stiefmueller, Radu Serrano, UK</p> <p>Fairness and justice: designing and developing human-first AI technologies Lauren Thomas Quigley, Stacy Hobson, Rachel Bellamy, USA</p> <p>A service design for rural India, helping alleviate dual grand challenges of unemployment & a lack of access to healthcare Shrikant Parikh, India</p>	
<p>17</p>	<p>User Research and Product Design II Co-Chairs: Meng Gao and Francisco Rebelo, China/Portugal</p>	<p>ED</p>
<p>11:00-12:30 - AHFE 3</p>	<p>Graphic perception design of social fear release for college students Yuan Lingling, He Guoqiang, China</p> <p>Perception of soundscape for the elderly in urban communities: Field study based on three communities in Changsha, China Liqun Wang, Feihu Chen, Jiaqi Li, Jie Wang, China</p> <p>Framework for teacher-student interaction in the design classroom to enhance student creativity Tingting Gao, China</p> <p>Describing and visualizing sustainable product-service system (S. PSS) applied to distributed water-energy-food nexus Meng Gao, Renke He, Ke Ma, China</p> <p>Naturalistic data collection of head movements during headphone use Xinyi Li, Wang Haining, Cao Yuan, Ruyang Yu, Ren-ke He, China</p> <p>Are you watching me? A study on privacy notice design of social robot Su Peng, Yuan Xiang, China</p> <p>China household ceramics design in the experience economy Hu Yu, Yu Zhou, China</p>	
<p>18</p>	<p>Usability and User Experience Applications II Co-Chairs: Rhyse Bendell and Yufeng Wu, USA/China</p>	<p>UUE</p>
<p>11:00-12:30 - AHFE 4</p>	<p>Analysis of level of accessibility of online scientific conferences for blind participants Hugo Arias-Flores, Sandra Sanchez-Gordon, Tania Calle-Jimenez, Ecuador</p> <p>Design of electric bicycle for delivery from the perspective of perceptual engineering Miao Liu, Yufeng Wu, Yujia Hu, Xuqi Yao, Zhiwen Li, China</p> <p>Profiling of E-learning users with accessibility needs Tania Calle-Jimenez, Sandra Sanchez-Gordon, Hugo Arias-Flores, Ecuador</p> <p>Application of background color in banner design Yitong Jiang, Zhonghua Ni, China</p> <p>Modeling dynamic visual attention resource allocation in cockpit with discrete event simulation Chaoran Liang, Shuang Liu, Xiaoru Wanyan, Hao Chen, Yuchen Min, China</p> <p>How pedestrian-AV interaction is affected by the eHMI: A virtual reality experiment Zhifan He, Zhengyu Tan, Ruifo Zhang, Yanyan Li, Bin Liu, China</p> <p>Human-computer interface design of intelligent spinning factory monitoring system based on eye tracking technology Lan Zhang, Guorui Ma, Zhou Jian, Fang Jia, China</p>	

<p>19</p>	<p>HMI, ADAS and Electric Vehicles II Co-Chairs: Andrew Krum and Sarah El-Dabaja, USA</p>	<p>RR</p>
<p>11:00-12:30 - AHFE 5</p>	<p>Design sprints integrating agile and design thinking: A case study conducted in the automotive industry. Emilie Henreaux, Michel Noutcha, Tina Phan-Ngoc, Kieffer Suzanne, Belgium</p> <p>Subjective evaluation of road situation alerts using visual, speech and auditory modalities with elderly drivers Luka Rukonic, Marie-Anne Pungu Mwange, Belgium</p> <p>How to share control with ADAS? The impact and investigation of human-system interaction by joystick for driver intervention Cho Kiu Leung, Toshihisa Sato, Japan</p> <p>Cars are talking and their drivers are listening Sarah El-Dabaja, Bhaven Naik, Deborah McAvoy, Jacob Campbell, USA</p> <p>Implications of configurable displays for universal driver-vehicle interfaces Andrew Krum, Zachary Doerzaph, USA</p> <p>Supporting event prediction for level 2 ADAS users to prevent automation surprises Akihiko Takahashi, Japan</p> <p>Explaining the public acceptance of electrified L-category vehicles towards sustainable urban mobility planning Anna Antonakopoulou, Anastasios Rigos, Evangelia Portouli, Angelos Amditis, Evangelia Latsa, Greece</p>	
<p>20</p>	<p>Ergonomics in Building and Architecture II Chair: Wojciech Bonenberg, Poland</p>	<p>SUPI</p>
<p>11:00-12:30 - AHFE 6</p>	<p>Humanistic architecture - the human factor in the perception and creation of educational spaces Barbara Świt-Jankowska, Poland</p> <p>The pro-user revolution in design of military complexes in the interwar period Marta Rudnicka-Bogusz, Poland</p> <p>Architectural design after the information revolution Tomasz Konior, Agata Bonenberg, Poland</p> <p>Digital design tools in Polish architectural practice against the backdrop of developed European states Wojciech Bonenberg, Shoufang Liu, Agata Bonenberg, Xia Wei, Poland</p> <p>Digital diagrams in contemporary architectural design: A creative interface between human imagination and form Ana Vasconcelos, Portugal</p>	
<p>21</p>	<p>Cognitive Living Spaces by Using IoT Devices Co-Chairs: Herwig Zeiner and Zoheir Sabeur, Austria/UK</p>	<p>CCIoT</p>
<p>11:00-12:30 - AHFE 7</p>	<p>Cognitive living spaces by using IoT devices and ambient biosensor technologies Herwig Zeiner, Lucas Paletta, Roland Unterberger, Julian Aldrian, Austria</p> <p>Human-centric emergent configurations: Supporting the user through self-configuring IoT systems Fahed Alkhabbas, Romina Spalazzese, Paul Davidsson, Sweden</p> <p>Design of an IoT architecture in livestock environments for the treatment of information for the benefit of cattle Miguel Angel Quiroz Martinez, David Manuel Rodriguez Zapata, Monica Daniela Gomez Rios, Maikel Leyva, Ecuador</p> <p>Advanced cyber and physical situation awareness in urban smart spaces Zoheir Sabeur, Marios Angelopoulos, Liam Collick, Natalia Chechina, Deniz Cetinkaya, Alessandro Bruno, UK</p>	

22	Brain-Machine Interface (BMI) and Neuroinformatics Co-Chairs: Umer Asgher and Hasan Ayaz, Pakistan/USA	ICEEP
11:00-12:30 - AHFE 8	<p>Cognitive interventions based on technology: A systematic literature review Carlos Ramos-Galarza, Omar Córdor-Herrera, Hugo Arias-Flores, Janio Jadán-Guerrero, Mónica Bolaños-Pasquel, Priscila Cedillo, Ecuador</p> <p>Design for AI-enhanced operator information ergonomics in a time-critical environment Jussi Okkonen, Jaakko Hakulinen, Matti Jalava, Heikki Mansikka, Tuuli Keskinen, Markku Turunen, Finland</p> <p>Feature comparison of emotion estimation by EEG and heart rate variability indices and accuracy evaluation by machine learning Kei Suzuki, Midori Sugaya, Ryouta Matubara, Tipporn Laohakangvalvit, Japan</p> <p>Control room operators' cognitive strategies in complex troubleshooting Jari Laarni, Marja Liinasuo, Satu Pakarinen, Kristian Lukander, Tomi Passi, Finland</p> <p>An analysis of the cognitive process and similarities of Complex Problem Solving (CPS) discussions Yingting Chen, Taro Kanno, Kazuo Furuta, Japan</p> <p>Exploring relationships between distractibility and eye tracking during online learning Shanshan Chen, Yiqian Zhao, Tianyu Wu, Yajun Li, China</p>	
23	Risk Assessment and Safety Training I Co-Chairs: Rui Melo and Jouke Verlinden, Portugal/Belgium	SMHF
11:00-12:30 - AHFE 9	<p>Risk assessment knowledge relating to occupational health and safety risks: A case study of five Finnish companies Minna Rantala, Maria Lindholm, Sari Tappura, Noora Nenonen, Finland</p> <p>Experimental comparison of CWA 17553:2020 community face coverings to surgical masks and filtering facepiece respirators Nhat Nguyen, Joren Van Loon, Jochen Vleugels, Sam Smets, Els Du Bois, Jouke Verlinden, Stijn Verwulgen, Regan Watts, Belgium</p> <p>Workplace hazards difficult to identify and manage Noora Nenonen, Sari Tappura, Minna Rantala, Maria Lindholm, Finland</p> <p>COVID-19 prevention in construction sites: A case study in a railway project Christiane N. Gomes, Rui B. Melo, Portugal</p> <p>Occupational exposure reporting for fire investigators Barbara Millet, Erin Kobetz, USA</p> <p>Short circuiting the controller – Missteps in maintenance and inspection of process and wiring in STS-93 Kristy Yun, Tanya Andrews, USA</p> <p>Machine learning for occupational slip-trip-fall incidents classification within commercial grain elevators Fatemeh Davoudi Kakhki, Steven A. Freeman, Gretchen A. Mosher, USA</p>	

<p>24</p>	<p>Wearable Sensing in Physical Ergonomics Assessment and Safety Co-Chairs: Sol Lim and Chi-Wen Lung, USA/Taiwan</p>	<p>PEHF</p>
<p>11:00-12:30 - AHFE 10</p>	<p>Machine learning-based pre-impact fall detection and injury prevention for the elderly with wearable inertial sensors Xiaoqun Yu, Jaehyuk Jang, Shuping Xiong, South Korea</p> <p>The effectiveness of wearable sensor-based vibrotactile feedback in yoga training for users with visual impairment Melanie Grudinschi, Md Shafiqul Islam, Kyle Norland, Sang Won Lee, Sol Lim, USA</p> <p>Functional data representation of inertial sensor-based torso-thigh, knee, and ankle movements during lifting Sol Lim, Clive D'souza, USA</p> <p>Using deep learning methods to predict walking intensity from plantar pressure images Hsing-Chung Chen, S. T. Sunardi, Yih-Kuen Jan, Ben-Yi Liao, Chih-Yang Lin, Jen-Yung Tsai, Cheng-Tsung Li, Chi-Wen Lung, Taiwan</p> <p>BIONIC: Custom sensors for risk assessment and training of older workers Alberto Ferreras Remesal, Juan Fernando Giménez Pla, Purificación Castelló Mercé, Salvador Pitarch Corresa, Raquel Marzo Roselló, Mercedes Sanchís Almenara, Spain</p> <p>Diagnostics of the stress state by the method of pupillography Marina Boronenko, Oksana Isaeva, Russia</p> <p>A pilot study on the use of changes in facial features to assess physical workload in real-time Qian Zhang, Lora Cavuoto, USA</p>	
<p>25</p>	<p>Production Management in Industry Co-Chairs: Markus Kohl and Edmund Pawlowski, Germany/Poland</p>	<p>MFG</p>
<p>11:00-12:30 - AHFE 11</p>	<p>Segmentation and sequencing in CAx instructional videos Lorena Niebuhr, Nina Rußkamp, Eva-Maria Jakobs, Germany</p> <p>Data-driven determination and plausibility check of requirement profiles in logistics Markus Kohl, Sandra Häring, Jens Lopitzsch, Johannes Fottner, Germany</p> <p>Robot process automation in industrial engineering – challenges and future perspectives Sebastian Schlund, Mathias Schmidt, Austria</p> <p>Process improvement for the reduction of rework applying TPM and Kaizen in a company in the metalworking sector Percy Castro, Angel Murga, Jennyfer Valenzuela, Peru</p> <p>Improvement of the global efficiency of mining equipment through Total Productive Maintenance - TPM Cesar Nunura, Orlando Lama, Josue Alayo, Victor Aparicio, Peru</p> <p>Management system of intelligent autonomous environment (IAEMS): The reference model Edmund Pawlowski, Poland</p> <p>Application of Porter's Value Chain Model for construing potential prospects and lacunas in industry 4.0 adoption by 21st century manufacturers Makinde Oluwafemi Ajayi, Timothy Laseinde, South Africa</p>	

<p>26</p>	<p>Communication of Design I Co-Chairs: Daniel Raposo and Amic Ho, Portugal/China</p>	<p>HFCD</p>
<p>11:00-12:30 - AHFE 12</p>	<p>Brand marks analysis - criteria and evaluation components for an analysis tool Daniel Raposo, Fernando Moreira Da Silva, João Neves, Jose Silva, Rogério Ribeiro, Ricardo Correia, Portugal</p> <p>Guidance and public information systems: Diagnosis and harmonization of tourist signage João Neves, Fernando Moreira da Silva, Daniel Raposo, Jose Silva, Rogério Ribeiro, Ricardo Correia, Portugal</p> <p>Organizational design towards the configuration of a media communication model Jorge Brandão Pereira, Vítor Quelhas, Portugal</p> <p>Investigation of city environment with the help of typographic communication design perspectives Ruth Chau, Amic Ho, China</p> <p>Investigation of the application of humanized design concept in the evolution process of Chinese bed Xu Li, Wang Xueting, Lu Yeqing, Zhang Xiuhua, China</p> <p>Visual analytics of urban informality and infrastructure planning with tableau for sustainable urban design research strategies in Lagos metropolis Oluwole Soyinka, Alain Chiaradia, China</p> <p>Quantitative method of regional color planning -- Field investigation on renewal design of Jiangchuan Street Lingling Chen, Kong Fan Qiang, China</p>	
<p>27</p>	<p>Education Co-Chairs: Paulo Maldonado and Qingchuan Li, Portugal/China</p>	<p>CIE</p>
<p>11:00-12:30 - AHFE 13</p>	<p>Creative class of micro culture creative industry Xiaobao Yu, Han qing Lin, China</p> <p>Innovation and entrepreneurship practice: Interdisciplinary teaching and learning in an applied psychology context Jinge Huang, Lin Gan, Yuchen Jing, Longxin Ma, Qi Zhang, Liuyi Zhao, Mingyu Zheng, Antong Zhang, Wei Liu, China</p> <p>How shared online whiteboard supports online collaborative design activities: A social interaction perspective Qingchuan Li, Jiaxin Zhang, Xin Xie, Yan Luximon, China</p> <p>Perceived conflict and resolution strategy in collaborative design of complex product from the perspective of cognitive semantics Yufan Zhou, Zhengtang Tan, Danhua Zhao, Zhen Wang, China</p> <p>Understanding the interrelation between prototype cognition and creativity in interdisciplinary design course Lisha Ren, Zhe Sun, Yue Li, China</p> <p>The application of teachers' encouragement in design classroom Xiaoyu Li, China</p> <p>Exploring and reflecting on Generation Z interaction qualities and selfie scenario designs Di Zhu, Ruilin Wang, Ziwei Zhang, Dawei Wang, Xiaohan Meng, Wei Liu, China</p>	

28	Pandemic Impacts and Coping Co-Chairs: Maria João Pereira Neto and Lilia Raycheva, Portugal/Bulgaria	DCPP
11:00-12:30 - AHFE 14	<p>Job satisfaction and expectations of pharmacy employees During the COVID-19 pandemic: An application of DEMATEL method Xin Li, Chunrong Liu, Ting Han, China</p> <p>Identifying key factors influencing customers' acceptance of serving chopsticks and spoons in restaurants by FA-DEMATEL approach Zhaohui Nian, Chunrong Liu, China</p> <p>Interactive design of public health safety smart supervision platform under the background of normalization of epidemic prevention Tingwei Cai, Ying Cao, China</p> <p>Green design of prefabricated community control measures in response to public health emergencies Enjia Zhang, China</p> <p>Surviving in pandemic times – Can good design help us to change our lives? Raffaella Maddaluno, Maria João Pereira Neto, Jorge Firmino Nunes, Portugal</p> <p>Communicating challenges of COVID-19 to the ageing population Lilia Raycheva, Bulgaria</p> <p>Addictive cell phone usage: Impacts on family interaction during COVID-19 pandemic Bankole Fasanya, Karen T. Abad Navarrete, Temilade Adeyeye, USA</p>	
29	Real-World Human State Assessment: Victories and Remaining Challenges Co-Chairs: Bethany Bracken and Tamsyn Edwards, USA	CN
13:00-14:30 - AHFE 1	<p>Can situation awareness be measured physiologically? Bethany Bracken, Sean Tobbyne, Aaron Winder, Nina Shamsi, Mica Endsley, USA</p> <p>Towards a measure of situation awareness for space mission schedulers J Tamsyn Edwards, Summer Brandt, Jessica Marquez, USA</p> <p>Monitoring human performance on future deep space missions Kritina Holden, Brandin Munson, Jerri Stephenson, USA</p> <p>Real-time estimation of cognitive states via fNIRS-based time series classification Nina Shamsi, Sean Tobbyne, Aaron Winder, Bethany Bracken, Mica Endsley, USA</p> <p>What did our model just learn? Hard lessons in applying deep learning to human factors data Brian Weigel, Kaleb Loar, Andres Colon, Robert Wright, USA</p> <p>Addressing two central issues of team interaction dynamics: The whole is greater than the sum of its parts Mustafa Canan, Mustafa Demir, USA</p>	
30	Emerging Research Innovations in AI, User Experience, New Technology, and Design: Industry, Business, and Education Co-Chairs: Debra Satterfield and Kimberly Melhus Mitchell, USA	HSSE
13:00-14:30 - AHFE 2	<p>UI design for medical devices: An interdisciplinary research program to enhance the usability and UX of environmental control units at VA-hospitals Sam Anvari, Gabriella Hancock, Nicole Mok, Aram Ayvazyan, Matthew Nare, Camen Machado, Becka Chomppf, Yoshiko Mizushima, Yuji Shiraiwa, Natalia Morales, Loulya Alcharbaji, USA</p> <p>Value co-creation through collaborative world-building and cosplay: QwörkSpace Joshua Ian, Debra Satterfield, USA</p> <p>Evaluating innovation strategies in online education in higher education Debra Satterfield, Jose Rivera-Chang, David Teubner, Tom Tredway, Wesley Woelfel, USA</p> <p>Color and flavor perception Sunghyun Kang, Carol Faber, Nora Ladjahasan, Andrea Quam, USA</p> <p>Disruptive innovation: Designing a shifting pedagogy for creative disciplines in higher education learning Kimberly Mitchell, USA</p> <p>Virtual exhibit design: The UX of student BFA design shows in social VR Laura Huisinga, USA</p>	

<p>31</p>	<p>User Research and Product Design III Co-Chairs: Ming Zhong and Francisco Rebelo, China/Portugal</p>	<p>ED</p>
<p>13:00-14:30 - AHFE 3</p>	<p>Green intelligent production design strategy based on service design Wandong Cheng, Jun Zhang, Wanzhi Gao, China</p> <p>Using vibrotactile device in music therapy to support wellbeing for people with Alzheimer's disease Yingjie Fang, Jing Ou, Nick Bryan-Kinns, Qingchun Kang, Junshuai Zhang, Bing Guo, China</p> <p>Information superiority effect of multi-channel interaction of smart mobile robot Ming Zhong, Ren-ke He, China</p> <p>The effects of auditory parameters on the meaning of sound for multifunctional beds Jiehao Ling, Yonghong Liu, Yiming Song, China</p> <p>Emergency protection of urban commercial complex based on VR technology Wenyu Qi, Yun Liu, Zhong Zheng, China</p>	
<p>32</p>	<p>Usability and User-Centered Design I Co-Chairs: Saad Almesalm and Yu-Pin Lin, Saudi Arabia/Taiwan</p>	<p>UUE</p>
<p>13:00-14:30 - AHFE 4</p>	<p>Improving usability of a gaze-based surveillance support tool through user-centered design Alexandre Marois, Laura Salvan, Daniel Lafond, Alexandre Williot, Noémie Lemaire, Sébastien Tremblay, Canada</p> <p>Enhancing blood donation intentions using mobile responsive web design Yu-Pin Lin, Meng-Cong Zheng, Taiwan</p> <p>Applying iterative design approach to Kafu games in order to enhance the user experience of gamers in Saudi Arabia Saad Almesalm, Nadeem Bakhsh, Saad Ali Khan, Saudi Arabia</p> <p>Insight into the needs of mobile performance speakers based on multimodal sensory user experience Huai Cao, Juanjuan Feng, Jihao Xu, Zining Liu, China</p> <p>Advanced interactive style guide for design consistency Bryan Croft, Mike Nithaworn, Seana Rothman, Odalis Felix, Jeff Clarkson, Eric Voncollin, Lisa Guo, USA</p> <p>Improved Kano Model based on stakeholder-centered design Yuqi Wang, Danhua Zhao, China</p> <p>GVUI: Graphic-assisted voice user interface based on multi-modal human-machine conversation Bo Zhou, Long Li, China</p>	
<p>33</p>	<p>Educational Design Co-Chairs: Zhiyi Wen and Qianqian Lin, China</p>	<p>ED</p>
<p>13:00-14:30 - AHFE 5</p>	<p>Experience in teaching design of human-computer interaction through evaluation and research YuanBo Sun, Zhiyi Wen, Shaohuan Zhang, China</p> <p>A teaching experience of service design course supported by design thinking Qianqian Lin, Yuanbo Sun, China</p> <p>The application of scenario-based design thinking in the teaching practice of product design Cailian Wang, KangHu, Li Zeng, Chunmeng Weng, China</p> <p>Visual analysis of the development trend of design discipline in American basic education Haiwei Yan, Tianyi Sun, Ying Chuai, Yuanbo Sun, Ruolin Gao, China</p> <p>Design thinking application in K-12 education utilizing service design methodology Qiongying Ge, YuanBo Sun, Zhiyi Wen, Shaohuan Zhang, China</p> <p>A review: Implementation of design thinking education in K-12 Shaohuan Zhang, YuanBo Sun, Zhiyi Wen, Qiongying Ge, China</p> <p>Teaching practice of product design driven by supportive employment project for mentally challenged youth Meng Li, China</p>	

34	Advanced Learning Technologies Co-Chairs: Martin Kröll and Eric Peterson, Germany/USA	TELS
13:00-14:30 - AHFE 6	<p>Structure of a socio-technical learning and innovation factory Barbara Tropschuh, Fabian Dillinger, Quirin Gärtner, Svenja Korder, Harald Bauer, Moritz Kagerer, Germany</p> <p>Teaching robotics with virtual reality: Developing curriculum for the 21st century workforce Eric Peterson, Biayna Bogosian, Shahin Vassigh, Jorge Tubella, USA</p> <p>I feel the need for speed - empirical evidence of the effectiveness of VR training technology on knowledge and skill acquisition Victoria Trabysh, Theodore Feldhacker, Cait Rizzardo, Kent Halverson, Jake Johnson, Lisa Tripp, Antonio Gonzalez, III, USA</p> <p>Digital creative abilities for achieving digital maturity Marita Canina, Carmen Bruno, Italy</p> <p>AI and learning in the context of digital transformation Martin Kröll, Kristina Burova-Keßler, Germany</p> <p>Impacts on cognitive decay and memory recall during long duration spaceflight Terry Rector, James Casler, Curtis Cripe, USA</p>	
35	Human Technology Approach to Governance Co-Chairs: Batia Ben-Hador and Benita Zulch, Israel/South Africa	HFML
13:00-14:30 - AHFE 7	<p>Leadership in media industry: Theoretical approach Cristian Londoño, Ecuador</p> <p>How much immersive is virtual reality? Evidence from VR-based managerial competency assessment tool testing Asta Savanevičienė, Lina Girdauskiene, Lithuania</p> <p>He just didn't listen -Coaches' and coachees' different perceptions about the practice of Managers as Coach (MAC) Batia Ben-Hador, Israel</p> <p>The construction professional's Kanohi kē: The road to purpose-fit selection for New Zealand Andries (Hennie) Van Heerden, Gregory Chawynski, Janette Doblas, Michelle Burger, New Zealand</p> <p>The role of the project manager in delivering design-build projects Jp Kitshoff, Benita Zulch, South Africa</p> <p>An improved method to determine the weight of evaluation index based on group decision-making theory and analytic hierarchy process Jingqi Gao, Qing Xue, Minxia Liu, China</p>	
36	Human Error, Reliability, Resilience, and Performance in Aviation Co-Chairs: Barry Kirwan and Casey Kovesdi, France/USA	HERRP
13:00-14:30 - AHFE 8	<p>Is our human factors capability in aviation and maritime domains up to the task? Barry Kirwan, Kasia Cichomska, Beatrice Thiebaut, Andrew Kilner, France</p> <p>Introducing human factors into fault tree modelling for aviation Andrew Kilner, Marta Llobet-Lopez, France</p> <p>Design of a human factors database for learning from safety occurrences in the aviation and maritime domains Sybert Stroeve, Barry Kirwan, Luca Save, Simone Pozzi, Rafet Kurt, Osman Turan, Netherlands</p> <p>Flying high. Voice stress analysis to detect pre-symptomatic acute hypobaric hypoxia at 25000 ft. Martine Van Puyvelde, Emma Debecker, Xavier Neyt, Frederic Detaille, Vanderlinden Wim, Nathalie Pattyn, Belgium</p> <p>Human factors analysis for a new wake vortex air traffic alert Frédéric Rooseleer, Barry Kirwan, Adriana Dana Schmitz, Belgium</p>	

37	Kansei Engineering I Co-Chairs: Jiahao Wang and Xinran Chen, China	KE
13:00-14:30 - AHFE 9	<p>Analysis of keyboard layout elements based on aesthetic and subjective evaluation Xinran Chen, Jianrun Zhang, China</p> <p>Evaluation of the layout of home game console interface elements based on aesthetic calculation Ziyi Xie, Chengqi Xue, Wenyu Wu, China</p> <p>The effect of optical weight on optical balance in user interface Kai Ma, Wenyu Wu, Chengqi Xue, China</p> <p>Evaluation of the layout of the interface elements of the posters designed by the Luban AI system and the designer based on Meidu calculation Peng Cheng, Xingsong Wang, China</p> <p>Aesthetics evaluation and usability of multifunctional printer interface Zhou Shen, Mengqian Tian, Xingsong Wang, China</p> <p>Enterprise product morphology based on Kansei Engineering - Taking AGV as an example Xinxiong Liu, Zining Liu, Juanjuan Feng, Jihao Xu, China</p> <p>Form design of household knee-joint products based on Kansei Engineering Wei Ding, Wenqin Fan, Junnan Ye, China</p>	
38	Health Care Issues and Risk Assessment Co-Chairs: Helen Fuller and Serena Ivaldi, USA/France	EHMD
13:00-14:30 - AHFE 10	<p>Machine learning approaches to predict scoliosis Joanne Yip, Ruixin Liang, Michael To, Yunli Fan, China</p> <p>Using exoskeletons to assist medical staff during prone positioning of mechanically ventilated COVID-19 patients: A pilot study Serena Ivaldi, Pauline Maurice, Waldez Azevedo Gomes Junior, Jean Theurel, Lien Wioland, Jean-Jacques Atain-Kouadio, Laurent Claudon, Hind Hani, Antoine Kimmoun, Jean-Marc Sellal, Bruno Levy, Jean Paysant, Serguei Malikov, Bruno Chenuel, Nicola Settembre, France</p> <p>A case study of initial in-brace spinal correction of Anisotropic Textile Brace and Boston Brace Charlotte Sze-Ham Wong, Joanne Yip, Kit Lun Yick, Sun Pui Ng, China</p> <p>Preliminary wear trial of posture training bracewear for older adults with degenerative scoliosis (ADS) Linda Yin Ling Sit, Joanne Yip, Kenny Yat Hon Kwan, China</p> <p>The benefits of standardization in healthcare systems Nancy Lightner, Tandi Bagian, USA</p> <p>The flip side of the coin: Potential hazards associated with standardization in healthcare Helen Fuller, Timothy Arnold, USA</p> <p>How might we think about safety? Inviting deeper reasoning through elaborative inquiry Timothy Arnold, Helen J. A. Fuller, Stuart C. Gilman, William P. Gunnar, USA</p>	
39	Communication of Design II Chair: Amic Ho, China	HFCD
13:00-14:30 - AHFE 11	<p>Relationship between Chinese painting strokes and Qi on inspiration of art education - A study on Jian Bi stroke Xue Hu, Eakachat Joneurairatana, Sone Simatrang, Thailand</p> <p>Application of emotion-based design in brand communication: Taking KFC as an example Xiaoning Jiang, Fan Zhan, China</p> <p>Pupil dilation, emotion valence and recall of visual images Mritunjay Kumar, Braj Bhushan, Ahmed Sameer, Satyaki Roy, Rajesh Ranjan, India</p> <p>Advertising and lifestyle: A brief history of contemporary Chinese advertising and lifestyle transition Wenhua Li, Jia Xin Xiao, Jiaying Huang, China</p> <p>An impression evaluation of robot facial expressions considering individual differences by using biological information Kai Yu, Peeraya Sripan, Muhammad Nur Adilin Mohd Anuardi, Midori Sugaya, Japan</p> <p>Mascot endorsement provoke the audiences' engagement Tsz Chun Kevin Kwok, Amic Ho, China</p> <p>A modular structure to explore the interface design and interaction testing process of teams Bahar Memarian, Brian Fisher, Christos Koulas, Canada</p>	

40	Virtual Reality and Game Design in Education Co-Chairs: Pirita Ihämäki and Zheng Chen, Finland/China	HFGD
13:00-14:30 - AHFE 12	<p>Efficacy of romantic poetry: Chinese classical poetry education project based on augmented reality technology for elementary school students Zheng Chen, Zhong Wang, China</p> <p>Developing interactive company presentations in the 3D glue virtual reality environment: a collaborative educational approach Pirita Ihämäki, Katriina Heljakka, Finland</p> <p>A theoretical model of video game design in the educational context Sergio Martinez, Enrique Chiroque, Vanessa Vega, Maria José Espinosa, Eudes Axel Muñoz Delmás, Peru</p> <p>User experience design of online education based on flow theory Jiadong Han, Yan Wang, China</p> <p>Behind the chain coffee shop: Design of utilizing virtual reality for coffee-making training Yi Ciao Lin, Chien-Hsu Chen, Taiwan</p> <p>MindJourney: Employing gamification to support mindfulness practice Yang Ge, Ting Han, China</p>	
41	Human Factors in Artificial Intelligence and Social Computing I Co-Chairs: Veton Matoshi and Nathanael Brown, Germany/USA	AISC
13:00-14:30 - AHFE 13	<p>Human-AI-collaboration in the context of information asymmetry: A behavioral analysis of Demand Forecasting Tim Lauer, Sophia Wieland, Germany</p> <p>A minimally supervised event detection method Matthew Hoffman, Sam Bussell, Nathanael Brown, USA</p> <p>LDAvis, BERT: Comparison of method application under Corona conditions Heike Walterscheid, Veton Matoshi, Katarzyna Wisniewiecka-Brückner, Klaus Rothenhaeusler, Frank Eckardt, Germany</p> <p>Artificial Intelligence (AI) coupled with Internet of Things (IoT) for the enhancement of occupational health and safety in the construction industry Kavitha Palaniappan, Chiang Liang Kok, Kenichi Kato, Singapore</p> <p>Computational intelligence applied to business and services: A sustainable future for the marketplace with a service intelligence model Mariana Alfaro Cendejas, Mexico</p> <p>Promoting economic development and solving societal issues within connected industries ecosystems in Society 5.0 Elizabeth Koumpan, Anna Topol, USA</p> <p>Knowledge discovery about cancer based on fuzzy predicates Miguel Angel Quiroz Martinez, Christian Rene Vargas Alava, Monica Daniela Gomez Rios, Maikel Leyva, Ecuador</p>	
42	Fashion and Apparel Design Co-Chairs: Carla Morais and Theresa Lobo, Portugal/USA	HFATE
13:00-14:30 - AHFE 14	<p>Fiber leading designs. How the typical features of woollen yarn can drive a collection of knitwear product in a real industry application Giovanni Maria Conti, Martina Motta, Chiara Bianchi Maiocchi, Italy</p> <p>The personal wardrobe during COVID-19 Carla Morais, Gianni Montagna, Portugal</p> <p>A cultural mediation of meanings between consumer-goods, trends and the culturally constituted world Theresa Lobo, William Afonso Cantu, Nelson P. Gomes, Portugal</p> <p>Individual motivation to create can boost the apparel and textile company's culture and climate for innovation: A case study João Barata, Rui Miguel, Portugal</p> <p>Constructed images and the inner self: Reading identities in "The Queen's Gambit" Carlos Manuel Figueiredo, Ana Rafaela Diogo, Portugal</p> <p>Design of fashionable and functional tri-laminated wool fabrics for leisurewear considering comfort Benilde Reis, Rui Miguel, Madalena Pereira, José Lucas, Claudia Sousa, Gilda Santos, João Carvalho, Fernando Moreira da Silva, Manuel Santos Silva, Portugal</p> <p>Comfort of the 3D layered materials for self-grown fashion creation Wen Wang, China</p>	

43	Modeling and Monitoring Humans for Operational Task Performance Co-Chairs: Angela Harrivel and Adrian Curtin, USA	CN
15:00–16:30 - AHFE 1	<p>Investigating the modulation of spatio-temporal and oscillatory power dynamics by perceptible and non-perceptible rhythmic light stimulation Katharina Lingelbach, Isabel Schöllhorn, Alexander Dreyer, Frederik Diederichs, Michael Bui, Michael Weng, Jochem Rieger, Ina Petermann-Stock, Mathias Vukelić, Germany</p> <p>Autocomplete fNIRS: Bi-directional RNN approach for time-series signal recovery Adrian Curtin, Marjan Saadati, Lei Wang, Hasan Ayaz, USA</p> <p>Human monitoring as a migration path mechanism to support public confidence and operational resilience with urban air mobility reduced-crew operations Saeideh Samani, Richard Jessop, Angela Harrivel, USA</p> <p>Planned investigations to address acute central nervous system effects of space radiation exposure with human performance data Angela Harrivel, Steve Blattinig, Ryan Norman, Lisa Simonsen, USA</p> <p>Towards artificial social intelligence: Inherent features, individual differences, mental models, Theory of Mind Rhyse Bendell, Jessica Williams, Stephen Fiore, Florian Jentsch, USA</p> <p>Modeling crew performance degradation due to radiation exposure in space M. C. Dorbecker, USA</p>	
44	Augmenting Service Capabilities in the With/Post-Pandemic Era Co-Chairs: Kazuyoshi Hidaka and Kentaro Watanabe, Japan	HSSE
15:00–16:30 - AHFE 2	<p>Toward a model for improving service literacy via digital assistants Md Abul Kalam Siddike, Kazuyoshi Hidaka, Japan</p> <p>Differences in effect of endorsement of professional vs. Non-professional YouTuber through credibility and parasocial relationship Hisashi Masuda, Spring H. Han, Jungwoo Lee, Japan</p> <p>Digital transformation strategy of service systems for enhancing human experiences Takeshi Takenaka, Watanabe Kentaro, Miwa Hiroyasu, Sashima Akio, Japan</p> <p>Restaurant reservation system: Allocating customers with space management under the impact of Covid-19 Bingxin Du, Nariaki Nishino, Koji Kimita, Kohei Sasaki, Japan</p> <p>Empathy-based CE strategy to tackle complex challenges Hiromi Iida, Kensaku Ishibashi, Akino Inoue, Yuriko Sawatani, Japan</p>	
45	Design and Evaluation Research for Enhanced Product Usability and User Experience Chair: Yuting Tong, China	ED
15:00–16:30 - AHFE 3	<p>Effect of natural sounds masking on perception of noise in the kitchen environment Yuting Tong, Ruifo Zhang, Zheng Liu, Zhengyu Tan, China</p> <p>Neck muscles fatigue evaluation of VR glasses based on sEMG signals Xin Wang, Yumiao Chen, China</p> <p>Ergonomic design of dining robot for older adults Yuanjie Chen, Yumiao Chen, China</p> <p>Design of cognitive ability assessment method for the elderly when using intelligent kitchen products Yi Jin, Juanfang Xu, Zheng Liu, China</p> <p>Choice of behavior model in new retail: usability testing of intelligent shopping terminals functional framework Yuanfeng Li, Qun Wu, Yilin Zhang, China</p> <p>Function layout of adaptive aging population kitchen design based on trace observation Meilin Chen, Canqun He, Mengyao Wang, Yun Wang, China</p>	

46	Design Issues in Research Co-Chairs: João Neves, José Silva and Daniel Raposo, Portugal	ED
15:00–16:30 - AHFE 4	<p>A puzzling confrontation: Overall quality and usefulness of PhD design research vs master design research Rita Almendra, Portugal</p> <p>Mitigating the ephemeral character of design exhibitions Helena Barbosa, Vasco Branco, Portugal</p> <p>Design, meaning and intention: Communication in times of a pandemic Maria Luísa Costa, Joana Saes, Silvia Rala, Portugal</p> <p>Brand argument driven through art and schematics: Designing new perspectives to transform and empower the neighborhood Daniel Raposo, José Silva, Noemy Berbel, Maravillas Diaz, João Neves, Nuno Martins, Daniel Brandão, Portugal</p> <p>Design and communication for the territory: Promotion and enhancement of heritage based on tourist routes João Neves, Ricardo Jorge Nunes da Silva, Jose Silva, Daniel Raposo, Nuno Martins, Daniel Brandão, Portugal</p> <p>The book's relevance in the contemporary editorial practice João Brandão, Sofia Rodrigues, Portugal</p> <p>Research through co-design (RTC) and ergonomics Sofia Scataglini, Daniele Busciantella-Ricci, Belgium</p>	
47	Usability and User-Centered Design II Co-Chairs: Yaru Li and Zhenzhen Ma, China	UUE
15:00–16:30 - AHFE 5	<p>Interface color design of intelligent vehicle central console Fang You, Yaru Li, Preben Hansen, Liping Li, Mengting Fu, Yifan Yang, Xin Jin, Jianmin Wang, China</p> <p>Design of drinking water facilities in Shanghai Botanical Garden based on service design Zhenzhen Ma, Li Xu, China</p> <p>Product identity design of Yiwu general merchandise based on user experience Shanwei Zhang, Ye Junnan, Jingping Li, Lixia Hua, China</p> <p>Online shopping web sites' perceived usability: A case study with Turkish shopping related web sites Merve Demirci, Turkey</p> <p>Measurement of the attentional bias in children using eye tracking during a psychological test Andrea Argudo-Vásconez, Omar Alvarado, Cristian Calderon, Franklin Buele, Patricia Margarita Ortega Chasi, Martha Cobos, Ecuador</p> <p>The color semantics of compact car: A case study on Ford Focus Jiahao Wang, Yafeng Niu, Lang Xiao, Jin Liu, Guorui Ma, Hongrui Zuo, China</p> <p>How expert and novices perceive the photographic images composition: An eye-tracking study on composition Farbod Torabi, Sakol Teeravarunyou, Thailand</p> <p>Color matching method for foreground based on complex background image processing: Example of mobile phone interface Lanjing Li, Dongke Sun, China</p>	

48	Design for Inclusion in the Living Environment Co-Chairs: Michela Benente and Elke Ielegems, Italy/Belgium	DI
15:00–16:30 - AHFE 6	<p>Ergonomic considerations for the design of tactile guide paths for new urban changes and needs Kin Wai Michael Siu, Hong Kong</p> <p>Inclusive design for open spaces in dense older districts: A comparative study of Hong Kong and Guangzhou Jia Xin Xiao, Kin Wai Michael Siu, Ming Jun Luo, China</p> <p>The UDI³-framework: Unravelling a design context in which knowledge on Universal Design can be built Elke Ielegems, Jasmien Herssens, Jan Vanrie, Belgium</p> <p>Accessibility and usability standards of built environment design: Struggle toward agreement in the global context Satoshi Kose, Japan</p> <p>The Museum listens: A collaborative project on Torino archaeology collections Michela Benente, Valeria Minucciani, Filippo Masino, Italy</p> <p>Cultural perception of accessibility and the role of heritage: The Havelis in Shahjahanabad (Old Delhi) Valeria Minucciani, Michela Benente, Gianluca D'Agostino, Anuradha Chaturvedi, Italy</p>	
49	Human Factors on Security and Crises Management Co-Chairs: Mário Simões-Marques and Justine Caylor, Portugal/USA	SYSI
15:00–16:30 - AHFE 7	<p>Mental traps behind maritime disasters Pedro Água, Armindo Frias, Mario Simões-Marques, Portugal</p> <p>Preliminary evaluation of multi-criteria decision-making methodology for emergency management Justine Caylor, Robert Hammell, Adrienne Raglin, USA</p> <p>Linked open data supporting semantic integration and collaboration in disaster management cycle Anacleto Correia, Pedro Água, Mario Simões-Marques, Portugal</p> <p>Human factors impact in the security and safety of the maritime domain Mario Simões-Marques, Armindo Frias, Pedro Água, Portugal</p> <p>Virtual sensor robust to faults in the nuclear power plant accidents Jeonghun Choi, Seung jun Lee, South Korea</p>	
50	Computational Modeling Approaches in Politics and Economics Chair: Zining Yang, USA	HFSIM
15:00–16:30 - AHFE 8	<p>Assess electric vehicle adoption through an agent based approach Yi Ling Chang, Yuan Yuan Lee, Zining Yang, USA</p> <p>The impact of housing programs on unsheltered homeless population: An agent-based approach Dandan Kowarsch, Zining Yang, USA</p> <p>Opening borders: Peru's expected utility on Venezuelan's immigration; A social network analysis Jorge Guerra, USA</p> <p>Optimal strategy in international relations Dandan Kowarsch, Kelly Fang, USA</p> <p>Modeling and simulation of disaster medicine processes for resilience assessment of hospital BCPs Shunsuke Kadono, Taro Kanno, Chia-Hsin Cheng, Sheuwen Chuang, Japan</p> <p>PEV market dynamics: An ABM approach to model the relationship between demand for PEVs and charging station supply in Southern California Zining Yang, Ruiqian Li, USA</p>	

<p>51</p>	<p>Human Factors and Assistive Technology I Co-Chairs: Shoichiro Fujisawa and Yang Cai, Japan/USA</p>	<p>HFAT</p>
<p>15:00–16:30 - AHFE 9</p>	<p>Visual guidance by blinking light of LED block for individuals affected with low vision Shoichiro Fujisawa, Kenji Sakami, Tomoya Sakaguchi, Takatoshi Aoki, Masaki Okegawa, Jiro Morimoto, Junji Kawata, Yoshio Kaji, Mineo Higuchi, Shin-ichi Ito, Japan</p> <p>Gait recognition from drone videos Yang Cai, USA</p> <p>Pedagogical interface agent for Kenyan sign language Casam Njagi Nyaga, Ruth Diko Wario, Lizette De Wet, South Africa</p> <p>Collision prediction and prevention in contact sports using RFID tags and haptic feedback Moeen Mostafavi, Fateme Nikseresht, Jacob E. Resch, Laura Barnes, Mehdi Boukhechba, USA</p> <p>Estimation of probe angles based on inertial measurement and human skill assessment Kazuki Matsuo, Hiroyuki Nakamoto, Daigo Kosaka, Futoshi Kobayashi, Japan</p> <p>Promoting social skills in technology-mediated communication contexts: First results on adopting the social compass curriculum Miguel Carvalho, António Teixeira, Samuel Silva, Portugal</p> <p>Developing quality assistive technology and better supports for breasts with the help of low-cost sensors Lucia Regina, Jose Aguiomar Foggiatto, Brazil</p> <p>A methodology to determine the efficacy of design variations in a wearable airbag using finite element analysis Byung Cheol (Bruce) Lee, Krystal Garza, USA</p>	
<p>52</p>	<p>Advanced Production Management and Process Control I Co-Chairs: Salvador Avila and Magdalena K. Wyrwicka, Brazil/Poland</p>	<p>APMPC</p>
<p>15:00–16:30 - AHFE 10</p>	<p>Improved sulfuric acid discharge through combined task and risk analysis Jefferson dos Santos Mascarenhas, Igor Santos Araujo, Salvador Ávila Filho, Danillo Ramos Camargo, Leila Maria Aguilera Campos, Luiz Antônio Magalhães Pontes, Brazil</p> <p>Operational reliability investigation of turbo-generator based on technological aspects and human factors Igor Santos Araujo, Salvador Ávila Filho, Jefferson dos Santos Mascarenhas, Danillo Ramos Camargo, Brazil</p> <p>Organizational risk in custom manufacturing of complex products Anna Stasiuk-Piekarska, Magdalena K. Wyrwicka, Poland</p> <p>Expanded polystyrene wall and conventional concrete wall sustainability issues in housing Adegboyega Lateef Adewole, Rita Yi Man Li, Nigeria</p> <p>Applying packing problems to optimize throughput time and human ergonomics in project shops Thomas Henke, Jochen Deuse, Germany</p> <p>Stability method for pit dimensioning obtained using the gradient boosting machine algorithm in underground mining Hernan Camacho, Humberto Pehovaz, Carlos Raymundo, Peru</p> <p>Impact of globalization on current practices in the supply chain management of SMEs Ayodeji Dennis Adeitan, Clinton Aigbavboa, Oyindamola Cynthia Olubiyo, South Africa</p>	

<p>53</p>	<p>Sustainability and Ecodesign Chair: Daniel Raposo, Portugal</p>	<p>HDCS</p>
<p>15:00–16:30 - AHFE 11</p>	<p>Dryas as a model for lighting products design Liliana Soares, Ermanno Aparo, Rita Almendra, Fernando Moreira Da Silva, João Teixeira, Jorge Passos, Portugal</p> <p>Design, plastics and sustainability – methodological reflections Dilia Nunes, Joana Lessa, Portugal</p> <p>Fostering sustainability on campus: Design of an IoT-enabled smartbottle for plastic reduction in the academic environment João Mendes, Ana F. Curralo, Antonio Curado, Sergio I. Lopes, Portugal</p> <p>Fashion design education towards transition - circularity and biobased materials Gabriela Forman, Portugal</p> <p>Design and science for the valorisation of residues and by-products of the wine industry Elena Cioffi, Assunta Capece, Severina Pacifico, Mario Buono, Italy</p>	
<p>54</p>	<p>Human Factors in Artificial Intelligence and Social Computing II Co-Chairs: Alexander Streicher and David Coar, Germany/USA</p>	<p>AISC</p>
<p>15:00–16:30 - AHFE 12</p>	<p>Graph-based modeling for adaptive control in assistance systems Alexander Streicher, Rainer Schönbein, Stefan W. Pickl, Germany</p> <p>Is artificial intelligence digital? Vaclav Jirovsky, Vaclav Jirovsky, Czech Republic</p> <p>Interpreting pilot behavior using long short-term memory (LSTM) models Ben Barone, David Coar, James Allen, Jinhong Guo, Brad Galego, Ashley Shafer, USA</p> <p>The old moral dilemma of me or you Maria Colurcio, Ambra Altimari, Italy</p> <p>Teaching Brooks Law based on Fuzzy Cognitive Maps and Chatbots Miguel Angel Quiroz Martinez, Andres Fabian Arteaga Ramirez, Santiago Teodoro Castro Arias, Maikel Leyva, Ecuador</p> <p>Algorithm for the signal validation in the emergency situation using unsupervised learning methods Younhee Choi, Gyeongmin Yoon, Jonghyun Kim, South Korea</p>	
<p>55</p>	<p>Explorations in Industrial Design Education Co-Chairs: George Chow and Adam Feld, USA</p>	<p>IPID</p>
<p>15:00–16:30 - AHFE 13</p>	<p>Validation in a distance learning environment Adam Feld, USA</p> <p>Rapid idea development: Translating face-to-face interactions to virtual platforms Verena Paepcke-Hjeltness, USA</p> <p>Expressive design: An intersection of design and meaning. Paul Skaggs, USA</p> <p>Trash to treasure: An upcycling project case study George Chow, USA</p> <p>What if...? Strategies to teaching communication, empathy and teamworking for design students by design students Ana Paula Nazaré de Freitas, Rita Assoreira Almendra, Brazil</p> <p>Predicting inclusive futures: Wearables, automation, and design speculation Raja Schaar, Clint Zeagler, USA</p> <p>Investigation of scarcity: The cause and effect of homogeneity in the industrial design workforce Betsy Barnhart, USA</p>	

56	Human Performance and Variability Co-Chairs: Kin Wai Michael Siu and Patrick Seitzinger, China/Canada	HFAS
15:00–16:30 - AHFE 14	<p>Promoting the social connectedness of the lost-only-child elderly in China Yunhe Du, Yu Hin Brian Lee, Kin Wai Michael Siu, China</p> <p>Factors affecting mobile game genre preference for chinese older adults in Hong Kong Wing Lam Yu, Tsun Hang Ho, Alan Chan, China</p> <p>The guardian slippers: Designing an IoT device to enhance safety for the elderly in the nursing home I-Hsin Chen, Chien-Hsu Chen, Taiwan</p> <p>Emotional design of dining processes for older adults Chenqi Zhang, Ting Han, Can Huang, Tasaki Seina, Xinran Chen, Xi Han, China</p> <p>Chatty Bot: An alternative to implement a memory training option for the upcoming older adults in Indonesia Elizabeth Wianto, Chien-Hsu Chen, Chia-Chen Chen, Chih-Lung Lin, Indonesia</p> <p>Service and design strategy of smart care products in pension agency under the background of active aging Wen Qing, Li Fangyu, China</p>	
57	Design Strategy, Design Method - Interdisciplinary Methods of Research and Design for Experience Design Co-Chairs: Liang Fuxi and Tiantian Li, China	ED
17:00-18:30 - AHFE 1	<p>What kind of quality do users prefer? A study of automobile interior quality based on loudness theory Liang Fuxi, Danhua Zhao, Fangzhou Gu, China</p> <p>Mood board tool on high-level semantics visual representation to favor creative design Tiantian Li, Danhua Zhao, China</p> <p>The trend of artificial intelligence aided industrial design Hao Xin, Danhua Zhao, China</p> <p>Design of kitchen appliances for aging population based on healthy diet Mengyao Wang, Canqun He, Meilin Chen, Yun Wang, China</p> <p>A conceptual framework of future home smart kitchen system with multiple experience modes Zhongliang Yang, Xinyu Zhang, Xingyu Liu, Jialu Tang, Hui Cao, China</p> <p>From present to future: Developing personas combining scenario thinking and LDA model Jingshu Jiang, Zhengyu Tan, China</p>	
58	Human Factors and Unmanned Aerial Vehicles Co-Chairs: Oscar Bjurling and Serge Chaumette, Sweden/France	HFRDUS
17:00-18:30 - AHFE 2	<p>Swarms, teams, or choirs? Metaphors in multi-UAV systems design Oscar Bjurling, Mattias Arvola, Tom Ziemke, Sweden</p> <p>Visual communication with UAS: Estimating parameters for gestural transmission of task descriptions Alexander Schelle, Peter Stütz, Germany</p> <p>Concept for cross-platform delegation of heterogeneous UAVs in a MUM-T environment Siegfried Maier, Axel Schulte, Germany</p> <p>A distributed mission-planning framework for shared UAV use in multi-operator MUM-T applications Gunar Roth, Axel Schulte, Germany</p> <p>Zsouav: The social open UAV to support information collection and collaboration in risky situations Serge Chaumette, David Auber, France</p>	

59	Human Factors and Wearable Technologies I Co-Chairs: Yang Cai and Michael Thomas Knierim, USA/Germany	HFWT
17:00-18:30 - AHFE 3	<p>Simultaneous floor mapping with depth sensors Yang Cai, Uma Arunanchalam, USA</p> <p>Detecting daytime bruxism through convenient and wearable around-the-ear electrodes Michael Thomas Knierim, Max Schemmer, Dominik Woehler, Germany</p> <p>Design principles for mobile brain-body imaging devices with optimized ergonomics Niell Gorman, Antoinette Louw, Alexander Craik, Jose Gonzalez-Espana, Jeff Feng, Jose L Contreras-Vidal, USA</p> <p>On the diversity of self-tracking purposes: Systematizing the objectives in tracking oneself Fabienne Lambusch, Michael Fellmann, Christoph Rosenau, André Gember, Germany</p> <p>Wearables for quality assurance in manual assembly – a qualitative study Kristin Wagner, Rebecca-Maria Ries, Patrick Poetters, Bert Leyendecker, Holger Beckmann, Germany</p> <p>The pattern-making and refinement of a smart compression trouser design for Taiwan University football team Ying-Chia Huang, Wei-Hao Yang, Hsiu-Ling Hu, Chien-Chang Ho, Taiwan</p> <p>Detection of racial bias from physiological responses Fateme Nikseresht, Runze Yan, Rachel Lew, Yingzheng Liu, Rose Sebastian, Afsaneh Doryab, USA</p>	
60	Implementation of Learning Technologies in Education Co-Chairs: Jan Neuhoefer and Salman Nazir, Germany/Norway	TELS
17:00-18:30 - AHFE 4	<p>Spiritual accompaniment training in pediatric palliative care - A case study from Spain Florentin Popescu, Pau Miquel Diego, Inma Ferrer Svoboda, Mario Gabriel Ciccorossi, Netherlands</p> <p>Evolution of an approach for digital learning and training in nursing Jan Neuhoefer, Germany</p> <p>A human-centered approach for an autism-friendly drawing space Anna Lisa Pecora, Erminia Attaianesi, Alessandra Pagliano, Italy</p> <p>An interactive guide based on learning objects to train teachers on detection and support children with attention-deficit/hyperactivity disorder Karina Parra-Luzuriaga, Zobeida Robles-Bykbaev, Vladimir Robles-Bykbaev, Paúl León-Gómez, Ecuador</p> <p>Application of assessment-analytic knowledge building tools in collaborative creative studies Amic Ho, China</p> <p>Design approach of digital numeration training for students in a primary school Frédéric Vella, Nadine Vigouroux, Jean-François Camps, Charlotte Tabarant, France</p> <p>Participants' perspectives on design-build experience: A qualitative exploration Shweta Saxena, Sandeep Arora, Rachna Khare, India</p>	
61	Designing for Inclusion: Methodologies and Future Trends Co-Chairs: Giuseppe Mincoelli and Giuseppe Di Bucchianico, Italy	DI
17:00-18:30 - AHFE 5	<p>Designing an inclusive theatre environment: Co-creating a relaxed performance within the Segal Centre for Performing Arts in Montréal Zakia Hammouni, Tiiu Poldma, Eva Kehayia, Ingrid Verduyck, Natalina Martiniello, Walter Wittich, Canada</p> <p>How co-design leads mobility innovation towards a more inclusive and senior-friendly transportation system Filippo Petrocchi, Silvia Imbesi, Giuseppe Mincoelli, Italy</p> <p>Smart and connected systems for the non-typical user: Design methodology to observe the outliers Inés Alvarez-Icaza Longoria, Arturo Molina, Rogelio Bustamante-Bello, Mexico</p> <p>Design for inclusion: Different approaches for a shared goal Giuseppe Di Bucchianico, Italy</p> <p>Transformation of users' technical knowledge into design-with an example from bra assistive device Xiaohua Lv, China</p>	

62	Decision Support System and Human Factors Co-Chairs: Raghda Alqurashi and Salman Alharethi, Saudi Arabia	HFSSE
17:00-18:30 - AHFE 6	<p>Decision support system: A systematic mapping study Salman Alharethi, Saudi Arabia</p> <p>Decentralized decision support system for vehicular crowd management using the internet of things (IoT) Raghda Alqurashi, Saudi Arabia</p> <p>An intelligent systems development for multi Covid-19 related symptoms detection: A framework Mohammed Thanoon, Saudi Arabia</p> <p>Design and creation of educational video games using assistive software instruments Yavor Dankov, Boyan Bontchev, Valentina Terzieva, Bulgaria</p> <p>Multiple LDPC codes combined with OVCDM to improve signal coding efficiency and signal transmission effects Zhang Fan, Zhang Hong, China</p>	
63	Human Performance improvement and Training Co-Chairs: Takumi Ohashi and Maria Colurcio, Japan/Italy	HFAS
17:00-18:30 - AHFE 7	<p>Designing residential architecture for future societies. The central and eastern European context - on the basis of the example of Poland Agata Gawlak, Magda Matuszewska, Ewa Pruszewicz-Sipinska, Poland</p> <p>Designing an abnormal posture detection system to prevent accidents during meal assistance for older adults: A user-centered design approach Takumi Ohashi, Yuma Ito, Daisuke Kurabayashi, Miki Saijo, Japan</p> <p>Mu-musicplay: How the interactive use of games and music influences the capacity of autistic children to recognize emotions in videos and music Ting Liang, I-Jui Lee, Taiwan</p> <p>Detecting hesitation during battlefield wound treatment on female soldiers Mark Mazzeo, Morgan Chewing-Kulick, William Pike, Joel Cartwright, Ericka Rovira, Robert Thomson, USA</p> <p>Application of graphological coincidence applied in the field of speech therapy in children with motor difficulties Luis Serpa-Andrade, Angel Perez, Ecuador</p>	
64	Sensory Engineering and Emotion Co-Chairs: Keiichi Watanuki and Kazunori Kaede, Japan	APD
17:00-18:30 - AHFE 8	<p>The validity of street view service applied to ambiance perception of street: A comparison of assessment in real site and Baidu street view Guanqing Feng, Guangtian Zou, Barbara E. A. Piga, Haihui Hu, China</p> <p>Immediate effect of thumb-to-ground distance training by a target multivariate gait data generation method considering physical differences Yusuke Osawa, Keiichi Watanuki, Kazunori Kaede, Japan</p> <p>Spatial perception under visual restriction by moving a sound source using 3D audio Koki Murakami, Keiichi Watanuki, Kazunori Kaede, Japan</p> <p>Evaluation of subject's attention during 3D visual-search tasks using eye-movement measurements Kaito Kobayashi, Keiichi Watanuki, Kazunori Kaede, Japan</p> <p>Interaction between negative emotion regulation strategy, voice emotion and gender Cuidi Wu, Yonghong Liu, Jiahe Zhang, China</p> <p>Emotional experience design of medical working space based on color semantics Long Ren, Shang Xinyi, Huai Cao, Jun Li, China</p> <p>Evaluation of entrainment of heart rate and brain activation depending on the listener's nodding response and the conversation situation Tomofumi Sakata, Keiichi Watanuki, Tomio Watanabe, Kazunori Kaede, Japan</p> <p>Evaluation of the effect of look-aside driving on avoidance behaviors of cyclists Yuki Akimoto, Keiichi Watanuki, Kazunori Kaede, Japan</p>	

65	Applications in Interaction Design Co-Chairs: Zhiqi Wang and Taoyong Tan, China	ED
17:00-18:30 - AHFE 9	<p>Characteristics of novice drivers' navigation information acquisition based on situated cognition Yubo Zhang, YuanBo Sun, Xiaoxu Liu, China</p> <p>Smart home setup based on service design YuanBo Sun, Zhiqi Wang, Shutian Yang, Guangqi Ren, Yushun Liu, China</p> <p>How do I use this car?: The learnability of interactive design for intelligent connected vehicles Li Ge, YuanBo Sun, China</p> <p>Digitalization of Emoji emotions in the pleasure-arousal-dominance space Taoyong Tan, Chengqi Xue, Wenyu Wu, China</p> <p>Improvement of spinning machine monitoring interface based on eye tracking experiment Zhou Jian, Lan Zhang, Fang Jia, China</p>	
66	Social, Occupational, Physical Ergonomics and Work-Related Musculoskeletal Disorders Co-Chairs: Zenija Roja and Henrijs Kalkis, Latvia	SOE
17:00-18:30 - AHFE 10	<p>Ergonomic indicators and physical workload risks in food production and possibilities for risk prevention Henrijs Kalkis, Ingus Graveris, Zenija Roja, Latvia</p> <p>Assessment of muscle fatigue and potential health risk of low back pain among call center workers Sunisa Chaiklieng, Worawan Poochada, Thailand</p> <p>The effects of the physical environment on employee wellbeing and performance: A case study on healthy architecture in call center interiors Salih Ceylan, Turkey</p> <p>Sustainable work opportunities for drivers' well-being: A case of Careem as a transportation network company Amna Javed, Youji Kohda, Japan</p> <p>Didactic adaptation with ICT's preliminary educational proposal Luis Serpa-Andrade, Ecuador</p> <p>Open learning: The new normal of design education Rosa Retuerto Luna, Portugal</p> <p>Ergonomic risk assessment of sea fisherman part IV: Tunisian chapter Alessio Silveti, Elio Munafò, Ari Fiorelli, Alberto Ranavolo, Lorenzo Fiori, Antonella Tatarelli, Francesco Draicchio, Italy</p> <p>Analysis and prevention of Office Syndrome of people in Thailand Manutchanok Jongprasitporn, Nantakrit Yodpijit, Posawat Ketkratuk, Peemapol Panichtamrong, Narawit Ratanajarusiri, Thailand</p>	
67	User Interface and Accessibility Co-Chairs: Julien Nelson and Eric Owusu, France/USA	UUE
17:00-18:30 - AHFE 11	<p>Data-driven persona construction: A case study for a gamified interface Julien Nelson, Mateo Campos, France</p> <p>Effects of culturally tailored user interface design Helina Oladapo, Eric Owusu, Joyram Chakraborty, USA</p> <p>The effective interface format for communicating risk information in shared-decision making Li-Jen Wang, Meng-Cong Zheng, Taiwan</p> <p>Multi-scale evaluation of HCI acoustic expression in digital performance space Yihang Du, Pei Yan, Petrovna Gnativ Marina, Wang Lijun, China</p> <p>Usability in a token-based ecosystem Kimin Kwon, Sung H. Han, Hyeji Jang, Juhwan Kim, South Korea</p> <p>Changes in usability evaluation of human-machine interfaces from the perspective of automated vehicles Yating Su, Zhengyu Tan, Ningyi Dai, China</p>	

68	Automated Vehicles I Co-Chairs: Steffen Jochum and Tipporn Laohakangvalvit, Germany/Japan	RR
17:00-18:30 - AHFE 12	<p>Influence of the relative position of surrounding traffic on drivers' take-over performance Qingkun Li, Andrej Naumenko, Qi Fang, Ali Muhammad Hadi, Lian Hou, Wenjun Wang, Quan Yuan, Bo Cheng, China</p> <p>Evaluating comfort in fully autonomous vehicle using biological emotion map Shoto Ueno, Runging Zhang, Tipporn Laohakangvalvit, Midori Sugaya, Japan</p> <p>Investigating the kinematic parameters of a turning seat as a haptic and kinesthetic HMI to support the take-over request in automated driving Steffen Jochum, Jan Bavendiek, Christopher Brockmeier, Lotte Saupp, Lutz Eckstein, Germany</p> <p>Design and implementation content validity study: Development of an instrument for measuring consumers' perception of automatic emergency braking (AEB) Nuruzzakiah Mohd Inshanuddin, Ezrin Hani Sukadarin, Nur Syazwani Mohd Nawi, Mirta Widia, Ahmad Azad Ab. Rashid, Hanida Abdul Aziz, Junaidah Zakaria, Nur Syafiqah Fauzan, Hairunnisa Osman, Eida Nadirah Roslin, Zulhaidi Mohd Jawi, Yassierli, Malaysia</p> <p>A focus group research in the frame of the autodiving project under lockdown conditions Anabela Simoes, Liliana Cunha, Daniel Silva, Sara Ferreira, António Lobo, Antonio Couto, José Pedro Tavares, Teresa Cotrim, Catarina Neto, Portugal</p> <p>Keep your distance, automated vehicle! – Configuration of automated driving behavior at an urban junction from a cyclist's perspective Vanessa Stange, Anne Goralzik, Mark Vollrath, Germany</p> <p>Preliminary experiment for driver's comfortable state using EEG and HRV during semi-autonomous driving Narumon Jadram, Midori Sugaya, Tipporn Laohakangvalvit, Muhammad Nur Adilin Mohd Anuardi, Japan</p>	
69	Implementation of Novel Technology and Gamification for Training and Certification Co-Chairs: Charlott Sellberg and Astrid Camilla Wiig, Sweden/Norway	TELS
17:00-18:30 - AHFE 13	<p>Non-technical skills training in crew resource management: Curating YouTube videos for educational purposes Charlott Sellberg, Gesa Praetorius, Martin Viktoelius, Sweden</p> <p>Exploration of team communication behaviors from a live training event Jason Saville, Randall Spain, Joan Johnston, James Lester, USA</p> <p>Blended learning: Exploring contradictory demands between emerging design principles and new learning practices Astrid Camilla Wiig, Norway</p> <p>The neglected component of simulator training: Performance assessment Salman Nazir, Norway</p> <p>Kaizen method applied in higher education: Case study of autonomous Autonomous University of Baja, California Susana Zambrano-López, Carolina Zayas-Márquez, Luis Alfredo Avila-López, Maria Marcela Solis-Quinteros, Mexico</p> <p>Changing children's behavior based on persuasive game design for children's safety education Yanan Yang, Duoduo Zhang, Xiaoqian Mou, Yuanyuan Yang, China</p> <p>Gamification strategies to teach algorithmic thinking to first graders Roberto Araya, Chile</p>	

70	Human Factors, Business Management and Society I Co-Chairs: Ana María Vallina-Hernández and Hernan Espejo, Chile/ Ecuador	HFBMS
17:00–18:30 - AHFE 14	<p>User survey based on household product consumption experience Yuqi Chen, Linong Dai, China</p> <p>Consumer extraversion, novelty seeking, and use of mobile instant messaging (MIM) Jorge Cruz-Cárdenas, Carlos Ramos-Galarza, Jorge Guadalupe-Lanas, Ekaterina Zabelina, Olga Deyneka, Ecuador</p> <p>COVID-19 in relation to business and management: A bibliometric analysis Jorge Cruz-Cárdenas, Jorge Guadalupe-Lanas, Carlos Ramos-Galarza, Nora Oleas, Laura Salazar, Raquel Proaño-Guerrero, Ecuador</p> <p>Process optimization of advertising articles using an integrated strategy of production and environmental care Hernan Espejo, Blanca Topón, Lloyd Morris, Ana Rodríguez, Ecuador</p> <p>Analysis to the Chilean pension fund system, comparing stochastic technical frontier and envelop technical frontier methodologies Claudina Rubilar-Maturana, Cesar Venegas-Pineda, Ana María Vallina-Hernández, Hanns De La Fuente-Mella, Rodrigo Fuentes-Solis, Chile</p> <p>Influence of energy cost on industrial competitiveness in a refined tuna protein processing company Blanca Topón, Cinthia Mendoza, Mireya Zapata, Ecuador</p> <p>Adversity or opportunity? Exploring the effect of COVID-19 on Ghana's informal economy Reginald Arthur, Olivia Anku-Tsedee, Ghana</p> <p>Business model innovation in energy businesses: Driving factors, trends and implications for the future Shah Rukh Shakeel, Arto Rajala, Finland</p>	

71	Health and Neuroergonomics Chair: Girija Kaimal, USA	CN
9:00-10:30- AHFE 1	<p>Exploratory fNIRS assessment of differences in activation in virtual reality visual self-expression including with a fragrance stimulus Girija Kaimal, USA</p> <p>Amyotrophic lateral sclerosis disease progression presents difficulties in brain computer interface use Emma Dryden, Hasan Ayaz, Mohammad Sahal, Terry Heiman-Patterson, Sara Feldman, USA</p> <p>Epileptic seizure detection using tunable Q-factor wavelet transform and machine learning Ala Tokhmpash, Sarah Hadipour, Bahram Shafai, USA</p>	

72	Resilient Design for Service-Oriented Value Creation Co-Chairs: Walter Ganz and Jens Neuhüttler, Germany	HSSE
9:00-10:30- AHFE 2	<p>How higher education institutions and technology innovation centres can support organisations through IoT digital transformations Maximilian Ge, Imogen Cleaver, Florian Urmetzer, Jens Neuhüttler, Lena Ahner, Yasemin Bayrak, UK/Germany</p> <p>Impacts of professional education measures on the digital transformation in organisations Lena Ahner, Maximilian Ge, Florian Urmetzer, Jens Neuhüttler, Imogen Cleaver, Yasemin Bayrak, Germany/UK</p> <p>Transformation towards smart result-oriented product-service systems Victor Naumann, Alexander Pflaum, Germany</p> <p>Towards a capability based approach to strengthen the strategic decision making process for developing smart products & services in SMEs Sandra Frings, Holger Kett, Germany</p> <p>Towards a continuous process model for data science projects Damian Kutziás, Claudia Dukino, Holger Kett, Germany</p> <p>Gaining resilient forms of coopetition in the age of digital platforms Jens Neuhüttler, Walter Ganz, Germany</p> <p>A people centered innovation methodology for its application in digital transformation – Service innovation blocks Gerhard Gudergan, Yassi Moghaddam, Germany</p> <p>Advanced systems engineering of sustainable smart PSS Friedrich Halstenberg, Germany</p>	
73	Design for People. Design as Catalyst Co-Chairs: José Silva, João Neves and Daniel Raposo, Portugal	ED
9:00-10:30- AHFE 3	<p>The impact of Edward Johnston's work on calligraphy, in 20th and 21st century type design João Brandão, Sofia Rodrigues, Portugal</p> <p>Functional and perceptive considerations for type design Vítor Quelhas, Jorge Brandão Pereira, Portugal</p> <p>Gamification in communicating the concept of circular economy - a design approach Jose Silva, Maria Fernandes, Rogério Ribeiro, Daniel Raposo, João Neves, Portugal</p> <p>Narrative benchmarking in scenario assessments for digital design Jose Silva, Daniel Raposo, João Neves, Rita Almendra, Daniel Brandão, Nuno Martins, Portugal</p> <p>Portuguese firefighters anthropometrics: A preliminary comparison with Portuguese workers Anna S. P. Moraes, Miguel A. Carvalho, Rachel S. Boldt, Fernando N. Ferreira, Susan P. Ashdown, Linsey Griffin, Portugal</p> <p>Book covers as gateways to literature Elisabete Rolo, Portugal</p> <p>Sustainable design of Finnish modern furniture Xu Li, Lu Yeqing, Zhang Xiuhua, Wang Xueting China</p>	

74	Ergonomics Design and Evaluation in Transportation Co-Chairs: Jianxin Wang and Hanzhao Qiu, China	ED
9:00-10:30 - AHFE 4	<p>The influence of automation failure on the automation trust of high-speed railway driver's monitoring operation Jianxin Wang, Weining Fang, Haifeng Bao, China</p> <p>A feasibility study of virtual reality technology in guidance design of underground space Hanzhao Qiu, Weining Fang, Haifeng Bao, Xiangxue Wang, China</p> <p>Aimed at situation awareness enhancement: Dynamic situation awareness circle and experimental verification Ziwan Yi, Beiyuan Guo, Hao Du, China</p> <p>Design and implementation of skill maintenance training system for drivers Yulong Sun, Beiyuan Guo, Mengqi Zhang, Heng Du, Xiao Xiao, China</p> <p>Real-time ergonomic assessment of human-machine interface layout using virtual reality reproduction Haifeng Bao, Beiyuan Guo, Qungao Ni, Jianxin Wang, China</p> <p>Ergonomic design approach for urban bus Francesco Fittipaldi, Patrizia Ranzo, Rosanna Veneziano, Italy</p> <p>RCSO model for human-computer interactive auditory interface Dongming Xu, Wenzhe Tang, Chengqi Xue, China</p>	
75	UX Design and Evaluation Co-Chairs: Stefano Filippi and Dokshin Lim, Italy/South Korea	UUE
9:00-10:30 - AHFE 5	<p>Enhancing a personality-based user selection tool to maximize User eXperience redesign effectiveness Stefano Filippi, Ruggero Bellio, Italy</p> <p>UX design principles and system requirements for holistic user journey of future Robotaxi Dokshin Lim, Hwangbo Hwan, South Korea</p> <p>User experience in previewing interactive mode of live streaming news Che Liang-Yuan, Chien-Hsiung Chen, Taiwan</p> <p>Usability of the self-check-in kiosk in airports based on users' behavior mapping Tzumin Yang, Meng-Cong Zheng, Taiwan</p> <p>Assessing clustering methods to establish reliability and consensus in card sorting tasks Lamia Alam, Shane Mueller, USA</p> <p>Exploring the interactive mode and user experience of dining space alone during the post-Covid-19 period from the perspective of cultural probes Chung-Shun Feng, Chien-Hsiung Chen, Taiwan</p> <p>Eye movement during dynamic visual search Mu Tong, Chengqi Xue, Xuekei Lee, Xiaoxi Du, Jinchun Wu, China</p>	
76	Automated Vehicles II Co-Chairs: Phillip Morgan and Lesley-Ann Mathis, UK/Germany	RR
9:00-10:30 - AHFE 6	<p>How to improve novice and expert drivers' attentional capacity in level 3 autonomous driving? Influence of the non-driving related task Sharon Ouddiz, Pierre-Vincent Paubel, Céline Lemerrier, France</p> <p>Accessibility under secondary driving task conditions during autopilot Shiyang Chuai, Long Liu, China</p> <p>Towards future interior concepts: User perception and requirements for the use case working in the autonomous car Lesley-Ann Mathis, Harald Widlroither, Nico Traub, Germany</p> <p>Put some drive in your country – need for and acceptance of autonomously operating services in rural areas of Germany Chantal Lidynia, Gian Luca Liehner, Martina Ziefle, Germany</p> <p>The blame game: Double standards apply to autonomous vehicle accidents Qiyuan Zhang, Christopher Wallbridge, Dylan Jones, Phillip Morgan, UK</p>	

77	Human Factors, Business Management and Efficiency Co-Chairs: Henrijs Kalkis and Zenija Roja, Latvia	SOE
9:00-10:30 - AHFE 7	<p>Personal gains from materials in social networks Tom Sander, Biruta Sloka, Henrijs Kalkis, Latvia</p> <p>Factors and barriers of implementing early warning, support and second chance support systems for SMEs in the Baltic States Liga Braslina, Anda Batraga, Aija Legzdina, Jelena Salkovska, Henrijs Kalkis, Daina Skiltere, Girts Braslins, Daina Saktiņa, Latvia</p> <p>Integrating individual and intra-organizational learning for calibration of organization's performance Harsh Chauhan, Henrijs Kalkis, Latvia</p> <p>Analysis of employment rates for people with disabilities in Ecuador Hugo Arias-Flores, Jorge Guadalupe-Lanas, Janio Jadán-Guerrero, Ecuador</p> <p>Retail skills as the craftsmanship of liquor retail SMEs Myungrae Cho, Koichiro Watanabe, Japan</p> <p>Social distancing, stress and unethical behavior: A study on Italian university students in the first period of isolation due to COVID-19 Oronzo Parlangeli, Paola Palmitesta, Stefano Guidi, Ileana Di Pomponio, Margherita Bracci, Enrica Marchigiani, Italy</p>	
78	Design for Inclusion in Learning Experiences Co-Chairs: Giuseppe Di Bucchianico and Raffaella Massacesi, Italy	DI
9:00-10:30 - AHFE 8	<p>Applied arts and communication design for inclusion Raffaella Massacesi, Italy</p> <p>Intelligent environment to support fine motor learning in children with and without motor disorders Luis Serpa-Andrade, Isaac Ojeda-Zamalloa, Angel Perez-Muñoz, Vladimir Robles-Bykbaev, Adriana Leon-Pesantez, Ecuador</p> <p>Designing designers through inclusion. A Design experience of career choice orientation Stefania Camplone, Giuseppe Di Bucchianico, Emidio Antonio Villani, Italy</p> <p>Athetosis speech and language learning assistant: Case study Luis Serpa-Andrade, Roberto Garcia-Velez, Vladimir Robles-Bykbaev, Marlene Zuñiga, Ecuador</p> <p>Comparative analysis of accessibility features built into computer operating systems Anna Szopa, Poland/USA</p>	
79	Human Factors in Software and Systems Engineering I Co-Chairs: Leonhard Glomann and Jakub Polaczyk, Germany/USE	HFSSE
9:00-10:30 - AHFE 9	<p>Agile circular design Leonhard Glomann, Germany</p> <p>Modelling key performance indicators for improved performance assessment in persistent maritime surveillance projects Francesca De Rosa, Thomas Mansfield, Anne-Laure Joussetme, Alberto Tremori, Belgium</p> <p>Compositional sonification of cybersecurity data in a Baroque style Yang Cai, Katelyn Croft, Jakub Polaczyk, USA</p> <p>Implementation of cross-platform real-time message middleware in air traffic control (ATC) systems Desheng Xu, Hong Liu, China</p> <p>Adapting human factors methods to agile development Richard Steinberg, USA</p> <p>Analysis of influencing factors of depth perception Yu Gu, Wei Su, Minxia Liu, China</p>	

80	Cognitive Neuroscience, Health Care and Artificial Intelligence (AI) Systems Co-Chairs: Meher Khan and Sofia Scataglini, USA/Belgium	ICEEP
9:00-10:30 - AHFE 10	<p>Using virtual reality in the treatment of social anxiety disorder Carlos Ramos-Galarza, Mónica Acosta-Rodas, Jaime Moscoso-Salazar, Omar Córdor-Herrera, Jorge Cruz-Cárdenas, Ecuador</p> <p>Product design for Yangliuqing woodblock new year paintings based on eye movement experiment Beibei Dong, RongRong Fu, China</p> <p>Advantage design of small commodities under cultural transfer Lixia Hua, Jian-Ping Yang, Ye Junnan, Yi-Xiang Wu, Shanwei Zhang, China</p> <p>The sense of agency in human-machine interaction Debora Zanatto, Mark Chattington, Jan Noyes, UK</p> <p>The differences in information transmission efficiency - a comparison of analog and digital media Jun Iio, Tatsuya Sashizawa, Kenta Kawamoto, Minami Higuchi, Japan</p> <p>Human-computer interaction (HCI) approach for the optimal generation and selection batches destination options in steel making factories Denis-Joaquín Zambrano-Ortiz, Jose Arzola Ruiz, Rosa-Mariuxi Litardo-Velásquez, Umer Asgher, Ecuador/Cuba/Pakistan</p>	
81	Risk Assessment and Safety Training II Co-Chairs: Antonio Maria Coruzzolo and Salvador Ávila Filho, Italy/Brazil	SMHF
9:00-10:30 - AHFE 11	<p>Safety concerns in a Portuguese chemical industry: A workers' perspective Claudia Pereira, Catherine Delgoulet, Marta Santos, Portugal</p> <p>Quantitative fit testing of Decathlon Easybreath surface snorkeling masks used as emergency respiratory protective equipment Regan Watts, Stijn Verwulgen, Thoms Peeters, Jochen Vleugels, Sander Van Goethem, Andres Vanhooydonck, Joren Van Loon, Robin Vandormael, Drim Stockhuijzen, Marieke Van Camp, Lore Veelaert, Jouke Verlinden, Belgium</p> <p>The dynamic, individual and integrated risk assessment: A multi-criteria approach using big data Francesco Lolli, Antonio Maria Coruzzolo, Giulia Alessandro, Elia Balugani, Maria Angela Butturi, Samuele Marinello, Simona Marinelli, Italy</p> <p>Risk analysis based on ETA, FTA and Bowtie Methodologies for the bulk coal discharge process Rodrigo Dominguez, Carlos Gomez, Oskar Cerezo, Chile</p> <p>Performance implications of safety training Sari Tappura, Aki Jääskeläinen, Julius Pirhonen, Finland</p> <p>The effect of preventive training on accidents in the construction sector Bàrbara Estudillo Gil, Jose M. Carretero-Gomez, Francisco J. Forteza, Spain</p>	
82	Virtual and Augmented Reality Co-Chairs: Maartje Hidalgo and Valarie Yerdon, USA	HFSIM
9:00-10:30 - AHFE 12	<p>Information ergonomics: Expediting maintenance workflow using mixed reality Chad Weiss, Mary Freiman, Sylvain Bruni, Spencer Lynch, Kristy Kay, USA</p> <p>Cybersickness and its implications for using virtual reality head mounted displays in transport psychology research Petr Děcký, Sara Kleckova, Petr Zamecnik, Czech Republic</p> <p>Learning-forgetting-fatigue-recovery simulation model Vitor Vargas, Jung Hyup Kim, USA</p> <p>Using mixed reality in multi domain operations Adam Werner, Michael Boyce, Anna Loar, Joel Cartwright, Ericka Rovira, USA</p> <p>Human body posture recognition in virtual reality system for astronauts training Guo Junpeng, Jin Yang, China</p>	

83	Advanced Production Management and Process Control II Chair: Thorben Panusch, Germany	APMPC
9:00-10:30 - AHFE 13	<p>Reduction of human effort in technical cleanliness inspection through advanced image processing approaches Thorben Panusch, Roman Moehle, Ronny Zwinkau, Jochen Deuse, Germany</p> <p>Achieving the success of sustainability systemic design through data visualization approach Ying Chuai, Haiwei Yan, China</p> <p>Method for the targeted selection and installation of an IoT-platform Stefan Kugler, Cordula Czwick, Hoang Phuong Linh Nguyen, Reiner Anderl, Germany</p> <p>Increasing agility: A tangible XR for rapid prototype development, design exploration and usability assessment Ronald Meyer, Michael Preutenborbeck, Marcel Usai, Kristof Briele, André Witzel, Frank Flemisch, Germany</p> <p>Predictive model of rock fragmentation using the Neuro-Fuzzy Inference System (ANFIS) and Particle Swarm Optimization (PSO) to estimate fragmentation size in open pit mining Carlos Raymundo, Maria Torres, Betty Vergara, Vidal Aramburu, Peru</p> <p>An assessment of supply chain resilience in events: A case of South Africa Ifije Ohiomah, Nita Sukdeo, Clinton Aigbavboa, South Africa</p> <p>Influence of effective and new information flow on logistics management Ayodeji Dennis Adeitan, Clinton Aigbavboa, South Africa</p>	
84	Human Factors in Artificial Intelligence and Social Computing III Co-Chairs: Benito Umaña and Giovanni Vincenti, Chile/USA	AISC
9:00-10:30 - AHFE 14	<p>Analysis of a bankruptcy prediction model for companies in Chile Benito Umaña, Hanns De la Fuente-Mella, Claudio Elórtégui Gómez, Jorge Ferrada-Rodríguez, Mauricio Arce-Rojas, Chile</p> <p>Felix: A model for affective multi-agent simulations Giovanni Vincenti, James Braman, USA</p> <p>Modeling cognitive load in mobile human computer interaction using eye tracking metrics Antony William Joseph, J Sharmila Vaiz, Ramaswami Muruges, India</p> <p>Theoretical aspects of the local government's decision-making process Maryna Averkyyna, Estonia</p> <p>Can complexity become the new "glaive vs shield" paradigm? Sylvain Hourlier, France</p> <p>Voltammetric electronic tongues applied to classify sucrose samples through multivariate analysis Fuentes Esteban, José Varela-Aldás, Samuel Verdú, Miguel Alcañiz, Raúl Gráu, Ecuador</p> <p>Platform based on artificial vision for the identification and classification of ceramic tiles Luis Serpa-Andrade, Edisson Pugo-Mendez, Ecuador</p>	
85	Cognitive State Assessment Co-Chairs: Hasan Ayaz and Adrian Curtin, USA	CN
11:00-12:30 - AHFE 1	<p>Application of recurrent convolutional neural networks for mental workload assessment using functional near-infrared spectroscopy Marjan Saadati, Jill Nelson, Adrian Curtin, Lei Wang, Hasan Ayaz, USA</p> <p>Art image complexity measurement based on visual cognition: evidence from eye-tracking metrics Rui Hu, Minghan Weng, Liqun Zhang, Xiaodong Li, China</p> <p>Influence of properties of the nervous system on cognitive abilities Oleksandr Burov, Svitlana Lytvynova, Olga Pinchuk, Evgeniy Lavrov, Olga Siryk, Olena Hlazunova, Victoriya Logvinenko, Valentyna Korolchuk, Alexander Zolkin, Ukraine</p> <p>Expectations in human-robot interaction Julia Rosén, Sweden</p> <p>Augmented reality integrated brain computer interface for smart home control Mohammad Sahal, Emma Dryden, Mali Halac, Sara Feldman, Terry Heiman-Patterson, Hasan Ayaz, USA</p> <p>Understanding junior design students' emotion during the creative process Amic Ho, China</p>	

86	<p>Education, Training, and Technology Facilitating a Future Workforce Co-Chairs: Denise R. Simmons and Susan M. Lord, USA</p>	HSSE
11:00-12:30 - AHFE 2	<p>Exploring disciplinary technologies for increased accessibility in the civil engineering and construction industry: Starting the conversation Cassandra Mccall, Denise Simmons, USA</p> <p>Human-technology frontier: Measuring student performance-related responses to authentic engineering education activities via physiological sensing Idalis Villanueva, Edwin Marte Zorilla, Jenefer Husman, Matthew Graham, USA</p> <p>Illuminating the sociotechnical landscape in engineering Susan Lord, USA</p> <p>Students that stand out: Faculty perspectives on the competencies that define outstanding engineering students entering the workforce Madeline Polmear, Denise Simmons, Elizabeth Volpe, Danielle Weisenfeld, USA</p> <p>Service design of ward nurse station based on Kansei Engineering Siwen Xie, Huifang Shang, Chuanshun Wang, China</p> <p>A proposed roadmap to close the gap between undergraduate education and stem employment across industry sectors Yassi Moghaddam, Stephen Kwan, Louis Freund, Martha Russell, USA</p>	
87	<p>Anthropometry in Ergonomic Design I Co-Chairs: Iolanda Fiorillo and Lin Ge, Italy/China</p>	ED
11:00-12:30 - AHFE 3	<p>Comparison of anthropometrics between boys and girls in desks and chairs Wang Zhong, Yue Shang, China</p> <p>Discomfort threshold evaluation for hand and elbow regions: A basis for hand-held device design Liliana Di Brigida, Iolanda Fiorillo, Alessandro Naddeo, Peter Vink, Italy</p> <p>The effect of handle length and holding angle of manual coffee grinder on completion time and subjective responses Wei Han, Lee Yu-chi, China</p> <p>Experimental study for arm fetch accessibility in standing posture Ling Luo, Tianshu Wang, Xin Zhang, Wei Li, Lin Ge, China</p> <p>The design of sleep pillow based on human physiological curvature Yue Sun, Ding-Bang Luh, Yu-Lin Zhao, China</p>	
88	<p>Usability Evaluation Co-Chairs: Yihung Hsu and Tianshu Wang, China</p>	UUE
11:00-12:30 - AHFE 4	<p>Usability and users readability of nuclear evacuation map design Yen-Yu Chang, Meng-Cong Zheng, Taiwan</p> <p>Product ergonomics evaluation model based on online and offline multi-method collaboration Wang Huiling, Yinxia Li, Huimin Hu, Cheng Weihong, Jie Jiang, China</p> <p>Usability of the user interface design of Tablet drawing applications Yihung Hsu, Chien-Hsiung Chen, Taiwan</p> <p>Evaluation model of voice user interface Tianshu Wang, Ling Luo, Xin Zhang, China</p> <p>Usability and user experience evaluation of a new immersive pilot training device Julian Abich, C. J. Montalbano, Eric Sikorski, USA</p> <p>Aesthetic evaluation of card game interface based on analytical hierarchy process Yaqi Sun, Chengqi Xue, China</p>	

89	Ergonomics in Urban Design I Chair: Wojciech Bonenberg, Poland	SUPI
11:00-12:30 - AHFE 5	<p>Parameterization in the process of landscape revitalization Wojciech Bonenberg, Agata Bonenberg, Poland</p> <p>Residences and their gardens Wojciech Bonenberg, Agata Bonenberg, Teresa Bardzinska-Bonenberg, Poland</p> <p>Application of geo-urban centric technology in diagnostics of urbanization processes Wojciech Bonenberg, Agata Bonenberg, Quan Wen, Mo Zhou, Poland</p> <p>Place making for creative environment Wojciech Bonenberg, Magdalena Kozien-Wozniak, Poland</p> <p>Perception and invisibility: Urban-architectural reception of Lisbon downtown Jorge Cruz Pinto, Bárbara Formiga, Portugal</p> <p>Cultural identity of the cities -The use of narrative design in urban spaces Stefano Follesa, Peian Yao, Shuang Liang, Min Zhou, Italy</p> <p>Transport accessibility as a factor of spatial development on the example of the Poznan Metropolitan Area, Poland Wojciech Bonenberg, Lili Dong, Agata Bonenberg, Mo Zhou, Poland</p> <p>The impact of building information modeling design system on traditional urban design methods Xia Wei, Wojciech Bonenberg, Mo Zhou, Jinzhong Wang, Poland</p>	
90	Human Factors in Software and Systems Engineering II Co-Chairs: Nursultan Askarbekuly and Raúl Ernesto Gutiérrez Alvarez, Russia/Ecuador	HFSSE
11:00-12:30 - AHFE 6	<p>Software instruments for analysis and visualization of game-based learning data Boyan Bontchev, Yavor Dankov, Dessislava Vassileva, Martin Kovachev, Bulgaria</p> <p>Building an educational product: constructive alignment and requirements engineering Nursultan Askarbekuly, Alexandr Solovyov, Elena Lukyanchikova, Denis Pimenov, Manuel Mazzara, Russia</p> <p>Work accident investigation software according to the legal requirements for Ecuadorian companies Raúl Ernesto Gutiérrez Alvarez, Karla Belén Guerra Huilca, Ecuador</p> <p>Systemic analysis of the territorial and urban planning of Guayaquil María Lorena Sánchez Padilla, Jesús Rafael Hechavarría Hernández, Yoenia Portilla, Ecuador</p> <p>Spatial model of community health huts based on the behavior logic of the elderly Zhang Ping, Wang Chaofan, Zhang Yuejiao, China</p> <p>Analysis of the proposal for the Solca Portoviejo hospital data network based on QoS parameters José Giler, Marely del Rosario Cruz Felipe, Ecuador</p>	
91	Kansei Engineering II Co-Chairs: Tianxiong Wang and Bai Pengcheng, China	KE
11:00-12:30 - AHFE 7	<p>Product development and evolution innovation redesign method based on particle swarm optimization Tianxiong Wang, Meiyu Zhou, China</p> <p>Kansei engineering for the back color of mobile phone Pengcheng Bai, Zhisheng Zhang, Zhijie Xia, China</p> <p>Appearance evaluation of toaster with Kansei engineering Yanfei Lu, Yongyan Guo, China</p> <p>State of the art analysis of emotional design methodologies and their demonstrated results Oscar Lopez Perez, Alfonso González, Clara Murillo, Spain</p> <p>Clothing design methods based on Kansei engineering: Example of suit design Jiaxin Zhang, Yun Mu, China</p> <p>Kansei evaluation of the self-service rice polisher design based on product semantics theory Hairong Zhu, Yunfei Chen, China</p> <p>Investigation into pedaling operation using driving simulator for preventing unintended acceleration Toshio Tsuchiya, Kanon Watanabe, Mizuki Hirano, Hiroyuki Kato, Japan</p>	

92	Intelligent Computing and Cognitive Computing in Healthcare Chair: Lucas Paletta, Austria	CCIoT
11:00-12:30 - AHFE 8	<p>Requirements analysis on emotional preferences for leisure activities in virtual reality for female nursing home residents – a mixed method approach Alfred Haeussl, Bscn, Sandra Schuessler, Lucas Paletta, Hermine Furli, Msc, Beatrix Koch, Thomas Binder, Michael Schneeberger, Jean-Philippe Andreu, Mag. Sybille Reidl, Sarah Beranek, B. A., Msc, Mag. Robert Hartmann, Di Martin Sighart, Austria</p> <p>Virtual reality-based sensory triggers and gaze-based estimation for mental health care Lucas Paletta, Martin Pszeida, Sandra Schuessler, Jean-Philippe Andreu, Amir Dini, Elke Zweytik, Josef Steiner, Andrea Grabher, Julia Lodron, Austria</p> <p>Towards decision support with assessment of neuropsychological profiles in Alzheimer's disease using playful tablet-based multimodal activation Lucas Paletta, Martin Pszeida, Maria Fellner, Silvia Russegger, Amir Dini, Sandra Draxler, Thomas Orgel, Anna Jos, Eva Schuster, Josef Steiner, Austria</p> <p>Learning a privacy-aware embedding toward robust ASR for children with autism spectrum disorder Hsin-Hao Chiu, Chi-Chun Lee, Susan Shur-Fen Gau, Taiwan</p> <p>Theradia: Digital therapies augmented by artificial intelligence Franck Tarpin-Bernard, Joan Fruitet, Jean-Philippe Vigne, Patrick Constant, Hanna Chainay, Olivier Koenig, Fabien Ringeval, Beatrice Bouchot, Gerard Bailly, Franois Portet, Sina Alisamir, Yongxin Zhou, Jean Serre, Vincent Delerue, Hippolyte Fournier, Kevin Berenger, Isabella Zsoldos, Olivier Perrotin, Frederic Elisei, Martin Lenglet, Charles Puaux, Leo Pacheco, Melodie Fouillen, Didier Ghenassia, France</p>	
93	Design, Human–Machine interaction and Learning Systems Co-Chairs: Fang Bin Guo and Umer Asgher, UK/Pakistan	ICEEP
11:00-12:30 - AHFE 9	<p>Designing augmented reality learning system with real-time tracking sensors Wenbin Guo, Jung Hyup Kim, USA</p> <p>Practical evaluation of impression and aesthetics for public displays: A case study in evaluation of platform display design Hirotaka Aoki, Japan</p> <p>Location of the shift technical advisor role in nuclear power plant scenarios - impact on performance Magnhild Kaarstad, Espen Nystad, Robert Mcdonald, Norway</p> <p>Psycho-educational intervention program to eradicate sexual harassment for university students Ernesto Hernandez Martinez, Angelica Atoche Silva, Victor Horna Calderon, Edwin Martn Garcia, Lucia Ruth Pantoja Tirado, Peru</p> <p>Does being human cause human errors? Consideration of human-centred design in ship bridge design Fang Bin Guo, Zali Yang, Eddie Blanco Davis, Abdul Khalique, Alan Bury, UK</p> <p>Reflections of the different reasons for not teleworking Simone Castro, Fernando Ferraz, Claudio Mahler, Isaac Santos, Brazil</p> <p>Psychological impact on design: empirical case studies in city regeneration of post-industrial sites Xiaochun Zhan, Fang Bin Guo, Stephen Fairclough, Denise Lee, UK</p>	

94	Education and Health Based on Accessible and Inclusive Technology Co-Chairs: Patricia Acosta-Vargas and Janio Jadan-Guerro, Ecuador	SYSI
11:00-12:30 - AHFE 10	<p>Towards the development of serious games accessible for users with cognitive disabilities Patricia Acosta-Vargas, Jorge-Luis Pérez-Medina, Mayra Carrión, Marco Santórum, Ligia-Pilar Samaniego-Santillán, Verónica-Gabriela Maldonado-Garcés, Carlos Corrales, Nelly-Yolanda Ortiz-Carranco, Ecuador</p> <p>Digital resources and children's learning: Parental perception during the pandemic Cleofé Alvites-Huamaní, Janio Jadán-Guerrero, Hugo Arias-Flores, Patricia Acosta-Vargas, Peru</p> <p>Towards accessibility assessment with a combined approach for native mobile applications Patricia Acosta-Vargas, Javier Guña-Moya, Janio Jadán-Guerrero, Cleofé Alvites-Huamaní, Luis Salvador-Ullauri, Ecuador</p> <p>Challenges of web accessibility in a health application to predict neonatal mortality – the Score Bebe [®] Patricia Acosta-Vargas, Iván Dueñas-Espín, Luciana Armijos, Johanna Fonseca, Nancy Santillán, Ruth Jimbo, María F. Rivadeneira, Xavier Sánchez, Carmenza Sevilla, Betzabé Tello, Luis Vivas, Ecuador</p> <p>Usability inspection of a serious game to stimulate cognitive skills Jorge-Luis Pérez-Medina, Michael Solah, Patricia Acosta-Vargas, Jairo Vera, Mayra Carrión, Marco Santórum, Ligia-Pilar Samaniego-Santillán, Verónica-Gabriela Maldonado-Garcés, Carlos Corrales, Nelly-Yolanda Ortiz-Carranco, Ecuador</p> <p>Designing serious games for stimulating cognitive abilities using iPlus methodology Marco Santórum, Mayra Carrión, Patricia Acosta-Vargas, Jairo Vera, Jorge-Luis Pérez-Medina, Ligia-Pilar Samaniego-Santillán, Carlos Corrales, Verónica-Gabriela Maldonado-Garcés, Nelly-Yolanda Ortiz-Carranco, Ecuador</p> <p>Improvement of accessibility in medical and healthcare websites Gloria Acosta-Vargas, Patricia Acosta-Vargas, Janio Jadán-Guerrero, Mario Gonzalez, Luis Salvador-Ullauri, Ecuador</p>	
95	Human Interaction and Communication in Industry Chair: Daniel Brandão, Portugal	HDCS
11:00-12:30 - AHFE 11	<p>Design and development of a F-16 fighter pilot training system using virtual reality: First insights Nuno Martins, Rui Oliveira, Silvia Faria, Vítor Carvalho, Jorge Silva, Portugal</p> <p>Creativity for good: How advertising can impact lives - case study on binge drinking Sara Balonas, Portugal</p> <p>Design and its multiple roles in place branding: The case of Mississauga, Canada Paula Malamud, Marco Neves, Gabriel Patrocínio, Portugal</p> <p>Additive manufacturing re-designs the Industry Ciro Scognamiglio, Rosario Borrelli, Assunta Capece, Francesco Caputo, Stefania Franchitti, Mario Buono, Italy</p> <p>Human-centered-design to define new collaborative scenarios Fabrizio Formatì, Elena Laudante, Mario Buono, Italy</p> <p>Information design and the hermeneutic process of knowledge Maria Luísa Costa, Sílvia Rala, Portugal</p>	

96	Creativity and Thinking Styles Co-Chairs: Carmen Bruno and Yuuki Shigemoto, Italy/Japan	CIE
11:00-12:30 - AHFE 12	<p>Fractal features of creative thinking process Minghan Weng, Rui Hu, Liqun Zhang, Xiaodong Li China</p> <p>Blending design thinking and design futures: Facing the complexity of uncertain futures Marita Canina, Laura Anselmi, Carmen Bruno, Davide Minighin, Chiara Parise, Italy</p> <p>Contextual knowledge sharing strategy based on contextual thinking in service design Long Yuan, Jun Zhang, China</p> <p>Creative inspiration Leonardo Springer, Portugal</p> <p>Beyond IDEO's design thinking: Combining KJ method and Kansei engineering for the creation of creativity Yuuki Shigemoto, Japan</p> <p>Overcoming bounded scalability: Achieving interoperability through behavioral boundary objects Ruth Schmidt, Katelyn Stenger, USA</p> <p>Strategic adaptive engineering Martin Stein, Nicholas Sarantopoulos, USA</p>	
97	Human Factors in Artificial Intelligence and Social Computing IV Co-Chairs: Marina Boronenko and Jose Machado, Russia/Portugal	AISC
11:00-12:30 - AHFE 13	<p>Application of AI in diagnosing and drug repurposing in COVID 19 Ravikumar Gk, Skanda Bharadwaj, Niveditha Nm, Narendra Bk, India</p> <p>Using eye-tracking to check candidates for the stated criteria Oksana Isaeva, Marina Boronenko, Yura Boronenko, Vladimir Zelenskiy, Russia</p> <p>Towards understanding how emojis express solidarity in crisis events Sashank Santhanam, Vidhushini Srinivasan, Khyati Mahajan, Samira Shaikh, USA</p> <p>Deep neural networks as interpretable cognitive models for the Quine's uncertainty thesis Dingzhou Fei, China</p> <p>Artificial intelligence: Creating more possibilities for programmatic advertising Yunbo Chen, Shuzhen Feng, China</p> <p>A CRISP-DM approach for predicting liver failure cases: An Indian case study António Cunha, Diana Ferreira, Cristiana Neto, António Abelha, Jose Machado, Portugal</p> <p>Chatbot user experience: Speed and content are king Jason Telner, US</p>	
98	Innovative Health Care Technologies: Aging and Special Needs Co-Chairs: Jingjing Mao and Roberto García-Vélez, China/Ecuador	HFAS
11:00-12:30 - AHFE 14	<p>Games for seniors - An interactive artifact for the ageing population Margarida Azevedo, Joao Lemos, Portugal</p> <p>Design of medicine box for the elderly with chronic diseases Wen Shao, Jiong Fu, Yingjue Dai, China</p> <p>Interactive design of products suitable for the elderly under the smart pension Jingjing Mao, Jing Yang, Lvqiang Wen, China</p> <p>Systematic review for children with ADHD with a virtual therapeutic tool Roberto García-Vélez, Luis Serpa-Andrade, Graciela Serpa-Andrade, Ecuador</p> <p>Folk beliefs related to rural elderly in the context of Covid-19: Shanghai Gingpu Tianshanzhuang Village as an example Zhu Zhangchun, Huijun Li, China</p>	

99	Neurobusiness Applications Co-Chairs: Rajneesh Suri and Hasan Ayaz, USA	CN
13:00–14:30 - AHFE 1	<p>Attentional and emotional engagement of sustainability in tourism marketing: electroencephalographic (EEG) and peripheral neuroscientific approach Michela Balconi, Federico Cassioli, Giulia Fronda, Italy</p> <p>The face of bad advertising? Assessing the effects of human face images in advertisement design using eye-tracking Jan Watson, Hongjun Ye, Yigit Topoglu, Jintao Zhang, Rajneesh Suri, Hasan Ayaz, USA</p> <p>Interpersonal synchrony protocol for cooperative team dynamics during competitive e-gaming Adrian Curtin, Jan Watson, Yigit Topoglu, Nicholas DeFilippis, Hongjun Ye, Rajneesh Suri, Hasan Ayaz, USA</p> <p>Does Esports influence spectators and players differently? Jintao Zhang, Hongjun Ye, Jan Watson, Yigit Topoglu, Hasan Ayaz, Rajneesh Suri, USA</p> <p>Assessing the impact of ad characteristics on consumer behavior and electrodermal activity Yigit Topoglu, Jan Watson, Jintao Zhang, Hongjun Ye, Rajneesh Suri, Hasan Ayaz, USA</p>	
100	Ergonomics in Buildings and Living Spaces Co-Chairs: Erminia Attaianesi and Bárbara Formiga, Italy/Portugal	ED
13:00–14:30 - AHFE 2	<p>Evidence-based design of unisex-portable toilets layout in Taiwan Meng-Cong Zheng, Yu-Man Huang, Taiwan</p> <p>Emotional social system design of smart kitchen for aging population Lin Li, Li Fangyu, China</p> <p>Design of smart building operations and maintenance management service system Yiting Zhao, Changyu Xie, Mingyuan Lu, China</p> <p>Water museums' response to COVID-19: The importance of digital media Joana Lessa, Portugal</p> <p>Rebuilding a social house fabric as a social reconstruction Conceição Trigueiros, Mario Saleiro Filho, Portugal</p> <p>Hospital lobby and user's perceptions: Architectural Kansei method Bárbara Formiga, Francisco Rebelo, Jorge Filipe Ganhão Da Cruz Pinto, Paulo Noriega Machado, Portugal</p>	
101	Ergonomics in Urban Design II Co-Chairs: Christianne Falcao and Mo Zhou, Brazil/Poland	SUPI
13:00–14:30 - AHFE 3	<p>Garden - The pursuit of harmony in the modern times Wojciech Bonenberg, Teresa Bardzinska-Bonenberg, Shoufang Liu, Poland</p> <p>The morphology of the urban sprawl phenomenon in the Poznan Metropolitan Area Wojciech Bonenberg, Lili Dong, Agata Bonenberg, Quan Wen, Poland</p> <p>Ecological corridors and green space in the city of Poznan Wojciech Bonenberg, Agata Bonenberg, Xia Wei, Quan Wen, Poland</p> <p>Future City Lab. An analytical tool for predicting urban development trends Wojciech Bonenberg, Lili Dong, Agata Bonenberg, Mo Zhou, Poland</p> <p>Emotional space in urban planning Wojciech Bonenberg, Lili Dong, Agata Bonenberg, Quan Wen, Poland</p> <p>Construction of visual reverse logistics system of solid waste from the perspective of smart city Miao Liu, Xiyuan Luo, Miao Ding, Qixin He, Hao Ma, China</p> <p>Tourism image perception of country parks in shanghai based on web text analysis: A case study in Pujiang Country Park Weiqian Zhang, China</p>	

102	Analysis of Learning Strategies and Learning Performance Co-Chairs: Gholam Reza Emad and Yingxin Guan, Australia/China	TELS
13:00–14:30 - AHFE 4	<p>Construction of competence model of music appreciation course teachers in science and engineering university Yingxin Guan, Songqi Fei, Yaning Zhao, Yihang Du, China</p> <p>The APS and undergraduate performance in construction economics in South Africa Danie Hoffman, South Africa</p> <p>The effect of student learning style and lesson structure on student outcomes in an online learning environment Matthew Romoser, USA</p> <p>Mapping aspects for assessing aptitude for architecture education with psychological testing Poonam Khan, India</p> <p>Admission points score predicting undergraduate performance – comparing quantity surveying vs construction management Danie Hoffman, Inge Pieterse, Derick Booyens, South Africa</p> <p>Reforming professional education: A case of cognitive human factor/element in shipping Industry Gholam Reza Emad, Australia</p>	
103	Robots in Transportation Systems Co-Chairs: Gökay Yayla and Carsten Meyer, Belgium/Germany	HFRDUS
13:00–14:30 - AHFE 5	<p>Measuring the impact of a navigation aid in unmanned ship handling via a shore control center Gökay Yayla, Chris Christofakis, Stijn Storms, Tim Catoor, Paolo Pillozzi, Yogang Singh, Gerben Peeters, Muhammad Raheel Afzal, Senne Van Baelen, Dimiter Holm, Robrecht Louw, Peter Slaets, Belgium</p> <p>Conditional behavior: Human delegation mode for unmanned vehicles under selective Datalink availability Carsten Meyer, Axel Schulte, Germany</p> <p>A computational assessment of ergonomics in an industrial human-robot collaboration workplace using system dynamics Guilherme Deola Borges, Rafael Ariento Neto, Diego Luiz de Mattos, Eugenio Andres Dias Merino, Paula carneiro, Pedro Arezes, Brazil</p> <p>A new modular intensive design solution for ROVS Qianqian Jing, Yunhui Li, Jing Luo, China</p> <p>Lethal Autonomous Weapon Systems (LAWS): An advocacy paper Guermantes Lailari, USA</p>	
104	Human Factors in Cybersecurity I Co-Chairs: Wayne Patterson and Linda Wilbanks, USA	CYBER
13:00–14:30 - AHFE 6	<p>Digital image forensics using hexadecimal image analysis Gina Fossati, Anmol Agarwal, Ebru Celikel Cankaya, USA</p> <p>Detecting cyberattacks using linguistic analysis Wayne Patterson, USA</p> <p>Cybersecurity privacy risks Linda Wilbanks, USA</p> <p>Sharing photos on social media: Visual attention affects real-world decision making Shawn Fagan, Lauren Wade, Kurt Hugenberg, Apu Kapadia, Bennett Bertenthal, USA</p> <p>Prosthetic face makeups and detection Yang Cai, USA</p> <p>Vulnerability analysis through ethical hacking techniques Angel Rolando Delgado Piloza, Viviana Belén Demera Centeno, Elba Tatiana Zambrano Solorzano, Ecuador</p>	

<p>105</p>	<p>Design for Inclusion in Everyday Life and Behaviors I Chair: Alessia Brischetto, Italy</p>	<p>DI</p>
<p>13:00–14:30 - AHFE 7</p>	<p>#HBLTable: A cost-effective study-from-home furniture solution for low-income families impacted by Covid-19 Christian Sng, Kiahsheng Teo, John Chan, Bassam Jabry, Karin Aue, Jeffrey Koh, Singapore</p> <p>Inexpensive pill dispenser for the elderly suffering from non-communicable diseases Luis Serpa-Andrade, Kleber Villacres-Miranda, Xavier Moscoso-Nugra, Ecuador</p> <p>Interaction design for experience and inclusion in cultural heritage Alessandra Rinaldi, Alessia Brischetto, Italy</p> <p>Assessment of adaptive behavior in the design of serious games for people with disabilities Carlos Corrales, Verónica-Gabriela Maldonado-Garcés, Nelly-Yolanda Ortiz-Carranco, Jorge-Luis Pérez-Medina, Ligia-Pilar Samaniego-Santillán, Mayra Carrión, Marco Santórum, Patricia Acosta-Vargas, Ecuador</p> <p>All play together: Design concepts of a sensory play equipment aimed to an inclusive play experience Kiana Kianfar, Alessia Brischetto, Italy</p> <p>Play time: Collaborative design at the service of inclusive leisure Rita Almendra, Portugal</p>	
<p>106</p>	<p>Human Capital Management and Applications in Industry Co-Chairs: Fernando Bellido, Michal Trziszka and Lucia Botti, Peru/Poland/Italy</p>	<p>MFG</p>
<p>13:00–14:30 - AHFE 8</p>	<p>Analyzing the dynamics of work accidents in manufacturing to understand “reasonably foreseeable behaviors” Lucia Botti, Riccardo Melloni, Maniva Oliva, Italy</p> <p>Human action recognition on exceptional movement of worker operation Chao-Lung Yang, Shang-Che Hsu, Yu-Wei Hsu, Yu-Chung Kang, Taiwan</p> <p>Motion analysis at checking phase in automobile repair painting Yuka Takai, Shigeru Ikemoto, Japan</p> <p>Occupational health and safety in the industry 4.0: New paradigms and new risks Mohamed Naceur Ben Aziza, Adel Badri, Foued Chihi, Canada</p> <p>Management model based on the application of the DEA (Data Envelopment Analysis) and 5s method to improve the efficiency of production processes in the coffee agronomic sector Cesar Ramirez, Fernando Bellido, Carlos Raymundo, Peru</p> <p>Micro-influencers as an effective channel to reach customers using social media in the time of the COVID-19 pandemic Michal Trziszka, Poland</p> <p>Correlations linking macroergonomic premises with key features of intelligent buildings Leszek Pacholski, Poland</p>	

107	Assistive Technologies, Accessibility and Human Systems Applications Co-Chairs: Vesna Spasojević Brkić and Ricardo Vígario, Serbia/Portugal	SYSI
13:00–14:30 - AHFE 9	<p>Software for diagnostics of mitral valve prolapse: Economic implications Vesna Spasojević Brkić, Slobodan Radojević, Nikola Dondur, Zorica Veljković, Marija Macurs, Serbia</p> <p>Sensor-based toilet instructions for people with dementia Jennifer Lumetzberger, Felix Ginzinger, Martin Kampel, Austria</p> <p>Assessing the emotional reaction to negative pictures through electrodermal activity data Pedro Correia, Pedro Morais, Carla Quintão, Cláudia Quaresma, Ricardo Vígario, Portugal</p> <p>Improving on-campus digital mental health support for underrepresented university students Lucretia Williams, Gloria Washington, Gillian Hayes, Rebecca Black, USA</p> <p>Identifying government funds to help people with disabilities: An analytical process Hugo Arias-Flores, Carlos Ramos-Galarza, Janio Jadán-Guerrero, Omar Córdor-Herrera, Isabel I. Nunes, Ecuador</p> <p>Exploring the pilot workload during professional pilot primary training and development: A feasibility study Stephen Belt, Yan Gai, Srikanth Gururajan, Gajapriya Tamilselvan, Nithilkumar Bollock, USA</p> <p>Digitalization of railway maintenance: A situation awareness perspective Phillip Tretten, Prasanna Illankoon, Sarbjeet Singh, Sweden</p> <p>Updating parameters of Fitts' law based on multi monitor command and control system Xingjiang Chen, Ning Li, Ziang Chen, Li Wang, Lulu Jiang, Yanghe Feng, China</p>	
108	Human Factors, Business Management and Society II Co-Chairs: Heikki Ruohomaa and Vesa Salminen, Finland	HFBMS
13:00–14:30 - AHFE 10	<p>Time to be committed. Relations in time management and organizational commitment Tero Reunanen, Jarno Einolander, Finland</p> <p>Ecosystem-based development in the transition of fourth industrial revolution Heikki Ruohomaa, Vesa Salminen, Jussi Kantola, Finland</p> <p>Digitalization of bio-based value chains Heikki Ruohomaa, Vesa Salminen, Finland</p> <p>Assessment of the forecasting capacity of the bankruptcy prediction models in companies listed on the Stock Exchange in Chile and Brazil Benito Umaña, Edinson Cornejo Saavedra, Valeria Riquelme Garcés, Hanns De la Fuente-Mella, Claudio Elórtogui Gómez, Chile</p> <p>Purchase decision-making factors of cultural and creative products in colleges and universities based on DEMATEL Yilin Sun, Fan Zhang, China</p> <p>Educating next generation B2B sales experts: First impressions of B2B sales competitions in South-East Asia Harri Lappalainen, Jukka Rantala, Artha Sejati Ananda, Kritsada Sriphaew, Timo Holopainen, Finland</p> <p>Peculiarities of psychologists' and social pedagogues' work in terms of quarantine Oksana Kravchenko, Oleksandr Safin, Marina Mishchenko, Yevhen Potapchuk, Ukraine</p> <p>From globalization towards localization in sales Jukka Rantala, Henri Untinen, Maria Yllikäinen, Timo Holopainen, Finland</p>	

109	Simulation and Human Factors for Nuclear Control Rooms Co-Chairs: Niv Hughes and Jinchao Lin, USA	HFSIM
13:00–14:30 - AHFE 11	<p>Comparing the sensitivity of workload measures for different task types using nuclear power plant main control room simulators Jinchao Lin, Gerald Matthews, Daniel Barber, Niv Hughes, USA</p> <p>Using qualified on-site nuclear power plant simulators in human factors validations of control room upgrades Jeffrey Joe, Casey Kovetski, USA</p> <p>A dual full-scope and reduced-scope Microworld simulator approach to evaluate the human factors of a coupled hydrogen production concept of operations Thomas Ulrich, Roger Lew, Torrey Mortenson, Heather Medema, Ronald Boring, Steffen Werner, Lucas Terry, Nathan Minard, USA</p> <p>Analysis and validation of the main control room staffing of the Xe-100 SMR Francisco De Borja Hervas, Luis Rejas, Spain</p> <p>Strategies for human factors validation of fire-event scenarios in a nuclear power plant Francisco De Borja Hervas, Luis Rejas, Spain</p>	
110	Culture and Globalization Co-Chairs: Mika Luimula and Evangelos Markopoulos, Finland/UK	CIE
13:00–14:30 - AHFE 12	<p>Temporal focus and innovativeness of consumers in the use of technologies: A cross-cultural study Jorge Cruz-Cárdenas, Ekaterina Zabelina, Olga Deyneka, Jorge Guadalupe-Lanas, Ecuador</p> <p>Application of defamiliarized illustrations to the design of culture and creative products Sheng Zhou, Fan Zhang, China</p> <p>Knowledge cities: ICT and urban components Sonia Cueva, Jorge Cruz-Cárdenas, Ecuador</p> <p>The 4Es of management: Managing cultural exchange in multinational corporations Evangelos Markopoulos, Emma Luisa Gann, UK</p> <p>Democratising governmental corporate entrepreneurship for the transformation of the public sector in the Balkan Region Evangelos Markopoulos, Egi Hoxhallari, Georgios Markopoulos, Hannu Vanharanta, UK</p> <p>Organising global democratic collaboration in crisis contexts: The international triangulation system Evangelos Markopoulos, Ines Selma Kirane, Dea Balaj, Hannu Vanharanta, UK/Finland</p> <p>Strategic utilization of the VR and AR technologies for the African cultural heritage promotion and management Mika Luimula, Evangelos Markopoulos, Ghazi Benahmed, Finland</p>	

<p>111</p>	<p>Health Care Organization and COVID-19 Responses Co-Chairs: Raffaella Maddaluno and Jay Kalra, Portugal/Canada</p>	<p>DCPP</p>
<p>13:00–14:30 - AHFE 13</p>	<p>The rite, time and living space: History of a pandemical interval Raffaella Maddaluno, Maria João Pereira Neto, Portugal</p> <p>Nursing care in pediatric COVID-19 pneumonia Cristhian Flores Urgiles, Paola Rojas-Verdugo, Johanna Reyes Reinoso, Ecuador</p> <p>A low-cost automated system for manual resuscitator for emergency Covid-19 care Omar Alvarado, Diego Morales, Javier Cabrera, Carlos Barros, Ecuador</p> <p>How sickness absence and presenteeism influence income: Empirical evidence from the European Working Conditions Survey (EWCS) 2015 Gernot Pruschak, Austria</p> <p>Bioethical reflection on access to education in the education sector as an effect of the COVID-19 pandemic Luis Serpa-Andrade, Ecuador</p> <p>The design linkage mechanism of crowd intelligence to respond to public emergencies Shangshang Zhu, Huiling Yu, Shijian Luo, Yenan Dong, China</p> <p>Bioethics in teaching bioengineering in times of COVID-19 Eduardo Pinos, Maria Cordero, Roberto Coronel, Erika Pinos-Vélez, Ecuador</p> <p>Surviving the Covid-19 pandemic: The role of digital innovation and transformation Khuram Shahzad, Faisal Imran, Finland</p>	
<p>112</p>	<p>Emerging Design Matter Co-Chairs: Yong-Gyun Ghim and Cliff Shin, USA</p>	<p>IPID</p>
<p>13:00–14:30 - AHFE 14</p>	<p>Data visualizations for interdisciplinary communication in HFE Byungsoo Kim, Payod Panda, USA</p> <p>How industrial design students develop videos to connect with potential investors and promote their ideas: Case study Jose Rivera-Chang, USA</p> <p>When the silos come down: Helping organizations perceive disciplinary differences as they mature toward interdisciplinarity Clinton Carlson, USA</p> <p>Shape-changing control interface design: Augmenting physical affordances to enhance a digital interface experience in cross-device interaction Siyi Zhu, Yong-Gyun Ghim, USA</p> <p>User interface characteristics of mobile applications across cross-cultures Wonseok Yang, Misato Akiba, Japan</p> <p>Utilization of behavior data due to differences in determination of activity Wonseok Yang, Ryusei Anzai, Japan</p> <p>Dynamic visual information for concentration on fitness Wonseok Yang, Sanghoon Park, Japan</p> <p>Ageless design: Interdependency between complexity and simplicity in visual perception of product aesthetics for product longevity Yong-Gyun Ghim, Cliff Shin, USA</p>	

113	Visual Ergonomics and Interaction Design of Intelligent Networking Co-Chairs: Ryota Ino and Zehua Bao, Japan/China	ED
15:00–16:30 - AHFE 1	<p>Optimization of eye control interactive interface based on genetic algorithm Shuai Chen, Xiaojun Liu, China</p> <p>Method for eye-controlled interaction for digital interface function icons Tianyu Zhou, Yafeng Niu, Wenjun Yang, Guorui Ma, Yue Gao, Hongrui Zuo, Xin Li, China</p> <p>Effects of path width on human distance perception and gaze position during walking Kenta Yonezawa, Yohsuke Yoshioka, Japan</p> <p>Sense of time while perceiving periodic visual stimuli by peripheral vision Ryota Ino, Yohsuke Yoshioka, Japan</p> <p>Rendering a light source based on visual experience - Influence of radial streaks on self-luminance perception Zehua Bao, Weiye Xiao, Chengqi Xue, China</p> <p>Costs for road safety of countering the automatic processes of natural reading in the design of horizontal road information Paulo Noriega, Elisângela Vilar, André Figueiredo, Catarina Brito, Joana Carvalho, Francisco Rebelo, Portugal</p> <p>[De]familiarization, the role of our hands in a technological world Luis Miguel Ginja, Portugal</p>	
114	Creating Value in Teams, Organizations, Communities, and Societies I Co-Chairs: Youji Kohda and Naoshi Uchihira, Japan	HSSE
15:00–16:30 - AHFE 2	<p>Co-enhancing skills of social entrepreneurs: A possible application of mobile social networks Karishma Zaman Katha, Youji Kohda, Eunyoung Kim, Japan</p> <p>Integrating real-world and virtual experiences through eSports-type 'cheering' Hisayuki Kunigita, Youji Kohda, Japan</p> <p>Robotic baby doll with minimal design for interactive doll therapy in elderly dementia care Nobuo Yamato, Hidenobu Sumioka, Masahiro Shiomi, Hiroshi Ishiguro, Youji Kohda, Japan</p> <p>Value creation in Aikido from a service perspective Makoto Saito, Youji Kohda, Tsutomu Fujinami, Japan</p> <p>Industry-academia research collaborations in the post-corona era: A case study of remote operations in a Japanese state-of-the-art research facility Takashi Onoda, Ito Yasunobu, Japan</p> <p>A possibility of value co-creation in the service ecosystem of the paid media in Japan: Focusing on viewers' life stories Shuji Sudo, Ito Yasunobu, Japan</p> <p>Service design based on customer value classification in IoT systems Sadaaki Shinjo, Naoshi Uchihira, Japan</p>	
115	Accessibility and User Experience Applications Co-Chairs: Andreas Kaufmann and Xiao Li, Germany/Taiwan	UUE
15:00–16:30 - AHFE 3	<p>Effects of affordance on the visual perception of smart washing machine user interface design Hongyu Li, Chien-Hsiung Chen, Taiwan</p> <p>Wayfinding performance using mobile maps with an Overview and Detail interface: Effects of the number of off-screen objects Xiao Li, Chien-Hsiung Chen, Taiwan</p> <p>The notification design of a mobile user interface Miao Huang, Chien-Hsiung Chen, China</p> <p>Design of outdoor public seating based on environmental psychology: The example of Shanghai botanical garden Yan Wang, Xiuhua Zhang, Xueting Wang, Yeqing Lu, China</p> <p>The effect of valence and layout of online reviews on purchase intention Jintao Luo, Guangji Liao, Weibin Wang, Jia Zhou, China</p> <p>Product ergonomics testing and application based on multiple methods Cheng Weihong, Yinxia Li, Huimin Hu, Wang Huiling, China</p> <p>Design of the resumption and prompt interface for online meetings under automatic driving Keying Dai, Zhengyu Tan, Qishen Duan, China</p> <p>The acceptance factors of smart home technologies: The case of Croatian households Darko Etinger, Snježana Babić, Lorena Jeger, Croatia</p>	

<p>116</p>	<p>Social & Occupational Ergonomics Co-Chairs: Linghua Ran and Mohamed Mokdad, China/Bahrain</p>	<p>SOE</p>
<p>15:00–16:30 - AHFE 4</p>	<p>Analysis of head size related to the design of eye and face protection products Linghua Ran, China</p> <p>Attitudes of young generation towards traditional irrigation system “Foggara” in the Southwestern Algeria: A green ergonomics approach Mohamed Mokdad, Bouhafis Mebarki, Bahrain</p> <p>Check-app Voice: A tool to self-evaluate dysphonia in speaking voice among teachers Maria Patrizia Orlando, Raffaele Palomba, Raffaele Mariconte, Martina Amodeo, Maurizio Diano, Fabio Lo Castro, Claudia Giliberti, Italy</p> <p>Objective and subjective evaluation of motorcycle helmet visors based on ECE 22.05 regulations Nhât Nguyen, Ellen Vanderlooven, Kevin Van Der Velden, Regan Watts, Jochen Vleugels, Belgium</p> <p>Lateral reaching distances for novice and experienced ladder users Angela Levitan, USA</p> <p>Vocal disability index in teachers from Ecuador Rommel Silva, Oswaldo Jara, Esteban Carrera Alvarez, Pablo Davila, José Luis Saá Loor, Ecuador</p> <p>Occupational health management in informal work: A theoretical analysis of the field Luis Carlos Betancourt Sanchez, Colombia</p>	
<p>117</p>	<p>Virtual Environments in Ergonomics and Design Co-Chairs: Ernesto Filgueiras and Sodai Kono, Portugal/Japan</p>	<p>ED</p>
<p>15:00–16:30 - AHFE 5</p>	<p>Evaluating the impact of the use of augmented reality in the design of a workstation Jorge A. González Mendivil, Miguel X. Rodríguez-Paz, Eduardo Gonzalez-Mendivil, Israel Zamora-Hernandez, Mexico</p> <p>Most visible display height of augmented reality route guidance signs under road congestion conditions Mayu Yoshihara, Yohsuke Yoshioka, Japan</p> <p>The effect of external factors on spatial reality in a virtual green space Rikuya Ichi, Yohsuke Yoshioka, Japan</p> <p>The influence of hue to the dynamic visual search performance Liwen Liu, Lei Zhou, Chengqi Xue, Shengchao Li, China</p> <p>Effects of change of ceiling height on subjective sense of time Sodai Kono, Yohsuke Yoshioka, Japan</p> <p>Evaluation of the influence of interface symbols on user hand-gestures in augmented reality Chen Lei, Wenyu Wu, China</p> <p>Physical and virtual wind tunnels: Advantages and disadvantages for the automotive design process Ernesto Filgueiras, Portugal</p>	

118	Health Care Advancement and Patient Safety Co-Chairs: Jay Kalra and Oksana Kravchenko, Canada/Ukraine	EHMD
15:00–16:30 - AHFE 6	<p>Global trends in clinical practice and healthcare delivery: Opportunities for growth and innovation Patrick Seitzinger, Zoher Rafid-Hamed, Jay Kalra, Canada</p> <p>Healthcare delivery: Leveraging artificial intelligence to strengthen healthcare quality Patrick Seitzinger, Zoher Rafid-Hamed, Jay Kalra, Canada</p> <p>Artificial intelligence and humanistic medicine: A symbiosis Jay Kalra, Zoher Rafid-Hamed, Patrick Seitzinger, Canada</p> <p>Design direction of waiting area in proton therapy hospital Xinxiong Liu, Yuan Liu, China</p> <p>Inclusive-resource center specialists' mental health Oksana Kravchenko, Marina Mishchenko, Yuliya Klymenko, Maksym Kuzmenko, Nataliia Potapchuk, Ukraine</p> <p>A novel linear algorithm to classify neck movement using surface electromyography Yi Zhu, Arash Mahnan, Tiago Falk, Juergen Konczak, USA/Canada</p> <p>An mHealth approach to addressing health inequity Martina A. Clarke, Sajda Qureshi, Timi Barone, Yi Qi, John R. Windle, Jason Combs, Paul R. Burger, USA</p>	
119	Innovative Health Care Technologies Co-Chairs: Byungjoon Kim and Gemma Vaughan, USA/UK	EHMD
15:00–16:30 - AHFE 7	<p>Towards sustainability: From “partial care” to “complete care” Ying Jiang, Huiyi Q, China</p> <p>Improving the patient room: Lessons from acuity adaptable room Cristiana Cellucci, Tiziana Ferrante, Italy</p> <p>Factors mediating use of advanced rehabilitation technologies in the home Manon Schladen, Yiannis Koumpouros, Peter Lum, USA</p> <p>An exploratory assessment of healthcare porters and their musculoskeletal disorders Gemma Vaughan, Michael Fray, Diane Gyi, UK</p> <p>Is body sway model valid to analyze posture control for diabetic peripheral neuropathy people? Byungjoon Kim, USA</p> <p>Discriminating wire navigation performance using quantitative objective analysis of intra-operative fluoroscopy Dominik Mattioli, Geb Thomas, Steven Long, Marcus Tatum, Matthew Karam, Donald Anderson, USA</p> <p>Interoperability in complex healthcare systems: The application of HRO principles in new technology implementation in digital healthcare Yalda Khashe, Maryam Tabibzadeh, USA</p>	
120	Safety and Human Factors Co-Chairs: Jose M. Carretero-Gomez and Diana Paola Moreno Alarcón, Spain/France	PEHF
15:00–16:30 - AHFE 8	<p>Character accentuation as a psychological risks criterion of fly-in-fly-out personnel in the far north Yana Korneeva, Russia</p> <p>Adopting the CRIOP framework as an interdisciplinary risk analysis method in design of remote operation centers for maritime autonomous systems Åsa S. Hoem, Ørnulf Jan Rødseth, Stig O. Johnsen, Norway</p> <p>Producing human factors recommendations in the aviation sector Diana Paola Moreno Alarcon, Corinne Bieder, France</p> <p>Lean ergonomic impacts on manufacturing systems Daniela Balsadi, Eduardo Santos, Brazil</p> <p>The relationship between organizational factors and specific risks in construction sites Jose M. Carretero-Gomez, Francisco J. Forteza, Albert Sesé, Spain</p>	

121	Physical Ergonomics and Human Factors: Case Studies and Job Analysis Co-Chairs: Thomas Hofmann and Sunisa Chaiklieng, Germany/USA	PEHF
15:00–16:30 - AHFE 9	<p>Ergonomics risk factors in developing musculoskeletal disorders among emergency medical services employees Sean Banaee, Konstantin Cigularov, Abdullah Al-Taiar, Anna Jeng, Muge Akpinar-Elci, USA</p> <p>Effectiveness of reduced work pace to decrease the risk of work-related musculoskeletal disorders in a chicken slaughterhouse Diogo Cunha Dos Reis, Adriana Seára Tirloni, Antônio Renato Pereira Moro, Brazil</p> <p>Surface electromyography (sEMG) and postural analysis for biomechanical risk assessment in a banknotes printing process Lorenzo Fiori, Alessio Silvetti, Antonella Tatarelli, Alberto Ranavolo, Francesco Draicchio, Italy</p> <p>Worker satisfaction of job rotations in Brazilian poultry slaughterhouses: A cross-sectional study Adriana Seára Tirloni, Diogo Cunha dos Reis, Antônio Renato Pereira Moro, Brazil</p> <p>Collaborative workspace – concept design of an interactive system to support collaborative decision-making for total airport management Thomas Hofmann, Germany</p> <p>Physical ergonomics design and evaluation of civil aircraft cockpit control devices Xinyang Zhu, Hongyu Zhu, Jin ZheFeng, Zhang Yinbo, China</p> <p>Investigation of anatomical shape of thumb of de Quervain’s tenosynovitis patients Eunice Wai-Si Tam, Joanne Yip, Kit Lun Yick, Sun Pui Ng, Xinshuo Christian Fang, China</p>	
122	Human Factors, Business Management and Society III Co-Chairs: Kirsi Liikamaa and Myungrae Cho, Finland/Japan	HFBMS
15:00–16:30 - AHFE 10	<p>Competences required in future working life Kirsi Liikamaa, Heidi Korin, Finland</p> <p>The effect of research, development and innovation (RDI) on companies’ financial activity capabilities: A case study of SME-companies in Finland Marcus Penttinen, Jukka Rantala, Timo Holopainen, Finland</p> <p>A model for demonstrating the benefits of weight health and the monetary value for changing obesity treatment into an investment Marcus Penttinen, André Heikius, Timo Holopainen, Finland</p> <p>The gap between theory and reality in retail internationalization research in China: An analytical perspective and future research directions Myungrae Cho, Shuo Wang, Japan</p> <p>Exploring the relationship between ethical and sustainable consumption in short supply chains: A literature review Maria José Palma Lampreia dos Santos, Helena Nobre, Nuno Baptista, Portugal</p> <p>Developing an operational BIM based modeling for net-zero construction waste management system Ademilade Aboginije, Clinton Aigbavboa, South Africa</p> <p>Felt justice: Correlations between university students and university personnel Tero Reunanen, Vesa Taatila, Finland</p> <p>Sales professionalism – A practice theory study Krista Holopainen, Jukka Rantala, Timo Holopainen, Finland</p>	
123	Panel: Applications for the Use of Synthetic Crew Members in Aircrew Training Chair: Beth Atkinson	HFSIM
15:00–16:30 - AHFE 11	<p>Improving the range of capabilities of synthetic crew members: Challenges and state-of-the-possible John Killilea, Bill Schmermund, USA</p> <p>DroneFisher: Utilizing a game-based approach for designing synthetic crew interactions Amanda Bond, Lauren Massey, USA</p> <p>The use of synthetic crew to solve a long standing training challenge John Killilea, Victor Hung, USA</p> <p>The future of synthetic crew members: Prospective use cases James Pharmer, Robert Bridgman, USA</p>	

124	Communication of Design III Chair: Sunny Sui-Kwong Lam, China	HBCD
15:00–16:30 - AHFE 12	<p>Status quo and improvement design of Nanjing Qinhuai Gift cultural and creative products—Take Zhuang Yuan Lang as an example Bingqing Sun, Yongyan Guo, China</p> <p>The role of auditory description in comprehension of demonstrators: A pilot study Aleksandra Sviridova, Stefanie Everaerts, Laura Tas, Salma Yachchou, Lotte Vanhoofstat, Joke Verlinden, Belgium</p> <p>Semantic research based on vibration interaction of smart bed in sleeping scene Yanlin Yin, Cuidi Wu, Yonghong Liu, China</p> <p>Architecture design of intangible cultural heritage games based on WeChat mini programs - Chongming Biandan Opera as an Example Qianyu Zhang, Wei Ding, Jie Zhou, Li Xiaolin, Xinyao Huang, China</p> <p>Transnationality, socialism, modernity: Text spread of the Bauhaus and emergence of modern design in China Yuxi Zhou, Zhao Shuwang, China</p> <p>Running community solidarity and well-being motivated by Instagram multimodal communications under the COVID-19 Pandemic Sunny Sui-Kwong Lam, China</p>	
125	Human Factors in Virtual Environments and Game Design Co-Chairs: Jiaming Day and Ju-Joan Wong, Taiwan	HFGD
15:00–16:30 - AHFE 13	<p>Joining battles with mouse: How gaming mouse connects the virtual world and body Ju-Joan Wong, Jian-Liang Liu, Taiwan</p> <p>Differences in wrist motion for different mice features between professional and high-level gamers Guangchuan Li, Carisa Harris-Adamson, Yue Liu, David Rempel, China/USA</p> <p>Interactive animation of mobile apps Honghai Zhang, Jianming Yang, China</p> <p>Traditional Chinese medical face diagnosis system visualized by augmented reality interface design Jiaming Day, Der-Lor Way, Wei Day, Hio-Leng Lo, Ching-Ying Chang, Taiwan</p> <p>Data2Game: Towards an integrated demonstrator Johannes Steinrücke, Paris Mavromoustakos-Blom, Judith van Stegeren, Ymko Attema, Sander Bakkes, Thomas de Groot, Johan de Heer, Dirk Heylen, Rafal Hryniewicz, Ton de Jong, Tije Oortwijn, Pieter Spronck, Mariët Theune, Bernard Veldkamp, Netherlands</p> <p>"It's my way or the highway:" Location mark-up prompts and interaction caveats in VR Bahar Memarian, Brian Fisher, Christos Koulas, Canada</p>	
126	Knowledge and New Technology Co-Chairs: Yan Luximon and Daniel Ziegler, China/Germany	CIE
15:00–16:30 - AHFE 14	<p>An interactive design solution based on AR technology for mobile phone addicted user Jing Luo, Huai Fang, Yan Luximon, China</p> <p>Packaging design of children's toys based on synesthesia Si Ming Gui, Xifan Ding, China</p> <p>Identification of potentials for the personalization of products Manfred Dangelmaier, Lesley-Ann Mathis, Daniel Ziegler, Anette Weisbecker, Germany</p> <p>Demands exploration of future interior layout in shared mobility using design fiction Qinxue Yang, Mengchao Ai, Xinyuan Tong, Long Liu, China</p> <p>E-Commerce perspective in kids and toys sector purchase process: Design opportunity Benedetta Terenzi, Arianna Vignati, Italy</p> <p>Digital museum transformation strategy against the Covid-19 global pandemic crisis Evangelos Markopoulos, Cristina Ye, Mika Luimula, Panagiotis Markopoulos, Finland</p> <p>A Fintech approach towards resolving the young adult home ownership challenge Evangelos Markopoulos, Jakob Dubois, Georgios Markopoulos, UK</p> <p>Applications of blockchain technology in the construction industry Opeoluwa Akinradewo, Clinton Aigbavboa, Ayodeji Oke, Innocent Mthimunye, South Africa</p>	

127	Resilience and Human Performance Co-Chairs: Salvador Ávila Filho and Jooyoung Park, Brazil/USA	HERRP
17:00-18:30 - AHFE 1	<p>Building a Trojan Horse: Third phase in the experiment/research with City Information Modeling (CIM) and the design ethics Gonçalo Falcão, José Beirão, Portugal</p> <p>Improvement of workflow structure to prevent human error Toru Nakata, Japan</p> <p>Trait interindividual differences in the effectiveness of Modafinil Jeroen Van Cutsem, Emilie Dessy, Martine Van Puyvelde, Olivier Mairesse, Xavier Neyt, Nathalie Pattyn, Belgium</p> <p>Symbolic context model for resilience engineering Daichi Mitsuhashi, Taro Kanno, Satoru Inoue, Daisuke Karikawa, Kohei Nonose, Kimitaka Asatani, Kazuo Furuta, Japan</p> <p>How many human factors influenced the June 30. 2013, Yarnell Hill Fire 19 fatalities and yet were never investigated nor documented? Fred Schoeffler, Lance Honda, Joy A. Collura, USA</p> <p>Continuous stress and consequence on C4t, complexity, risk, and necessity of Leadership Level 5 Salvador Ávila, Luiz Fernando Lopes de Souza, Lucas Menezes Pereira, Brazil</p>	
128	Kansei Engineering III Co-Chairs: Shigekazu Ishihara and Kaori Ohno Muramatsu, Japan	KE
17:00-18:30 - AHFE 2	<p>Remote virtual counseling and effects of embodied cues: toward casual on-line counseling under COVID-19 situation Teru Kawakita, Toshifumi Sasaki, Shigekazu Ishihara, Japan</p> <p>Appearance design method of New Mandatory Standard for electric bicycle based on online comments Miao Liu, Xueqi Ma, China</p> <p>Relationship between physical cognitive elements and viewers' impression evaluation in dance movements Kaori Ohno Muramatsu, Noriko Hashida, Mitsuo Hirokawa, Katsuo Inoue, Japan</p> <p>Appearance design method of household beauty instrument based on Kansei Engineering Huiyi Yang, Zhengqing Jiang, China</p> <p>Modeling design of waterjet machine tool based on Kansei Engineering Ying Zhu, Wencheng Tang, China</p> <p>Aesthetic image of traditional Chinese porcelain based on Kansei Engineering Qingqing Wang, Yongyan Guo, China</p> <p>Design of mining dump truck based on Kansei Engineering Yuxin Tu and Jun Yi, China</p>	
129	Design Education Strategy Co-Chairs: Joyce Thomas and David Smith, USA	IPID
17:00-18:30 - AHFE 3	<p>Studio-based learning strategies inspire thoughtful and purposeful designers David Smith, Joyce Thomas, Doris Wells-Papanek, USA</p> <p>Three cube rules Jerrod Windham, USA</p> <p>Development of a simplified insulin pump interface for improved user interaction Wendell Wilson, Young Mi Choi, Andrew Harper, USA</p> <p>Learning design thinking through a collaborative focus on social justice Joyce Thomas, Jialiang Wang, Sean Xin An Chen, Yuehtzu Yang, Ian Lee, Megan Strickfaden, USA/Canada</p> <p>Behavioral Barriers to adoption of the Safer Illinois App: A human-centered approach Karla Sanabria-Véaz, Simrun Sethi, Vidya Haran, Rachel Switzky, USA</p> <p>Digital ethnography for social design: Challenges and opportunities in the pandemic Kriya Gera, Peter Hasdell, China</p> <p>De-sign a greater reality Randall Bartlett, USA</p>	

130	Cross-Cultural Decision Making II Co-Chairs: Chihiro Tajima and Toshihisa Doi, Japan	CCDM
17:00-18:30 - AHFE 4	<p>Cultural mediations between branding and lifestyles: A case study based model for the articulation of cultural strategies and urban tribes Nelson P. Gomes, William Afonso Cantu, Portugal</p> <p>Correlations between inspections, maintenance errors, and accidents Toshiyuki Wakimizu, Atsuo Murata, Toshihisa Doi, Keisuke Fukuda, Yutaka Yoshida, Japan</p> <p>Study abroad in the Philippines and Canada by Japanese undergraduate students: A comparative mixed methods study Chihiro Tajima, Michael Fetters, Japan/USA</p> <p>Cognitive biases in game momentum, winning strategy, and Jinx in baseball Atsuo Murata, Japan</p> <p>Globalisation, cultural pluralism and the space of the human borderless career" world Agnieszka Cybal-Michalska, Poland</p> <p>Cultural preparation for digital transformation of industrial organizations: A multi-case exploration of socio-technical systems Aurangzeab Butt, Faisal Imran, Jussi Kantola, Petri Helo, Finland</p> <p>Trade gravity models for the factors affecting foreign trade in the political-administrative regions of Chile Manuel Ayala, Hanns De La Fuente-Mella, Víctor Leiva, Ana María Vallina-Hernández, Chile</p>	
131	Digital Human Modelling and Applied Optimization II Co-Chairs: Hyegjoo E. Choi-Rokas, Sudhakar Rajulu and Han Kim, USA	DHMAO
17:00-18:30 - AHFE 5	<p>Design specifications for eyewear with an integrated headborne system Hyegjoo E. Choi-Rokas, Peng Li, Todd Garlie, USA</p> <p>Design, execution, and results of an anthropometric surveillance study Joseph Parham, Todd Garlie, Hyegjoo E. Choi-Rokas, David Brantley, Linda Desimone, USA</p> <p>A computational approach to evaluate headborne equipment impacts to field of view over a population: A case study Peng Li, K. Blake Mitchell, David Brantley, USA</p> <p>A framework to implement the use of exoskeletons in DHM tools Francisco Garcia Rivera, Anna Brolin, Estela Perez Luque, Dan Högberg, Sweden</p> <p>Virtual human hand: Wrist movement Esteban Peña-Pitarch, Inma Puig De La Bellacasa, Anas Al Omar, Iñaki Alcelay-Larión, Jesus Fernando Padilla Magaña, Spain</p> <p>Generation of percentile human models based on 3D body scan database Soo-Hyun Jung, Wonsup Lee, Da-Un Kim, Ga-Eun Kim, Yechan Ju, South Korea</p> <p>Virtual fit assessment: Validation using historical spacesuit fit data K. Han Kim, Elizabeth Benson, Karen Young, Donald Campbell, Richard Rhodes, Sudhakar Rajulu, USA</p>	
132	Anthropometry in Ergonomic Design II Co-Chairs: He Zhao and Haimei Wu, China	ED
17:00-18:30 - AHFE 6	<p>Size of Chinese head and face for respiratory protective device design Linghua Ran and He Zhao, China</p> <p>Analysis and classification of neck size of Chinese young women related to neck product design Linghua Ran, Haimei Wu, China</p> <p>Design and analysis of human-machine interaction interface of vending machine under mobile payment Ge Xiaodan, Tang Wencheng, China</p> <p>Design of measuring equipment for upper limb flexibility Yue Sun, Ding-Bang Luh, Yu-Lin Zhao, China</p> <p>Ergonomics research on curved windshield of aircraft cockpit in night flight scene Li Qian, Feng Zhixiang, China</p> <p>Analysis of sitting pressure distribution on office chair for occupants with different body mass index Xiao Li, Ting Zhang, Liming Shen, Onder Tor, Yunlong Zhu, Jilei Zhang, Chilufya Chilufya, Bo Yan, Lingling Hu, China</p>	

133	Social Inclusion Through Products and Services Chair: Daniele Busciantella-Ricci, Italy	DI
17:00-18:30 - AHFE 7	<p>Embodied sensemaking: Balancing the cyber-physical display of abstract designs Jouke Verlinden, Lennaert Duwyn, Philip Eyckens, Aleksandra Sviridova, Lukas Van Campenhout, Belgium</p> <p>Framing design for inclusion strategies for service design Daniele Busciantella-Ricci, Carlos Aceves-Gonzalez, Italy/Mexico</p> <p>Project Pleinair: Discovering user needs exploring a non-conventional human-centered approach Giuseppe Mincoletti, Gian Andrea Giacobone, Michele Marchi, Italy</p> <p>Design of bathroom floor drain cover based on universal design concepts Yuchen Xi, Xue Chen, Xinxiong Liu, China</p> <p>Børge Morgensen's J39 re-designed: Learning inclusion through a dialogue between the past and the future Masashi Kajita, Nicolai de Gier, Denmark</p>	
134	Advanced Production Management and Process Control III Co-Chairs: Thomas Henke and Ryosuke Nakajima, Germany/Japan	APMPC
17:00-18:30 - AHFE 8	<p>Effect of complexity of inspection surface on defect detection in appearance inspection utilizing peripheral vision Ryosuke Nakajima, Sae Onodera, Takuya Hida, Toshiyuki Matsumoto, Japan</p> <p>Managing the team by individualisation. How can artificial intelligence help to manage team effectively and increase its efficiency? Ewa Jochheim, Maciej Orzechowski, Pawel Nowodzinski, Poland</p> <p>Tacit knowledge awareness and sharing as a focal part of knowledge production, Polish-US view on IT, healthcare, and construction industry Wioleta Kucharska, Poland</p> <p>Sill panel corrosion in automotive Industry Dina Diga, Irina Severin, Romania</p> <p>Evaluation method in multiple scenarios by means of datamine applying the law of variable cutting in optimization of the NPV in open pit Carlos Raymundo, Elmer Flores, Diego Rivera, Edgar Alayo, Vidal Aramburu, Peru</p> <p>Sustainment method in gold-bearing workings using woodpacks to mitigate the induced stresses that cause instability in an underground mine that uses longwall exploitation Carlos Raymundo, Carlos Saldana, Humberto Pehovaz, Peru</p> <p>Structural equation modelling of resource commitment constructs as a predictor of implementation of reverse supply chain management Ifije Ohiomah, Clinton Aigbavboa, Nita Sukdeo, South Africa</p>	
135	Perception, Cognition and Emotion Co-Chairs: Kazutaka Ueda and Koji Koizumi, Japan	APD
17:00-18:30 - AHFE 9	<p>Mondrian's Tartan style application pleasant perception based on the aesthetic evaluation and reliability analysis Yingjing Li, Chengqi Xue, Wenyu Wu, China</p> <p>Young consumers' perception of the matching relationship between product form and color: A case study of passenger car in side view Chunrong Liu, Kuikui Jin, China</p> <p>Emotional features of musical pieces with seamless transitions in a video game Akinori Taniguchi, Masashi Yamada, Japan</p> <p>Relationship between eye and hair colors and the impressions of characters Megumi Tanaguchi, Masashi Yamada, Japan</p> <p>Are brand affiliation tasks and similarity evaluations comparable? An examination using the example of the vehicle front Matthias Sebastian Fischer, Daniel Holder, Thomas Maier, Germany</p> <p>Using Kansei semantic differential method and grey relational analysis in the exploration of product form image cognition representation Guo-Peng Qiu, Jia Li Yuan, Chen Jing, Ming-Chyuan Lin, China</p>	

136	UX in Healthcare and Aging I Co-Chairs: Giada Paludet and Suzana Huang, Italy/Brazil	UUE
17:00-18:30 - AHFE 10	<p>UX heuristic evaluation of maxillo-facial surgery Stefano Filippi, Massimo Robiony, Alessandro Tel, Giada Paludet, Italy</p> <p>Analysis of the public participation experience of online opera concerts in the context of epidemic situation and research on influencing factors Suzana Huang, Xifan Ding, Brazil</p> <p>Rehab: New ways to improve physiotherapy rehabilitation experience Francisco Emiliano Garcia Garcia, Maurizio Boccherini Gallardo, Fabiola Cortes Chavez, Alberto Rossa-Sierra, Mexico</p> <p>Improving the experience of chemotherapy treatment for kids with leukemia Mariana Brun, Mariana García, Magaly Rentería, Gabriela Durán-Aguilar, Fabiola Cortes Chavez, Alberto Rossa-Sierra, Mexico</p> <p>Investigating the role of user experience design in a telemedical training system for pediatric physical examinations Elham Morshedzadeh, Andre Muelenaer, Michelle Morris, Dana Werlich, Margaret Nelson, USA</p>	
137	UX in Healthcare and Aging II Co-Chairs: Felipe Satte and Myriam Frejus, Portugal/France	UUE
17:00-18:30 - AHFE 11	<p>User interface design of smart IoT care products for the new-age elderly Lee-En Kao, Chien-Hsiung Chen, Taiwan</p> <p>Interaction design under the smart elderly community service system Xinxiong Liu, Yali Wang, China</p> <p>Quantified (self for) others: Lessons learned from the evaluation of a remote monitoring service of the activities of the elderly Myriam Frejus, Julien Guibourdenche, France</p> <p>Usability testing of optimizing senior-friendly online survey system: Lessons learned Danyang Wang, Hsien-Hui Tang, Taiwan</p> <p>Elderly in outdoors: Naturalistic observations in a public park Felipe Satte, Bruno Silva, Hande Ayanoglu, Portugal</p>	
138	Public Transport Systems Co-Chairs: Gabriel Gomes de Oliveira and Mohamed Adalbi, Brazil/USA	RR
17:00-18:30 - AHFE 12	<p>Analysis of the ergonomic concept of public transportation in the city of Campinas (Brazil) Gabriel Gomes De Oliveira, Yuzo Iano, Gabriel Caumo Vaz, Euclides Lourenço Chuma, Roger Prior Gregio, Alessandra Cristina Santos Akkari, Brazil</p> <p>Smart city transportation system in developing countries: The case of Lusail City, Qatar Khaled Shaaban, Mohamed Adalbi, USA</p> <p>User-oriented transport solutions: an ergonomic investigation of two novel concepts Pia Sophie Charlotte Dautzenberg, Gudrun Voß, Lining Wang, Martin Reske, Christopher Brockmeier, Stefan Ladwig, Germany</p> <p>Poor air quality along Utah's Wasatch front during inversions: Role of road transportation and possible solutions Khaled Shaaban, Ian Horrocks, USA</p> <p>Mind the gap! Can achieving green and efficient rail travel, with a focus on passenger experience, be effectively delivered through service-based contracts? Stewart Birrell, Phillip Davies, UK</p> <p>Passenger expectation in autonomous bus HMI with different scenarios: A field study Yanyan Li, Zhengyu Tan, Ningyi Dai, Zhifan He, China</p> <p>Safety equity in rail transportation Anne Garcia, USA</p>	

139	Ergonomics in Building and Architecture IV Co-Chairs: Wojciech Bonenberg and Christianne Falcao, Poland/ Brazil	SUPI
17:00-18:30 - AHFE 13	Influencing factors of residential well-being under COVID-19 Xintong Wei, Guangtian Zou, Kin Wai Michael Siu, China Renovation of campus old buildings under the service design perspective Wei Ding, Liu Zhaoyue, Dadi An, China Bradscape - An element of placemaking on the example of the city of Poznan, Poland Agata Bonenberg, Krzysztof Ingarden, Poland Cohabitation in a time of emergency: 'During' versus 'after' the confinement Caterina Anastasia, Portugal Gentrification in medium-sized Ecuadorian cities in the current context of territorial planning Boris Orellana-Alvear, Tania Calle-Jimenez, Ecuador	

141	Why Human Centered Service Design Needs an Architectural View Co-Chairs: Markus Warg and Andreas Zolnowski, Germany	HSSE
9:00-10:30 - AHFE 1	Human centered service design (HCSD): Why HCSD needs a multi-level architectural view Markus Warg, Ulrike Deetjen, Germany Analyzing actor engagement in data-driven business model innovation in the context of smart cities by creating a common understanding Babett Kühne, Michel Muschkiet, Germany Fostering human centred design in public service development Stephan Raimer, Peter Weiss, Germany Digital service innovation and actor engagement: A multilevel design perspective - impacts from a case study of an Insurtech Peter Weiss, Germany HR-management: Impacts from service (Eco) systems Markus Warg, Markus Frosch, Maren Lange, Germany Network effects to foster service innovation: An empirical analysis of actual practices Benjamin Gregersen, Andreas Zolnowski, Germany	
142	Emotional Design I Co-Chairs: Shuichi Fukuda and Keiichi Muramatsu, Japan	APD
9:00-10:30 - AHFE 2	Ergonomic design for assembly manufacturing workstation based on universal design principles Ruzy Haryati Hambali, Effendi Mohamad, Teruaki Ito, Japan Hedonic and Utilitarian motivations in predicting the buy intention of technological products: A study in developing and emerging countries Jorge Cruz-Cárdenas, Ekaterina Zabelina, Olga Deyneka, Carlos Ramos-Galarza, Ecuador Understanding the role of emotions in the evaluation process of baby stroller by expectant mothers Begüm Türeyengil, Ekrem Cem Alppay, Turkey A gesture elicitation study to generate interaction design insights for self-reporting of mental and body states using a portable device Ana Correia de Barros, Catarina Correia, Fernando Ricaldoni, Portugal Tactile texture experience on ceramic 3D-printed surfaces based on PAD emotion model Qingxia Chen, Yonghong Liu, Yiming Song, China Emotions as an inspiration for design Mafalda Casais, Portugal Nostalgic product design based on situational storytelling method Liu Lifang, China	

143	User Research: Education and Games Co-Chairs: Francisco Rebelo and Paulo Noriega, Portugal	ED
9:00-10:30 - AHFE 3	<p>Accessible learning tool design for students with hearing impairment Jingpeng Jia, Xueyan Dong, Guanzhong Zhou, Xiaofei Ma, China</p> <p>Teaching emotions with gaming: A solution for a complex concept Filipa Vinagre, Francisco Rebelo, Paulo Noriega Machado, Elisangela Vilar, Portugal</p> <p>Research games: A model to support the development of educational gaming experience using virtual reality platforms Yanick Trindade, Paulo Noriega, Francisco Rebelo, Portugal</p> <p>Can a stealth game be used to learn interaction design concepts? Carlos Paixão, Francisco Rebelo, Paulo Noriega Machado, Elisangela Vilar, Portugal</p> <p>Cognitive fit theory based on the effect of information arrangements on searching and browsing tasks on mobile shopping software Luyao Jiang, Xinyue Wang, Chengqi Xue, China</p> <p>Effect of bollard arrays on pedestrian's sense of safety Takahisa Nakamura, Yohsuke Yoshioka, Japan</p> <p>Remote work: The need of ergonomics to improve human health and wellbeing Cristina Caramelo Gomes, Portugal</p>	
144	Road Safety I Co-Chairs: Petr Zamecnik and Hanida Abdul Aziz, Czech Republic/ Malaysia	RR
9:00-10:30 - AHFE 4	<p>Examining the effect of safety attitudes, safety culture, and safety behavior on driving performance using structural equation modeling Abdulrahman Basahel, Saudi Arabia</p> <p>Blind spot in DUI countermeasures - dependent drivers are out of traffic safety system measures Petr Zamecnik, Adam Gregorovič, Darina Havlickova, Martina Trepáčová, Czech Republic</p> <p>How long does it take to get drowsy behind the wheel? An exploratory analysis of commercial drivers Sara Ferreira, António Lobo, Antonio Couto, Portugal</p> <p>Risk factors affecting the severity of single vehicle rear end crash in Malaysia Mirta Widia, Nur Syafiqah Fauzan, Fadhul Adni Binti Abdul Aziz, Yassierli, Ahmad Azad Ab. Rashid, Manida Swangnetr Neubert, Hanida Abdul Aziz, Ezrin Hanı Sukadarın, Hairunnisa Osman, Zulhaidi Mohd Jawi, Eida Nadirah Roslin, Hilma Raimona Zadry, Yogi Tri Prasetyo, Malaysia</p> <p>Injury patterns among drivers involved with multiple passenger vehicles frontal crashes in Malaysia Hanida Abdul Aziz, Mimi Nabila Mohd Noordin, Hairunnisa Osman, Norhayati Rosli, Mirta Widia, Ezrin Hanı Sukadarın, Nur Syafiqah Fauzan, Hilma Raimona Zadry, Ahmad Azad Ab. Rashid, Zulhaidi Mohd Jawi, Malaysia</p> <p>Critical behavior of young adolescent cyclists in Germany Franz Lambrecht, Carsten Sommer, Germany</p> <p>Measuring cell phone use while driving on campus Khaled Shaaban, Steven Taylor, USA</p>	
145	Ergonomics in Building and Architecture V Chair: Wojciech Bonenberg, Poland	SUPI
9:00-10:30 - AHFE 5	<p>Progression of human experience integration in the construction industry Abdulaziz Banawi, Cyril Ahiable, USA</p> <p>The comprehensive analysis of micro-climate adaptability and design mechanism based on traditional villages in Northern China Ling Qi, Ranqian Liu, Yuechen Cui, Yuwen Zhang, Zhisheng Song, Mo Zhou, China</p> <p>Sustainable waste water management in South Australia Li Meng, Rita Yi Man Li, Simon Beecham, Australia/Hong Kong</p> <p>Lessons learned from living in extreme environment– a review Sandra Häuplik-Meusburger, Austria</p> <p>Hotel in Lisbon's structural "Y": Between human factors and gentrification Soraia Noorali, Portugal</p>	

146	Human Factors in Software and Systems Engineering III Co-Chairs: Chang Zong and Lekan Amusan, China/Nigeria	HFSSE
9:00-10:30- AHFE 6	<p>Design and optimization of information architecture of NGC cloud platform Jinbo Hu, Zhisheng Zhang, Zhijie Xia, China</p> <p>Design of self rescue equipment for high rise building fire based on integrated innovation theory Chang Zong, Zhang Zhang, China</p> <p>Building the design proposal repository for increasing public emergency system resiliency Yu Zhun Huang, Jun Zhang, China</p> <p>Adoption, information implementation and communication-technology platform application in the built environment professional practice Lekan Amusan, David Adewumi, Adekunle Mayowa Ajao, Kunle Elizah Ogundipe, Adegbenjo Adelakun, Nigeria</p> <p>The influence of E-commerce web page format on information area under attention mechanism Fan Zhang, Yi Su, Jie Liu, Nan Zhang, Feng Gao, China</p> <p>Demand forecasting using ensemble learning for effective scheduling of logistic orders Katharina Lingelbach, Yannick Lingelbach, Sebastian Otte, Michael Bui, Tobias Künzell, Matthias Peissner, Germany</p> <p>Usage of cloud storage for data management in the built environment Ornella Tanga, Opeoluwa Akinradewo, Clinton Aigbavboa, Wellington Didibhuku Thwala, South Africa</p>	
147	Advances in Medical Devices and Techniques: Diagnostics and Usability Co-Chairs: Nancy Lightner and Pradip Kumar Ray, USA/India	EHMD
9:00-10:30 - AHFE 7	<p>Enhancing prosthetic hand functionality with elastic 3D-printed thermoplastic polyurethane Niell Gorman, Jeff Feng, USA</p> <p>The design of a user centered quick diabetes testing as a possible solution for late diagnosis complications in remote communities Juan Pedro Garciarce, Maria Jose Aguilera Gonzalez, Gloria Castellanos, Fabiola Cortes Chavez, Alberto Rossa-Sierra, Mexico</p> <p>Effects of joint mobilization on ankle dorsiflexion range of motion for subjects with chronic ankle instability Wei-Hsien Hong, Sui-Foon Lo, Min-Chi Chiu, Hsin-Chieh Wu, Taiwan</p> <p>Biotech scheme for prediction of occupational disease of the locomotive crews of the railway Riad Taha Al-Kasasbeh, Nikolay Korenevskiy, Altyn Amanzholovna Aikeyeva, Sofia Nikolaevna Rodionova, Ilyash Maksim, Mahdi Salman Alshamasin, Ashraf Shaqdan, Jordan</p> <p>Implantable medical device for depression: Be clear Brenda Denisse Rivero Orozco, Atziry Donaji Navarro Valadez, Samuel Jacob Olivares Sandoval, Alberto Rossa-Sierra, Fabiola Cortes Chavez, Mexico</p> <p>A systematic review on blood pressure measurement technologies and calibration techniques Suman Penumerthy, Seung nam Min, Murali Subramaniam, UK</p> <p>Prototyping a thermal limb: Methods for building a thermally representative phantom limb Ketan Sunil Mhetre, Abhijith Shasheendra, Shahram Aarabi, Ashley Emery, Jason O. Germany, USA</p>	
148	Multimodal Measurements, Artificial Intelligence and Mental Structure Co-Chairs: Zoheir Sabeur and Yang Cai, UK/USA	CCIoT
9:00-10:30 - AHFE 8	<p>Multi-measurement approach to the evaluation of human-autonomy systems Raquel Galvan, Carl Pankok, Jr., Gina Notaro, Sophia Mayne-Deluca, Joseph Notaro, Tamara Chelette, USA</p> <p>A database for cognitive workload classification using electrocardiogram and respiration signal Apostolos Kalatzis, Ashish Teotia, Vishnunaryan Girishan Prabhu, Laura Stanley, USA</p> <p>Using BERT model for intent classification in human-computer dialogue systems to reduce data volume requirement Hao Liu, Huaming Peng, China</p> <p>Human-machine learning with mental map Yang Cai, USA</p>	

149	Smart Manufacturing, Affordance and Technology Co-Chairs: Isabel I. Nunes and Maximilian Zarte, Portugal/Germany	SYSI
9:00-10:30 - AHFE 9	<p>A fuzzy inference model for social-sustainability production planning Maximilian Zarte, Agnes Pechmann, Isabel L. Nunes, Portugal/Germany</p> <p>A first approach for implementing a telepresence robot in an industrial environment Francisco Hernandez, Michael Wächter, Angelika C. Bullinger-Hoffmann, Germany</p> <p>How workers perceive LAEVO exoskeleton use in non-cyclic tasks Raquel Flor, Jacqueline Gaspar, Carlos Fujão, Isabel L. Nunes, Portugal</p> <p>Human-centered design of digital assistance systems in smart factories based on quality function deployment Bastian Pokorni, Germany</p> <p>Comparison of touch and touchless zoom control methods for single-handed mobile interactions Saurabh Garg, Scott Mackenzie, Canada</p> <p>The influence of icon color and style on mobile menu icon search Yuanyuan Liu, Zhisheng Zhang, Zhijie Xia, China</p> <p>A complex form design to improve the efficiency and emotional experience during information entry Xu Zhan, Zhijie Xia, Zhisheng Zhang, China</p>	
150	Human Factors, Business Management and Society IV Co-Chairs: Jussi Kantola and Jessica Lozano-Ramirez, Finland/Mexico	HFBMS
9:00-10:30 - AHFE 10	<p>Information sharing in industrial symbiosis Anne-Mari Järvenpää, Jussi Kantola, Vesa Salminen, Finland</p> <p>Value creation at the private and public sector interface Keijo Houhala, Vesa Salminen, Jussi Kantola, Finland</p> <p>An effective strategy for safety management and enhanced productivity in construction industry Oluwatumininu Ademolu, Clinton Aigbavboa, South Africa</p> <p>Requirements for a human-centered automotive development process: Results of a case study from the perspective of demographic change Sanjiv Surendra, Sarah Müller-Abdelrazeq, Frank Hees, Ingrid Isenhardt, Germany</p> <p>Examining the complexities between policy development and innovation Clarissa Piper, UK</p> <p>Psychosocial toxicology and mobbing in mining material transport drivers Carlos Armando Marin Valencia, Olga Helena Piñeros Mora, Colombia</p> <p>Addressing financial barriers influencing the adoption of solar PV: The role of business models Hassan Yousof, Shah Rukh Shakeel, Arto Rajala, Zeeshan Raza, Finland/Sweden</p> <p>Startups born out of academia: Structural pattern of monetization failures, rectified Kjartan Hauge, Jukka Rantala, Timo Holopainen, Norway</p>	
151	Visualizing Team Trust and Cohesion Co-Chairs: Ralph Brewer and Anthony Baker, USA	HFSIM
9:00-10:30 - AHFE 11	<p>Exploiting interdependence in autonomous human-machine systems to avoid disaggregation and vulnerability William Lawless, USA</p> <p>Visualizing human-autonomy team dynamics through the development of a global after-action review technology Michael Taberski, Ralph Brewer, Kristi Davis, Kristin Schaefer, USA</p> <p>Development of a neural network algorithm to detect Soldier load from environmental speech Angelique Scharine, USA</p> <p>Incorporating key leader engagement into tactical simulations Jacob Ziadeh, Jordan Blackman, Morgan Chewning-Kulick, Mazie Jones, Anna Loar, James Ness, Arno Harholt, Jacob Whisenhunt, USA</p> <p>Exploring constructs of team trust for human autonomy teams in a remote Minecraft Next Generation Combat Vehicle (NGCV) surrogate study Eric Holder, Glenn Lematta, USA</p>	

152	Human Factors in Global Issues and Disease Control Co-Chairs: Patrick Seitzinger and Salvador Ávila Filho, Canada/Brazil	DCPP
9:00-10:30 - AHFE 12	<p>Predicting shopper safety during a pandemic using checkout queue models Michael Schwartz, Boniface Noyongoyo, Paul Oppold, Glenn Martin, USA</p> <p>Crisis decision tool, fighting against COVID19 Salvador Ávila Filho, Júlia Spinola Ávila, Alisson dos Anjos Santos, Maria Carolina Nascimento Carmo, Luiz Fernando Lopes de Souza, Brazil</p> <p>The impact of the COVID-19 epidemic on university students mental workload Cesar Corrales, Wilmer Atoche, Jonatan Rojas, Peru</p> <p>Factors that affect COVID-19 studies for confinement of university students Cesar Corrales, Jonatan Rojas, Wilmer Atoche, Peru</p> <p>Diagnostic decision making in the face of uncertainty: COVID-19 and its sequela Patrick Seitzinger, Zoher Rafid-Hamed, Jay Kalra, Canada</p> <p>A novel approach to detect and monitor COVID-19 infection using transfer learning concept in AI Vinh Pham, Ha Min Son, Thuy Huynh, Tai-Myoung Chung, South Korea</p> <p>Digital media and COVID 19: Challenges for people's consolidation during pandemic crises Valentina Milenkova, Dobrinka Peicheva, Dilyana Keranova, Violeta Nikolova, Mario Marinov, Zheko Kyosev, Vladislava Lendzhova, Boris Manov, Bulgaria</p>	
153	Human Factors in Artificial Intelligence and Social Computing V Co-Chairs: Carlos Ramos-Galarza and Yanfei Liu, Ecuador/China	AISC
9:00-10:30 - AHFE 13	<p>Towards a most suitable way to AGI from cognitive architecture, modeling and simulation Yanfei Liu, Xin Wang, Zhiqiang Tian, Liang Zhang, Yuzhou Liu, Junsong Li, Feng Fu, China</p> <p>Artificial Intelligence and tomorrow's education Omar Córdor-Herrera, Hugo Arias-Flores, Janio Jadán-Guerrero, Carlos Ramos-Galarza, Ecuador</p> <p>Towards Chinese terminology application of TERMONLINE Jiali Du, Christina Alexandris, Pingfang Yu, China</p> <p>AsiRo-μ: A multi-purpose robotic assistant for educational inclusion of children with multiple disabilities Jonnathan Andrade-Altamirano, Ana Parra-Astudillo, Sofía Bravo-Buri, Efrén Lema-Condo, Vladimir Robles-bykbaev, Ma. Cecilia Cañizares-Jarrín, Ecuador</p> <p>Intelligent agent proposal in a building electricity monitoring system for anomalies' detection using reinforcement learning Santiago Felipe Luna Romero, Luis Serpa-Andrade, Ecuador</p> <p>Tourism recommender system based on natural language classifier Maritzol Tenemaza, José Limaico, Angélica De Antonio, Jaime Ramírez, Sergio Luján-Mora, Ecuador</p> <p>Real-time and self-induced emotion recognition for EEG signals recollected from poker game participant seal-time emotion recognition for EEG signals recollected from online poker game participants Edgar Torres, Edgar A. Torres, Myriam Hernandez-Alvarez, Sang Yoo, Ecuador</p>	
154	Engineering Design and Strategy Co-Chairs: KwanMyung Kim and Junxuan Li, South Korea/China	IPID
9:00-10:30 - AHFE 14	<p>Integrated design process for an elbow joint rehabilitation device Jaehan Park, Malika Gabbas, Yedam Ryu, KwanMyung Kim, South Korea</p> <p>Understanding challenges of designing for complex users by adapting the existing framework Malika Gabbas, Yedam Ryu, JaeHan Park, Kwanmyung Kim, South Korea</p> <p>Slipper design opportunity identification based on material and manufacturing process characteristics Yedam Ryu, Malika Gabbas, JaeHan Park, Kwanmyung Kim, South Korea</p> <p>Teaching strategies and models considering interdisciplinary practice in industrial design curriculum Elham Morshedzadeh, Christopher Arena, Page Cross, Andre Muelenaer, USA</p> <p>User characteristics through lifestyle: A user typology of robot with smartphone based on AIO scale Ningyi Dai, Xiaohui Zhang, China</p>	

155	Artificial Intelligence Based Co-Creation Co-Chairs: Alfred Zimmermann and Walter Ganz, Germany	HSSE
11:00-12:30 - AHFE 1	<p>Conceptualizing artificial intelligence-based service ecosystems Alfred Zimmermann, Rainer Schmidt, Kurt Sandkuhl, Barbara Keller, Germany</p> <p>5G assisted smart manufacturing and industrial automation Abdellah Chehri, Alfred Zimmermann, Canada</p> <p>Qualitative reasoning for service interactions Marco Aiello, Alideou Prosper Ayegnon, Oliver Jackson, Germany</p> <p>Transfer of service research into companies Thomas Meiren, Michaela Friedrich, Christian Schiller, Germany</p> <p>Smart tool use in knowledge intensive work situations – an information technology review Katja Gutsche, Michael Weltin, Germany</p>	
156	Digital Human Modeling by Women in Human Factors Co-Chairs: Sofia Scataglini and Silvia Imbesi, Belgium/Italy	DHMAO
11:00-12:30 - AHFE 2	<p>Mixed reality simulation for medical training: How it affects learners' cognitive state Agnese Brunzini, Alessandra Papetti, Michele Germani, Pamela Barbadoro, Daniele Messi, Erica Adrario, Italy</p> <p>User-centered design of cues with smart glasses for gait rehabilitation in people with Parkinson's Disease: A methodology for the analysis of human requirements and cues effectiveness Silvia Imbesi, Mattia Corzani, Giovanna Lopane, Filippo Petrocchi, Lorenzo Chiari, Giuseppe Mincoletti, Italy</p> <p>RGB-D sensors as marker-less MOCAP systems: A comparison between Microsoft Kinect v2 and the new Microsoft Kinect Azure Benedetta Rosa, Filippo Colombo Zefinetti, Andrea Vitali, Daniele Regazzoni, Italy</p> <p>Towards wearable technology assisting in training and risk assessment against musculoskeletal disorders for maritime workers Alexander Van Gastel, Sofia Scataglini, Sander Zelck, Lenie Denteneer, Hanne Vanden Bossche, Stijn Verwulgen, Belgium</p> <p>Stability measurements of overhead tasks in combination with prism glasses using IMU MOCAP system: Presenting an experiment protocol Sander Zelck, Stijn Verwulgen, Lenie Denteneer, Sep Sauter, Chiara Rousseau, Maite Dillen, Isabel Prieto García, Sofia Scataglini, Belgium</p> <p>Automatic printed fabric defect detection based on image classification using modified VGG network Samit Chakraborty, Marguerite Moore, Lisa Parrillo-Chapman, USA</p> <p>Mannequin-based validation of textile-based wearable contact sensing for body-spacesuit interactions Crystal Compton, Linh Vu, Yaritza Hernandez, K. Han Kim, Sudhakar Rajulu, Lucy Dunne, USA</p> <p>Spacesuit padding design for mobility and comfort Yaritza Hernandez, USA</p>	
157	User Research Co-Chairs: Ying Zhao and Jiang Tongzhou, China	ED
11:00-12:30 - AHFE 3	<p>Methods of co-design using machine learning as design materials Ying Zhao, Tan Hao, Gao Weiting, Chengzhi Zhang, China</p> <p>Using Kansei engineering to analyze consumers' product attribute preferences Jiang Tongzhou, Lei Zhou, Chengqi Xue, Chao Yang, China</p> <p>Human factors in waste reduction design: A case study on using garbage bags under waste charging policy in Hong Kong Yi Lin Wong, Chi Hang Lo, China</p> <p>The influence of household high noise appliances on hearing threshold Yuhan Wang, Ling Luo, Xin Zhang, Jie Wang, China</p> <p>The design of women's safety protection products based on the level of users' requirements Yunyan Zhao, Tie Ji, Yonghong Liu, Lisi You, China</p> <p>Cultural and creative service design of Jiangnan ancient town under the concept of slow life Zeyu Gu, Hong Chen, China</p>	

158	Maritime Co-Chairs: Thomas Porathe and Stephanie Hochgeschurz, Norway/ Germany	MAR
11:00-12:30 - AHFE 4	<p>Still unresolved after all these years: Human-technology interaction in the maritime domain Brit-Eli Danielsen, Margareta Lutzhoft, Thomas Porathe, Norway</p> <p>Task oriented use of functionalities on ship navigation systems Stephanie Hochgeschurz, Florian Motz, Svenja Kretzer, Lerke Thiele, Germany</p> <p>Autonomous ships: A research strategy for human factors research in autonomous shipping Thomas Porathe, Norway</p> <p>Design of a tool to explore the relationship between non-technical skills and resilience capabilities Gesa Praetorius, Carl Hult, Josué Franca, Jan Snöberg, Sweden</p> <p>Colour design method of ship centralized control cabin Kun Yu, Ao Jiang, Xi Zeng, Jianzhong Wang, Xiang Yao, Yangzuo Chen, China</p> <p>Construction of crew visual behaviour mechanism in ship centralized control cabin Kun Yu, Ao Jiang, Jianzhong Wang, Xi Zeng, Xiang Yao, Yangzuo Chen, China</p> <p>Situation awareness assessment for ship navigation tasks in virtual reality simulation system Yu Zhang, Chongbin Li, Chunlin Qian, Jie Chen, Xiaodong Zhang, Quan Ding, China</p>	
159	Usability and User Experience Application III Co-Chairs: WanJing Cao and Tianshu Wang, China	UUE
11:00-12:30 - AHFE 5	<p>User experience design of second-hand luxury APP based on Kano-QFD model Wan Jing Cao, Shuangni Cheng, China</p> <p>Contextual-aware fire product interaction design Jiangyong Li, Xuefei Du, Shuaidan Wu, Xiang Yao, China</p> <p>User experience: Portraits of young user groups for the future Chinese high-end electronic communication product market Ai Liang, Ting Han, Boyang Fan, Jingran He, Dian Zhu, China</p> <p>Public user experience satisfaction of E-government in China: Review and prospect Chunrong Liu, Yuchun Shi, China</p> <p>Identifying key influential factors critical to determining consumers/users' satisfaction of user experience in passenger car by FA-DEMATEL approach Chunrong Liu, Yuchun Shi, Kui Gao, China</p> <p>Intelligent agents in cars: Investigating the effects of anthropomorphism and physicality of agents in driving contexts Fangang Meng, Peiyao Cheng, Jie Yao, Yiran Wang, China</p> <p>Understanding harmful blue light in a group of Thai people Manutchanok Jongprasithporn, Nantakrit Yodpijit, Thanaporn Nunthawarasilp, Nopphavee Treekanjanothai, Thailand</p>	
160	Drones, Robots and Humanized Behaviors Co-Chairs: Francesco Burlando and Max Friedrich, Italy/Germany	HFRDUS
11:00-12:30 - AHFE 6	<p>Designing for the unknown: Using structured analysis and design technique to create a pilot domain for a shore control center for autonomous ships Dag Rutledal, Norway</p> <p>Reporting of ethical conduct in human-robot interaction research Julia Rosén, Jessica Lindblom, Erik Billing, Sweden</p> <p>Exploratory analysis of research publications on robotics in Costa Rica main public universities Juan Pablo Chaverri Ruiz, Adrian Vega, Kryscia Ramírez-Benavides, Ariel Mora-Jiménez, Luis A. Guerrero, Costa Rica</p> <p>A century of humanoid robotics in cinema: A design-driven review Francesco Burlando, Annapaola Vacanti, Claudia Porfirione, Niccolò Casiddu, Italy</p> <p>RESPONDRONE - A multi-UAS platform to support situation assessment and decision making for first responders Max Friedrich, Satenik Mnatsakanyan, David Kocharov, Joonas Lieb, Germany</p>	

161	Design for Inclusion in Everyday Life and Behaviors II Co-Chairs: Miguel Carvalho and Magda Matuszewska, Portugal/Poland	DI
11:00-12:30 - AHFE 7	<p>Inclusive design in the context of smart community Dadi An, Xinhe Lu, Yongqi Wang, Ge Song, Yuqin Chen, Yunchen Pu, Haorui Ke, China</p> <p>Experimental method of assessment of ergonomics and accessibility of public facilities Magda Matuszewska, Agata Gawlak, Poland</p> <p>A new model to motivate older adults to participate in physical activities Jiayin Guan, Emilene Zitkus, Cees De Bont, Hua Dong, UK</p> <p>From traditional styling to lifestyle: Design thinking perspective of cultural collection Yun He, Bo Ouyang, China</p> <p>The contribution of ergonomics as social inclusion and the development of products for bodies in transformation Artemisia Caldas, Miguel Carvalho, Fernando Ferreira, Monique Caldas, Portugal</p> <p>Designing from the inside out Kevin Clark, Kaz Yamazaki, Todd Hoskins, Stacey Baer, James Kwolykm, USA</p>	
162	Health Care Innovation Co-Chairs: Galia Kondova and Tihomir Dovramadjiev, Switzerland/Bulgaria	EHMD
11:00-12:30 - AHFE 8	<p>Blockchain-based healthcare data management: Current practices and opportunities ahead Galia Kondova, Switzerland</p> <p>Improving design of intelligent clinic product service system: A case study Wei Ding, Yang Liu, Ying Jiang, China</p> <p>Information and communication technology application in healthcare with computer-aided design of immediate partial dentures Tihomir Dovramadjiev, Diana Pavlova, Julia Radeva, Bulgaria</p> <p>A study on a method to reduce medical incidents in healthcare Haizhe Jin, Quanwei Fu, Masahiko Munechika, Masataka Sano, Chisato Kajihara, China</p> <p>A comparison of work posture and task complexity on surgeon biomechanics and performance Saif Al-Qaisi, Ilham Abousaleh, Rim Banat, Zavi Lakissian, Rida Zeineddine, Ahmad Zaghaf, Abdul Sattar Raslan, Rana Sharara-Chami, Lebanon</p>	
163	Holistic Approach in Safety Management and Influencing Factors During a Pandemic Co-Chairs: Hana Pacaiova and Anna Nagyova, Slovakia	PEHF
11:00-12:30 - AHFE 9	<p>Using ultrasound to assess microchambers and macrochambers tissue properties after walking at different speeds and durations Wei-Cheng Shen, Yih-Kuen Jan, Chi-Wen Lung, Hsin-Chieh Chen, Cheng-Tsung Li, Jian-Guo Bau, Ben-Yi Liao, Taiwan</p> <p>Analysis and application of influencing factors of mirror drawing ability Minxia Liu, Yu Gu, Jiping Lu, Lin Gong, Qing Xue, China</p> <p>Holistic approach in machinery risk reduction procedures Hana Pacaiova, Michaela Balazikova, Marianna Tomašková, Katarina Firmentova, Katarina Chomova, Lukas Duris, Peter Darvaši, Jan Kam, Lukas Salaj, Slovakia</p> <p>Digital technologies for monitoring the vital functions of employees with diseases accompanied by seizure with loss of balance Juraj Glatz, Milan Oravec, Zuzana Kotianova, Michal Gorzas, Jan Hijj, Ivan Habala, Slovakia</p> <p>Production process optimization by reducing downtime and minimization of costs Stefan Markulik, Renata Turisova, Anna Nagyova, Robert Kozel, Tomas Vilinsky, Katarina Vaskovicova, Slovakia</p> <p>Consideration for experimental verification of the effectiveness and safety of exoskeletons Daniela Onofrejova, Michaela Balazikova, Michal Hovanec, Slovakia</p> <p>Magnetometry for security applications Milan Oravec, Frantisek Hesko, Zoltan Szoke, Tomas Gazda, Slovakia</p> <p>Safety productivity enhancement through ergonomics development (SPEED) at the Embassy in the Philippines Alma Maria Jennifer Gutierrez, Rosemary Seva, Philippines</p>	

<p>164</p>	<p>Human Factors, Business Management and Society V Co-Chairs: Mihori Toki and Clarissa Piper, China/UK</p>	<p>HFBMS</p>
<p>11:00-12:30 - AHFE 10</p>	<p>Site accidents in the South African construction industry: Cleaning the Augean stables Matthew Ikuabe, Douglas Aghimien, Clinton Aigbavboa, Ayodeji Oke, Wellington Didibhuku Thwala, South Africa</p> <p>Economic challenges facing the adoption of sustainable construction delivery in the South African construction industry Emmanuel Ayorinde, Ntebo Ncogbo, Mathe Kasenge, South Africa</p> <p>The effect of street-facing storefront offset on the perception of the street center Mihori Toki, China</p> <p>Critical success factors for the financing of power infrastructure projects in Ghana Jacob Kofi Sie, Clinton Aigbavboa, Wellington Didibhuku Thwala, South Africa</p> <p>Human capital and power infrastructure financing in Sub-Saharan Africa: A review Jacob Kofi Sie, Clinton Aigbavboa, Wellington Didibhuku Thwala, South Africa</p> <p>Transforming quantity surveying firms in South Africa through digitalisation Olushola Akinshipe, Clinton Aigbavboa, Ayodeji Oke, Molemo Sekati, South Africa</p> <p>Future investor habits Jukka Rantala, Maria Yllikäinen, Juuso Turklin, Timo Holopainen, Finland</p>	
<p>165</p>	<p>Usability, Applied Virtual Reality and Game Design Co-Chairs: Simone Grassini, Ilona Buchem and Teijo Lehtonen, Norway/Germany/Finland</p>	<p>HFGD</p>
<p>11:00-12:30 - AHFE 11</p>	<p>How can simulation training benefit from virtual reality extensions? Case: A virtual reality extension to a simulated ship bridge for emergency steering training Jenny Lauronen, Leo Sakari, Teijo Lehtonen, Finland</p> <p>The validity of VR experiments Daniel Mestre, France</p> <p>User individual characteristics and perceived usability in immersive HMD VR: A mixed method explorative study Simone Grassini, Mina Saghafian, Sebastian Thorp, Karin Laumann, Norway</p> <p>Towards understanding of user's immersion using electroencephalogram (EEG) and activity-adhered biosensor in an environment of full-body game gesture Hamdan Gani, Zhipeng Feng, Indonesia</p> <p>Designing for rapport with virtual agents in a simulated mixed reality environment: Results from a pilot study with senior users in the bewARE project Ilona Buchem, Susan Vorweg, Oskar Stamm, Germany</p> <p>Eye movements in VR training: Expertise measurement and it's meaning for adaptive chess training Carolin Hainke, Thies Pfeiffer, Germany</p> <p>Framework for integration of virtual reality into model based systems engineering approach Mostafa Lutfi, Ricardo Valerdi, USA</p>	

166	Human Dynamics for Social Cohesion Chair: Nuno Martins, Portugal	HDCS
11:00-12:30 - AHFE 12	<p>bYou: A research proposal about and with children and youngsters as creative agents of change through the use of the media Sara Pereira, Daniel Brandão, Manuel Pinto, Portugal</p> <p>Brand models: A comparative study on brand creation and management Emílio Ribeiro Martins Dos Santos, Daniel Raposo, Brazil</p> <p>Co-creating places: Human participatory dynamics through territorial communication Ana Duarte Melo, Portugal</p> <p>Collaborative pedagogy for co-creation and community outreach: An experience from architectural education in social inclusion using the Miro tool Emílio Brandão, Marco Adelfio, Shea Hagy, Liane Thuvander, Sweden</p> <p>Design infrastructures: Proposing alternative strategies for countries with a lower maturation of design culture Nina Costa, Vasco Branco, Rui Costa, Afonso Borges, António Modesto, Raul Cunca, Ana Vieira Silva, Portugal</p> <p>Psychosocial toxicology: Emotional work and mental health in security guards Olga Helena Piñeros Mora, Carlos Armando Marin Valencia, Colombia</p> <p>Traje à Vianesa – A study on historical costume to inform contemporary design projects Lídia Araújo, Gabriela Forman, Portugal</p> <p>Kalokagathia, Made in Italy and cultural heritage in Campania Region Rosa Maria Giusto, Mario Buono, Portugal</p>	
167	Interaction and xR Technology: Health and Well Being Co-Chairs: Kimberly Sheen and Mika Luimula, UK/Finland	CIE
11:00-12:30 - AHFE 13	<p>A novel pandemic delivery pattern for a new digital user experience degree apprenticeship Kimberly Sheen, Jillian Griffiths, Derren Wilson, Stuart Cunningham, UK</p> <p>HRIpreneur model canvas: Human-robot interaction research prototype and roadmap design for practical real-world problem solving Ker-Jiun Wang, USA</p> <p>Human computer interaction opportunities in hand tracking and finger recognition in ship engine room VR training Mika Luimula, Evangelos Markopoulos, Jesse Ahtiainen, Villemarkus Aho, Werner Ravyse, Finland</p> <p>Behavioral data collection and learner analytics through eye-tracking in VR maritime safety training Werner Ravyse, Evangelos Markopoulos, Mika Luimula, Melissa Laakso, Francisco Carrascogirbes, Sami Laukkanen, Finland</p> <p>Wellbeing and healthcare: Exploring ways of interactive prototyping with mental process Yancong Zhu, Xiaohan Wang, Yuchen Jing, Longxin Ma, Bowen Zhang, Xiaoyu Shen, Wei Liu, China</p> <p>A conceptual design of a modular multifunctional nursing bed for moderately disabled patients Jing Luo, Yan Luximon, Xiao Ni, China</p> <p>Disinfection of vehicle interior space as a major step towards the recovery and development of post-pandemic car-sharing industry Zhiqian Hu, Xiaohan Tu, China</p> <p>A home-based upper limb-rehabilitation service system for patients with mild-stroke Liwen Gu, Shimeng Xiao, Liangyan Shen, Long Liu, China</p>	

168	Aging and Wellbeing Co-Chairs: Tiziana Ferrante and Marie Sjölander, Italy/Sweden	HFAS
11:00-12:30 - AHFE 14	<p>Human stereotypes affecting behavior when implementing technology targeted towards older adults Marie Sjölander, Ann-Sofie Mårtensson, Sweden</p> <p>Innovative design on the elders' use of smart phones based on man-machine interaction Yang Pei, Xiaoping Hu, China</p> <p>Impact of aging: The new frontier of healthcare at home Cristiana Cellucci, Tiziana Ferrante, Italy</p> <p>"Easyi"- a new toilet seat designed for senior adults to prevent falling when using the toilet Yuan Yin, Shu Huang, Bowen Zhan, Haoyu Zuo, UK</p> <p>Determining patient satisfaction indicators in a rural wound care center Elizabeth Cudney, Susan Murray, Clair Reynolds Kueny, USA</p>	
169	Enhancing Interdisciplinarity in Service Innovation Co-Chairs: Christian Zagel and Freimut Bodendorf, Germany	HSSE
13:00-14:30 - AHFE 1	<p>Qui legit, ingenium veterum mirabile laudet - How to introduce new knowledge into curriculum using the example of Alcuin's de Dialectica Hauke Hasenknopf, Germany</p> <p>Approaching sustainability in interdisciplinary teams Rebecca Fischer, Hauke Hasenknopf, Germany</p> <p>The impact of the Master's Program ZukunftsDesign on student creativity Lena Pieper, Annika Linsner, Franziska Leutner, Germany</p> <p>A human-centered approach to designing a blended learning environment for an interdisciplinary audience Matthia Leyendecker, Christian Zagel, Germany</p> <p>Interdisciplinary service development for construction suppliers with the help of an innovation support system Matthias Hille, Freimut Bodendorf, Germany</p> <p>Detecting effective impulses for the socio-ecological change - Presentation of the interdisciplinary research concept behind Game of Rain Matthias Scheibe, Hauke Hasenknopf, Oliver Frenzel, Germany</p>	
170	Human Factors in the Design of Products for Health Chair: Susan Sokolowski, USA	IPID
13:00-14:30 - AHFE 2	<p>Manual wheelchair design to improve user safety, comfort and aesthetics for the aging population Susan Sokolowski, Ezra Ende, Mark Fretz, USA</p> <p>Development of a mobile planter system to enable ease of use and enjoyment for the aging gardener Susan Sokolowski, Daniel Calabrese, Mark Fretz, USA</p> <p>Modernizing the walking cane to integrate ergonomics and wayfinding technology to improve aesthetics and functionality for <55-year-old users Susan Sokolowski, Adam Clausen, Mark Fretz, USA</p>	
171	Ergonomics, Design and Ergonomics Interceptions I Chair: Fernando Moreira da Silva, Portugal	ED
13:00-14:30 - AHFE 3	<p>Urban color planning - color and space systems are central for visual language programming Fernando Moreira da Silva, Portugal</p> <p>Computer-aided generation of Memphis-style patterns Yanan Du, China</p> <p>Intersection of engineering and design: Exploration and prospect of finite element analysis in design Xie Shenrui, Meiyu Zhou, China</p> <p>Integrating the syntactic and semantic dimensions in design projects Cátia Rijo, Maria Celeste Sanches, Roberta Barban, Portugal</p> <p>Chromatic plans for urban furniture: The case of multicoloured urban zones Margarida Gamito, Fernando Moreira Da Silva, Portugal</p>	

172	UX in Wearables, Virtual and Augmented Reality Environments I Co-Chairs: Kuo-Wei Su and Eloïse Zehnder, Tiawan/France	UUE
13:00-14:30 - AHFE 4	<p>What factors contribute to the perceived usability of virtual reality technology of conservative industrial consumers Mina Saghafian, Simone Grassini, Karin Laumann, Martin Rasmussen, Norway</p> <p>Enablers for designing situational awareness with AR: Case study of firefighter support Robin Vandormael, Joke Verlinden, Regan Watts, Belgium</p> <p>Social virtual agents and loneliness: Impact of virtual agent anthropomorphism on users' feedbacks Eloïse Zehnder, Jérôme Dinet, François Charpillat, France</p> <p>The effect of restorative environment and presence based on virtual reality for anxiety and depression Zhimeng Wang, Jingchen An, Yufan Zhao, Ziyi Wang, Yue Yu, Ting Jiang, Jianping Wu, China</p> <p>Improved UX design of self-autopilot driving takeover audio prompt based on UCD method Yujia Ma, Danhua Zhao, Zhouyang Wang, China</p> <p>Using usability testing, UEQ and EVS to explore the impact of AR media on consumer experience Kuo-Wei Su, Wan-Chen Lin, Pei-Chun Hsu, Chih-Tzeng Chien, Taiwan</p> <p>Motivational and behavioral differences between traditional and digital tabletop games Sha Liu, Junren Wang, Yang Long, Tan Yu Tan, China</p> <p>Sentiment analysis of elderly wearable device users based on text mining Zhou Jin, Meiyu Zhou, China</p>	
173	Usability and User Experience Application IV Chair: Ruigang Tan, China	UUE
13:00-14:30 - AHFE 5	<p>User experience redesign based on the emotional interaction needs of bullet screen Xin Chen, Xuanlin Zhu, China</p> <p>STEAM education mode based on new technology and user experience design Hongze Cai, De Liu, Zilan He, Chumeng Li, Bin Li, Bo Ouyang, China</p> <p>User experience design method from the perspective of scalability Xuelin Tang, Jiawei Zou, Weiwen Chen, Zhensheng Liu, China</p> <p>Interaction design of financial insurance products under the era of AIoT Wa An, Ye Chen, Shiqi Wang, Kai Wang, Huachun Chen, Changyu Wu, Zhihao Chen, China</p> <p>Customer experience of smart hotel based on network reviews information Ruiguang Tan, Hetian Chen, Xinyi Jing, Ziyue Jin, Shanshan Deng, China</p> <p>A simple and automatic typesetting method based on BM value of interface aesthetics and genetic algorithm Liuqing Wang, Chengqi Xue, China</p> <p>The role of digital marketing for aesthetic tourism: Understanding tourist behavior Jessica Lozano-Ramirez, Karen Ramos, Eduardo Ahumada-Tello, Martha Lopez-Regalado, Mexico</p>	
174	Distance Learning and COVID-19 Co-Chairs: Maria Colurcio and Alison Garaudy, Italy/USA	TELS
13:00-14:30 - AHFE 6	<p>E-learning and M-learning benefits in the learning process Omar Córdor-Herrera, Mónica Bolaños-Pasque, Carlos Ramos-Galarza, Ecuador</p> <p>E-learning ergonomic challenges during the Covid-19 pandemic Noemí Suárez Monzón, Janio Jadán-Guerrero, Reinaldo Requeiro Almeida, Karina Elizabeth Delgado Valdivieso, Ecuador</p> <p>Evaluation of distance learning effects on concentration and relaxed states by EEG and HRV Yuri Nakagawa, Peeraya Sripian, Midori Sugaya, Japan</p> <p>Information competency as a success factor in distance learning Tatiana Shaposhnikova, Alexander Gerashchenko, Dmitry Romanov, Russia</p> <p>Ergonomics of virtual learning during Covid-19 Lu Yuan, Alison Garaudy, USA</p> <p>Online classes: Lessons learned during the pandemic Angela Caridà, Maria Colurcio, Ambra Altimari, Monia Melia, Italy</p>	

175	Human Factors in Software and Systems Engineering IV Co-Chairs: Daniel Schilberg and Zhixiang Xia, Germany/China	HFSSE
13:00-14:30 - AHFE 7	<p>New findings on the calculation of the catenary Norbert L. Brodtmann, Daniel Schilberg, Germany</p> <p>A test method of inverter performance parameters based on virtual instrument Zhang Fan, Zhang Hong, China</p> <p>Analysis of the application of Steganography applied in the field of cybersecurity Luis Serpa-Andrade, Roberto García-Vélez, Eduardo Pinos-Velez, Cristhian Flores-Urgiles, Ecuador</p> <p>Charging and changing service design of new energy vehicles under the concept of sustainable development—a case study of NIO Yan Wang, Zhixiang Xia, Xiuhua Zhang, Yanmei Qiu, China</p> <p>Object detection using artificial intelligence: Predicting traffic congestion to improve emergency response to mass casualty incidents Rye Julson, Miranda Ahlers, Alexander Hamilton, Michael Kolesar, Gonzalo Barbeito, Jacob Ehrlich, Johnathon Dulin, Gregory Steeger, Justin Wilson, Kevin Cardenas, Marian Sorin Nistor, Stefan Pickl, Dieter Budde, Germany</p>	
176	Human Reliability Analysis Co-Chairs: Stig O. Johnsen and Torrey Mortenson, Norway/USA	HERRP
13:00-14:30 - AHFE 8	<p>Identification of performance shaping factors affecting subsequent human actions for dependence assessment in human reliability analysis Jooyoung Park, Ronald Boring, USA</p> <p>Is dependency in human reliability analysis a real phenomenon? Refining the dependency concept through research Torrey Mortenson, Ronald Boring, USA</p> <p>Human error of a system based on FMEA Qing Xue, Binjue Wang, Minxia Liu, China</p> <p>Formative vs. summative dependence in human reliability analysis Ronald Boring, Jooyoung Park, Torrey Mortenson, USA</p> <p>Identification of contributing factors to the resilience of emergency response organization in nuclear power plants based on the literature review Sungheon Lee, Jonghyun Kim, Jaehyun Kim, South Korea</p> <p>Professional deformations of bailiffs with different professional efficiency Yana Korneeva, Anna Yurjeva, Anastasiya Korneeva, Russia</p>	
177	Aviation Co-Chairs: Mark Miller and Seth Gatien, USA/Canada	AVI
13:00-14:30 - AHFE 9	<p>Enhanced controller working position for integrating spaceflight into air traffic management Carmo Sonja Kluecker, Germany</p> <p>Qualitative indexes of air traffic controllers attitude toward mistakes hazard Oleksii Reva, Volodimir Kamyshyn, Serhii Borsuk, Valeri Shulgin, Andrii Nevyntsyn, Ukraine</p> <p>Air traffic controller resource management: An approach for reducing cognitive loading and enhancing situation awareness Sam Holley, Mark Miller, USA</p> <p>Technology and human factor considerations in adapting airport landside facilities and operations to autonomous and connected vehicles Seth Gatien, Ata Khan, John Gales, Canada</p> <p>The influence of industrial relations on commercial flight safety Mark Miller, Adam McLaughlin, USA</p> <p>Critical review of wake vortex mitigation concepts in human factors Julio Roa, USA</p>	

178	Cognitive Ergonomics in Virtual and Augmented Reality Applications Co-Chairs: Thies Pfeiffer and Lucas Paletta, Germany/Austria	CCIoT
13:00-14:30 - AHFE 10	<p>Online analysis of eye movements in VR training Carolin Hainke, Thies Pfeiffer, Germany</p> <p>The triangle of trouble: Presence, cybersickness and novelty in VR training Yusra Tehreem, Germany</p> <p>Context-aware worker assistance: Potential of demonstrations by virtual humans in AR Eva Binder, Germany</p> <p>Playful screening of executive functions using augmented reality and gaze based assessment Martin Pszeida, Amir Dini, Lucas Paletta, Claudia Voithofer, Sandra Schuessler, Philipp Hafner, Austria</p>	
179	Safety Perception & Safety Culture Co-Chairs: Barry Kirwan and Barbara Millet, France/USA	SMHF
13:00-14:30 - AHFE 11	<p>Promoting occupational safety, health, and well-being in emergency medical services Susanna Mattila, Ismo Kinnari, Sari Tappura, Mervi Lehto, Finland</p> <p>An AHP method study on the migrant and refugee employees occupational health and safety issues in Turkey Cengiz Akyıldız, Ismail Ekmekci, Turkey</p> <p>Post COVID-19 fatigue management for ATCOs Fabrice Drogoul, Philippe Cabon, Belgium</p> <p>Exploring perception gaps of safety and security in a multidisciplinary mixed methods study Cecilia Xi Wang, Manhai Li, USA</p> <p>Firefighters' perceptions of occupational noise exposure and associated health outcomes Barbara Millet, Natasha Solle, Hillary Snapp, Suhrud Rajguru, Uzma Khan, USA</p>	
180	Innovation and Entrepreneurship Co-Chairs: Evangelos Markopoulos and Yan Luximon, UK/China	CIE
13:00-14:30 - AHFE 12	<p>The evolutionary nature of innovation businesses Matthias Hillner, Singapore</p> <p>3C crisis-concept for SME: Complexity, capacity and competence Dennis Bakir, Florian Engels, Germany</p> <p>Inspiration mining: Exploring design research(ers) strategies Paulo Maldonado, Ana Ricardo, Ana Almeida, Inês Gonçalves, Raquel Gouveia, Sara Condeça, Portugal</p> <p>Democratic organizational culture for SMEs innovation transformation and corporate entrepreneurship Evangelos Markopoulos, Anxhela Bilibashi, Hannu Vanharanta, UK</p> <p>The design of take-away garbage collection system based on service design Zhiwei Zhou, Tao Xi, China</p> <p>Bilateral knowledge-sharing for new product development under the UN sustainable development goals Evangelos Markopoulos, Emma Luisa Gann, UK</p> <p>Beyond corporate social responsibility (CSR): Democratizing CSR towards environmental, social and governance compliance Evangelos Markopoulos, Alexandra Konstanze Staggl, Emma Luisa Gann, Ines Selma Kirane, Hannu Vanharanta, UK</p> <p>Tailor-made smart sustainable city Daria Motala, Poland</p>	

181	Pandemic Prevention and Management Co-Chairs: Joana Lessa and Anne Mumbi, Portugal/Japan	DCPP
13:00-14:30 AHFE 13	<p>COVID-19 emergency: How to manage it in factories with a crossover of competences Emma Bagnato, Davide Mauro, Barbara Alessandrini, Italy</p> <p>Face masks as awareness and engagement platforms Nicholas Caporusso, Leo Christen, Tami Farber, USA</p> <p>A dedicated platform for health-safety reviews Nicholas Caporusso, Joseph Clark, USA</p> <p>Evaluating users' perception of health-safety measures against pandemics Nicholas Caporusso, Tami Farber, Leo Christen, USA</p> <p>Covid-19's new normal as an opportunity to speculative and critical design practice: Problematize and stimulate social debate Joana Lessa, Portugal</p> <p>Willingness to pay for improved water quality. A case study of River Sosiani, Eldoret Kenya Anne Mumbi, Tsunemi Watanabe, Japan</p> <p>The impact of the narrative of electronic Exergames to sports motivation during Covid-19 Zeshi Zhu, Ting Han, Chunrong Liu, China</p>	
182	Textile Design and Engineering Co-Chairs: Gianni Montagna and Tamaki Mitsuno, Portugal/Japan	HFATE
13:00-14:30 - AHFE 14	<p>Effect of leg support wear on body fat reduction: A pilot study on an older woman undertaking aerobic exercise Tamaki Mitsuno, Akio Yoshida, Shinich Watanabe, Japan</p> <p>Textiles in architecture: Floors and wall coverings. Cristina Carvalho, Marlene Couceiro, Gianni Montagna, Carla Morais, Rui Mendonça, Portugal</p> <p>Development of smart fencing garments Daniel Vieira, Bernardo Providência, Fernando Ferreira, Helder Carvalho, Portugal</p> <p>The hemp industry and apparel design - an introduction to challenges and opportunities of sustainability and evolutionary resilience Elsa Lima, Gianni Montagna, Portugal</p> <p>Design of fashionable and functional tri-laminated wool fabrics for leisurewear considering drape & touch Benilde Reis, Rui Miguel, Madalena Pereira, José Lucas, Claudia Sousa, João Carvalho, Rosário Grazina, Fernando Moreira Da Silva, Manuel Santos Silva, Portugal</p> <p>Anthropometric study of feet dimensions during pregnancy for footwear design Rong Liu, China</p> <p>Designing the future of smart fencing garments Bernardo Providência, Daniel Vieira, Helder Carvalho, Portugal</p>	
183	Creating Value in Teams, Organizations, Communities, and Societies II Co-Chairs: Youji Kohda and Naoshi Uchihira, Japan	HSSE
15:00-16:30 - AHFE 1	<p>Practices and issues of corporate ethnographers: A case study of a corporate laboratory of a Japanese telecommunications service provider Tomoko Oto, Ito Yasunobu, Japan</p> <p>"As normal" co-created by visiting nurses and patients: Ethnographic study on visiting nurse station in Japan Kagari Otani, Ito Yasunobu, Japan</p> <p>Reflecting the social values: A case of non-alcoholic lifestyle in Japan Nao Sato, Japan</p> <p>Brand image building of intangible cultural heritage Wulo based on service design thinking Huai Cao, Jihao Xu, Zining Liu, Juanjuan Feng, China</p> <p>Analyzing the relationship between service innovation and customer value co-creation intention: The case of mobile banking Nu Dieu Khue Ngo, Youji Kohda, Van-Nam Huynh, Japan</p> <p>Discovering topics of interest on Steam community using an LDA approach Yang Yu, Ba-Hung Nguyen, Fang-Yu Yu, Van-Nam Huynh, Japan</p> <p>Dialogue tool for value creation in digital transformation: Roadmapping for machine learning applications Naoshi Uchihira, Japan</p>	

184	Ergonomics, Design and Ergonomics Interceptions II Co-Chairs: Francisco Rebelo and Paulo Noriega, Portugal	ED
15:00-16:30 - AHFE 2	<p>The what, why and how of good work design: The perspective of the human factors & ergonomics society of Australia Nektarios Karanikas, Sara Pazell, Andrew Wright, Elise Crawford, Australia</p> <p>Ergonomics and human factors research challenges: The ergoUX lab case study Francisco Rebelo, Paulo Noriega Machado, Elisangela Vilar, Ernesto Filgueiras, Portugal</p> <p>Quantitative evaluation method of color matching design for public self-service equipment based on the color system of the Forbidden City Qiwen Wang, Yan Zhang, Yunfei Chen, China</p> <p>Heuristic evaluation of respirator masks: incorporating NIOSH respirator mask comfort surveying in the product design process Sara Huysmans, Wouter Dirx, Frédéric Geerardyn, Viktor Warndorff, Louise Uyttenbroeck, Sam Smets, Jochen Vleugels, Stijn Verwulgen, Joke Verlinden, Regan Watts, Belgium</p> <p>Digitalized bamboo product design and its social innovation system construction Lisi You, Tie Ji, Yunyan Zhao, Wenguang Li, Ying Li, China</p>	
185	UX in Wearables, Virtual and Augmented Reality Environments II Co-Chairs: Eduardo Palmeira and Xiaoqing Xia, Brazil/China	UUE
15:00-16:30 - AHFE 3	<p>One-handed text entry in mobile-based virtual reality: An ambiguous keyboard technique Eduardo Palmeira, Ígor Moraes, Eduardo Telles, Victor Saint Martin, Victor Gonçalves, Regis Kopper, Edgard Lamounier, Alexandre Cardoso, Brazil</p> <p>Virtual learning environments as training tools: An experience with NEO LMS in physics teaching Juan Carlos Polo, Mireya Zapata, Ecuador</p> <p>The impact of AR technology on the knowledge learning experience of science and technology museums Lin Chen, Linong Dai, China</p> <p>Virtual environments in the mathematics teaching-learning processes in high school Manuel Pillajo, Mireya Zapata, Ecuador</p> <p>User experience of virtual reality interfaces based on cognitive load Xiaoqing Xia, Wenyu Wu, China</p> <p>Audience participation behavior model for museum digital narrative Shengzhao Yu, Min Lee, China/Korea</p> <p>The impact of interactive games on children's experience of aerosol therapy Zhang Jiaqing, Ting Han, Yang Ge, Zeshi Zhu, China</p> <p>Comparison of different types of multi-screen methods and effect of traditional animation on human experience Zhipeng Feng, Hamdan Gani, China</p>	
186	Driver Behavior and Vulnerable Road Users Co-Chairs: Bhaven Naik and Richard Lukenge, USA/China	RR
15:00-16:30 - AHFE 4	<p>Predicting lane changes by identifying sequence patterns of implicit communication cues Ann-Christin Hensch, Matthias Beggiato, Josef Krems, Germany</p> <p>Drivers opinion for driving simulator training and real world driving Katarina Brummerova, Petr Zamecnik, Petr Děcký, Czech Republic</p> <p>An evaluation of driving behavior for "right-way" drivers in wrong-way driving events Jacob Campbell, Bhaven Naik, Justice Appiah, Kakan Dey, USA</p> <p>Assessment of drivers' risk levels using a virtual reality simulator Maria Rosaria De Blasiis, Carmen D'Anna, Silvia Conforto, Italy</p> <p>Walkability mobility: Re-envisioning non-motorized transport (NMT) in developing cities for a sustainable future Richard Lukenge, Kin Wai Michael Siu, China</p> <p>Visual attention of pedestrians in traffic scenes: A crowdsourcing experiment Pavlo Bazilinsky, Dimitra Sodou, Joost De Winter, Netherlands</p> <p>Reaching your destination on time - route choice decisions of different commuter cyclist types Susanne Grüner, Mark Vollrath, Germany</p> <p>Evaluate the effect of age and driving experience on driving performance with automated vehicles Tianjian Li, Ruobing Zhao, Yi Liu, Yueqing Li, Guanlong Li, USA</p>	

187	Pedagogy and Competency Management in Education Co-Chairs: Nataliia Levchenko and Kazuhiro Fujimura, Ukraine/Japan	TELS
15:00-16:30 - AHFE 5	<p>Innovative forms of social non-formal youth education Nataliia Levchenko, Yuliya Klymenko, Olena Baldyniuk, Svitlana Roienko, Natalia Koliada, Ukraine</p> <p>An analysis of the relationship between goal change and skill improvement in the consumption of education services: A case study of the management game Kazuhiro Fujimura, Japan</p> <p>An examination of the effect of common language on the creation of a sense of unity between organization members in management game Fumiyo Ozaki, Kazuhiro Fujimura, Japan</p> <p>Topic mapping to support users in literature search Ethan Trehwitt, Elizabeth Whitaker, Robert Wray, Dawn Riddle, USA</p> <p>Supporting users in review and analysis of academic literature Robert E. Wray, Elizabeth T. Whitaker, Dawn Riddle, Tyree Cowell, Timothy Siggins, Ethan B. Trehwitt, USA</p> <p>Augmented reality teaching resources and its implementation in the teaching-learning process Omar Córdor-Herrera, Mónica Acosta-Rodas, Carlos Ramos-Galarza, Ecuador</p>	
188	Robotic Systems and Users for Social Interactions Co-Chairs: Samantha Berg and José Varela-Aldás, USA/Ecuador	HFRDUS
15:00-16:30 - AHFE 6	<p>Robot design needs users: A co-design approach to HRI Annapaola Vacanti, Francesco Burlando, Xavier Ferrari Tumay, Italy</p> <p>Social robotic platform to strengthen literacy skills Mireya Zapata, Jorge Alvarez, Jacqueline Gordón, Andrés Caicedo, Ecuador</p> <p>Prototype system for control the ScorBot ER-4U robotic arm using free tools Elizabeth Chávez-Chica, Jorge Buele, Franklin Salazar, José Varela-Aldás, Ecuador</p> <p>Exploring resilience and cohesion in human autonomy teams: models and measurement Samantha Berg, Catherine Neubauer, Christa Robison, Christopher Kroninger, Kristin Schaefer, Andrea Krausman, USA</p> <p>Multi-modal emotion recognition for user adaptation in social robots Michael Schiffmann, Anja Richert, Aniella Thoma, Germany</p> <p>Structural bionic method of climbing robot based on video key frame extraction Xinxiong Liu, Yue Sun, China</p>	
189	Design for Inclusion in Healthcare and Therapies Co-Chairs: Avril Accolla and Luis Serpa-Andrade, China/Ecuador	DI
15:00-16:30 - AHFE 7	<p>Cognitive behavioral therapy as a learning tool Roberto García-Vélez, Luis Serpa-Andrade, Graciela Serpa-Andrade, Irene Serpa-Andrade, Ecuador</p> <p>Analysis of the use of digital tools as support in fine motor stimulation therapy Luis Serpa-Andrade, Sandro Gonzalez-Gonzalez, Vladimir Robles-Bykbaev, Adriana Leon-Pesantez, Paul Mata-Quevedo, Ecuador</p> <p>Design of home medical devices for the elderly using familiarity design and analytical hierarchy process Xue Ting Song, Jo-Yu Kuo, Chun-Hsien Chen, Singapore</p> <p>FonAPP: An interactive application for the therapeutic intervention of children with dyslalia from embedded devices and robotic assistants Óscar Tenesaca-Tenezaca, Adriana Leon-Pesantez, Verónica Velásquez-Angamarca, Vladimir Robles-bykbaev, Ecuador</p> <p>A strategic design analysis to facilitate the transition for all to the new patient-centered healthcare model in China Avril Accolla, Federico De Luca, China/Italy</p> <p>Accessibility to ambulatory and emergency services for deaf people in the context of a university hospital: A macroergonomic approach Monica Lopez, Lizandra Lupi Vergara, Brazil</p>	

190	Human Sensing and Data Essential for HF Simulation Modeling Co-Chairs: Debra Patton, Ye (Sarah) Sun and Lan Zhang, USA	HFSIM
15:00-16:30 - AHFE 8	<p>Deep learning based wireless sensing via connected digital and physical experiments Lan Zhang, Xianhao Chen, Yawei Pang, Xiaoyong Yuan, USA/China</p> <p>Effects of non-driving task related workload and situational awareness in autonomous vehicles Shruti Amre, Ye Sun, USA</p> <p>Perceptive patient: Important factors for practical emotion sensing in conversational human-computer interactions and simulations Thomas Brett Talbot, Matthew Hackett, William Pike, USA</p> <p>Comfortable SCBA weights from biomechanical models for firefighting tasks Susan Xu, Michael Hu, Jeffrey Powell, Ziqing Zhuang, USA</p> <p>Optimizing human performance data for enhanced modeling and analytics Seth Elkin-Frankston, Erika Hussey, USA</p> <p>Applying numerical simulation to predict effect of brace wear for scoliosis Queenie Fok, Joanne Yip, China</p> <p>A hybrid simulation model for an efficient and flexible shop floor system Kashif Zia, Umar Farooq, Alois Ferscha, Oman</p> <p>The future of data standards and storage: Harnessing data generation into a standardized repository Jennifer Neugebauer Sperlein, Samantha Chambers, Jerod Bernicky, Scott Pridgeon, USA</p>	
191	Human Factors and Wearable Technologies II Co-Chairs: Hongmei Jin and Xiaoli Fan, China	HFWT
15:00-16:30 - AHFE 9	<p>Children's garments based near field positioning safety oriented to intelligence Wenjin Hong, China</p> <p>Innovation design of indigo print in soft smart knitted garments Hongmei Jin, China</p> <p>Evaluation of VR/AR visual comfort based on color perception Xiaoli Fan, Yuwei Jiang, Kun Wang, Liang Xie, Mengjing Cai, Ningci Wang, China</p> <p>Plantar pressure distributions of pregnant women during gestation with body weight gain Rong Liu, China</p> <p>Pilot state monitoring wearable systems in real environment: Pilot's usability and acceptance feedback to enhance risk management Daniele Ruscio, Thomas Feuerle, Jesper Sandgaard, Lisanne Azzam-Riecher, Michael Langer, Keyvan Bayram, Italy</p> <p>The importance of product language: An exploratory study of smartwatches for remote healthcare Bahar Khayamian Esfahani, Daniel Ganji, UK</p> <p>Training capabilities assessment in support of enhanced military training: Comparing head-mounted displays Maartje Hidalgo, Scott Harris, Wiley Boland, Tristin Halfman, Joan Johnston, Travis Hillyer, Debbie Patton, Linda Elliott, USA</p> <p>The perception and acceptance of wearable fitness devices among people, and designing interventions for prolonged use Swati Sarkar, Debkumar Chakrabarti, India</p>	

192	Advanced Technologies and Manufacturing Processes for 3D Printing Co-Chairs: Slim Krückemeier and Robin Vandormael, Germany/Belgium	AMMSP
15:00-16:30 - AHFE 10	<p>Determining the optimal orientation of AM-parts based on native 3D CAD data Slim Krückemeier, Georg Staudter, Reiner Anderl, Germany</p> <p>Node-based shape optimization and mechanical test validation of complex metal components and support structures, manufactured by laser powder bed fusion Lakshmi Narasimha Aditya Ghantasala, Johannes Diller, Armin Geiser, Dorina Siebert, David Wenzler, Christina Radlbeck, Roland Wüchner, Martin Mensinger, Kai-Uwe Bletzinger, Germany</p> <p>A semi-skilled fabrication approach of shape-changing interfaces through fused filament fabrication Robin Vandormael, Kamie Leten, Marieke Van Camp, Jouke Verlinden, Regan Watts, Belgium</p> <p>Printing small: Measuring the resolution limits of CLIP technology Addis Tessema, Justin Mecham, Sue Mecham, Kimon Iliadis, Robert Pinschmidt, Joseph Desimone, USA</p> <p>Development of an elastic inflatable actuator for active seating systems Peter Gust, Sebastian Kampa, Marco Kuhlmeier, Christian Sauder, Alina Sersch, Germany</p>	
193	Human Factors and Assistive Technology II Co-Chairs: Andrew Miller and Yuan Yin, USA/UK	HFAT
15:00-16:30 - AHFE 11	<p>Developing and creating an operational controller for automation within mining operations Andrew Miller, USA</p> <p>Intervention platform for children with intellectual disability: Chatbots and IBM Watson services in the Ecuadorian context Saúl Arias-Durán, Jorge Sanisaca-Muñoz, Sofia Bravo-Buri, Vladimir Robles-Bykbaev, Ecuador</p> <p>Multimodal technology: Improving accessibility on the design of home appliances Dominique Adam, Maria lucia Okimoto, Brazil</p> <p>Low-cost myoelectrical hand orthosis to regain autonomy in daily tasks after a stroke: A neurorehabilitation case study Omar Alvarado, Eduardo Guamán, Hugo Torres, Juan Alvarez, Alexandra Bermeo, Ecuador</p> <p>"IKnow": Helping those with hearing impairment communicate fluently Yuan Yin, Yurong Yu, UK</p> <p>Assistive artificial intelligence - Studying an image analysis task Mark Chattington, Ciara Beattie, Angus Johnson, UK</p>	
194	Advanced Production Management and Process Control IV Co-Chairs: Jhonatan Diaz and Saac Huacho, Peru	APMPC
15:00-16:30 - AHFE 12	<p>Method of implementation of air chambers using recycled rubber based on positioning for the optimization of fragmentation in open-pit blasting Carlos Raymundo, Jhonatan Diaz, Cristhian Chapoñan, Vidal Aramburu, Yanet Vasquez, Peru</p> <p>Shotcrete elaboration method using geopolymer cement product of the alkaline activation of tailings for the support of underground work in polymetallic mines of Peru Jhoseph La Fuente, Carlos Raymundo, Saac Huacho, Humberto Pehovaz, Peru</p> <p>An empirical review and implication of globalization on the South African automotive industry John M. Ikome, Timothy Laseinde, M. G. Kanakana Katumba, South Africa</p> <p>An assessment of logistics and transport subdivision as an element of globalization Ayodeji Dennis Adeitan, Clinton Aigbavboa, South Africa</p> <p>Contextualizing foreign investments in the Nigerian construction industry Matthew Ikuabe, Clinton Aigbavboa, Ayodeji Oke, Douglas Aghimien, Wellington Didibhuku Thwala, South Africa</p>	

195	Innovation and Creativity in Business Chair: Tero Reunanen, Finland	CIE
15:00-16:30 - AHFE 13	<p>BossUP!: Assessing potential hiring candidates during the interview process via an innovation diagnostics card game Kiahsheng Teo, Jeffrey Koh, Keith Wong, Karin Aue, John Chan, Bassam Jabry, Singapore</p> <p>One time innovativeness: Relations and interrelations between time management and innovativeness. Tero Reunanen, Matti Kuikka, Finland</p> <p>Innovation and creativity in the independent market of comic books in Brazil Christianne Soares Falcao, Rodrigo Sérgio Ferreira de Paiva, Fernando Henrique Athayde Cunha, Brazil</p> <p>A business transformation model for legacy carriers as a response to the rise of low-cost carriers Evangelos Markopoulos, Fabian Jan Friedrich Hesse, UK</p> <p>Managing interdisciplinary human intellectual capital for project and organizational development Evangelos Markopoulos, Philipp Robl, Georgios Markopoulos, Emma Luisa Gann, UK</p> <p>Sustainable leadership wisdom cube: Sustainable leadership style evaluation application to the wisdom cube scientific knowledge space Evangelos Markopoulos, Lisa Marie Carolin Winter, Hannu Vanharanta, UK</p> <p>Digital sales in B2B: Status and application Heiko Fischer, Sven Seidenstricker, Thomas Berger, Timo Holopainen, Germany</p>	
196	Human Factors for Textile and Society Co-Chairs: Gianni Montagna and Carla Morais, Portugal	HFATE
15:00-16:30 - AHFE 14	<p>The knitting of an (im)material presence Gianni Montagna, Maria João Delgado, Carla Morais, Portugal</p> <p>Weaving as traditional and innovative human-centred activity Eleonora Trivellin, Italy</p> <p>Materials matters in textile and fashion design education Sonia Seixas, Gianni Montagna, Maria João Felix, Portugal</p> <p>New pathways for design teaching Luís Santos, Gianni Montagna, Maria João Pereira Neto, Portugal</p> <p>An ideal triangulation in fashion and textile: Industry, academia and users Maria Antonietta Sbordone, Barbara Pizzicato, Gianni Montagna, Sonia Seixas, Italy</p> <p>The boro style and the Sashiko technique Isabel Bieger, Portugal</p> <p>Adaptive textile mold system for double curvature A. Basto Diogo, António Morais, Portugal</p>	
197	Information and Graphic Design Co-Chairs: Ana Moreira da Silva and Yuhang Tang, Portugal/China	ED
17:00-18:30 - AHFE 1	<p>The display aesthetics of different background images Bo Yu, Xinyue Wang, Chengqi Xue, China</p> <p>Aesthetic evaluation of text superposition based on balance and symmetry Yuhang Tang, Hui Zhang, Zhisheng Zhang, Zhijie Xia, China</p> <p>Hand drawing in the XXI Century process of design Ana Moreira Da Silva, Portugal</p> <p>Graphic design and ethnography: The use of folk art to create a visual identity Elisabete Rolo, Portugal</p> <p>Slipform paver design based on product identity Lixia Wang, Yunfei Chen, China</p>	

198	Human Factors and Behavior in Organizational Context and Work Environments Co-Chairs: Christine Ipsen, Yael Brender-Ilan, Kevin Clark, Denmark/ Israel/USA	HFML
17:00-18:30 - AHFE 2	<p>Using ACDC model to characterize temporal leadership dynamics in Dyad cooperation Delphine Graeff, Jean-Marc André, Théodore Letouzé, Véronique Lespinet-Najib, France</p> <p>Influencing parameters for the development of adaptive HMI & requirements for the categorization of control functions generated via expert knowledge Andreas Kaufmann, Thomas Maier, Germany</p> <p>Social context of attitudes toward middle-aged employees Yael Brender-Ilan, Galy Binyamin, Israel</p> <p>Leveraging collaborative crowdsourcing to empower workers to improve their organizations Julio Mateo, Michael McCloskey, Aniko Grandjean, Scott Cone, USA</p> <p>Designing sustainable organizations – a framework with a joint focus on wellbeing and organizational performance in workplaces Christine Ipsen, Signe Tønnesen Bergmann, Denmark</p> <p>The influence of modern information technology on college english teaching under the background of educational information Jian Liu, China</p> <p>Agile CMII: A methodology for assessing social project impacts within agile contexts Farley Fernandes, Rui Belfort, Fabio Campos, Brazil</p>	
199	Safety and Prevention Management Co-Chairs: Toni Waefler and Frederic Detaille, Switzerland/Belgium	SMHF
17:00-18:30 - AHFE 3	<p>Management and control of occupational risks in the manufacture of fuel and oil filter caps Blanca Topón, Pablo Ron, Miguel Delgado, Ecuador</p> <p>Compliance you said? Why may safety critical operators deviate from procedures? A military aviation perspective comparing operators from different operational fields Frederic Detaille, Rebecca Grant, Emilie Dessy, Martine Van Puyvelde, Nathalie Pattyn, Belgium</p> <p>The Safety Measure Effectiveness Assessment Tool (EAT) Toni Waefler, Rahel Gugerli, Switzerland</p> <p>Prevention through design: Clients' pre-construction health and safety arrangements Ebenezer Adaku, Nii A. Ankrah, Issaka E. Indekugri, UK</p> <p>Understanding systemic interactions and feedbacks in a one-health Joana Santos, Carla Ramos, Manuela Vaz Velho, Marta Vasconcelos Pinto, Portugal</p> <p>Health and working conditions in the prevention of the risk of professional dropping-out for seniors: results of a statistical survey Sandrine Guyot, France</p>	
200	Communication of Design IV Co-Chairs: Xue Hu and Shrikant Parikh, Thailand/India	HFCD
17:00-18:30 - AHFE 4	<p>Cultural communication design strategies of primary school environment from the perspective of cultural cognition Xia Jingyi, Kong Fan Qiang, China</p> <p>The hidden art of transmedia storytelling across cinema and video game David Yip, China</p> <p>The dark art of transmedia storytelling David Yip, China</p> <p>Analysis of the impact on Mexican consumers of the new precautionary legends in processed foods with excess nutrients Mariel Garcia-Hernandez, Fabiola Cortes Chavez, Marco Antonio Marin Alvarez, Alberto Rossa-Sierra, Elvia Luz González-Muñoz, Brenda Denisse Rivero Orozco, Mexico</p> <p>The adaptation of a design research-action for social innovation within the criminal justice system in times of pandemic Caio Miolo de Oliveira, Rita Almendra, Ana Rita Lourenço, Tiago Leitão, Portugal</p> <p>Post-1995 generation color preference based on social software Ren Long, Zheqian Peng, China</p>	

201	Road Safety II Co-Chairs: Zheng Wang and Noé Monsaingeon, Japan/France	RR
17:00-18:30 - AHFE 5	<p>Surface electromyography-controlled vehicle braking assistance system using deep learning Gia Quoc Bao Tran, Zheng Wang, Yusuke Koge, Kimihiko Nakano, Japan</p> <p>The highway to hell? - Associations and requirements for commuting from the user's point of view Ralf Philippen, Hannah Biermann, Martina Ziefle, Germany</p> <p>Indicating the limits of partially automated vehicles with drivers' peripheral vision: An online study Noé Monsaingeon, Yanna Carli, Loïc Caroux, Sabine Langlois, Céline Lemerrier, France</p> <p>Statistical analysis of adult cyclists' sociodemographic factors and helmet-wearing behavior Karl Auer, Poojitha Vurtur Badarinath, Fatemeh Davoudi Kakhki, Maria Chierichetti, USA</p> <p>Enhancing child, young and older adult pedestrians' crossing decision presenting vehicle's state information through an external vehicle display Aisha Sahai, Elodie Labeye, Loïc Caroux, Céline Lemerrier, France</p> <p>Responsibility sensitive safety analysis of truck following in US highway Abhijit Sarkar, Andrew Krum, Richard Hanowski, Jeffrey Hickman, USA</p>	
202	New Research and Design Applications for 3D Printing Co-Chairs: Emilio Rossi and Massimo Di Nicolantonio, UK/Italy	AMMSP
17:00-18:30 - AHFE 6	<p>Reusable kit for 3D printable sustainable cutlery Massimo Di Nicolantonio, Emilio Rossi, Antonello Vespoli, Giovanni Annese, Italy/UK</p> <p>Systematic review of differences between conventional orthoses and 3D-printed orthoses Ana Cláudia Tavares Rodrigues, Letícia Vasconcelos Morais Garcez, Fausto Orsi Medola, Luciana Ramos Baleotti, Frode Eika Sandnes, Atiyeh Vaezipour, Brazil</p> <p>Product design and development by additive manufacturing for automotive systems Álvaro M. Sampaio, António J. Pontes, Portugal</p> <p>3D printing and social inclusion: A design research framework Emilio Rossi, Massimo Di Nicolantonio, Alessio D'Onofrio, UK/Italy</p> <p>Design of custom breast prosthesis for additive manufacturing production Carlos Helguero, Jorge Amaya, Fausto Maldonado, Jocelyne Acosta, Maria Bravo, Junior Garzón, Ecuador</p>	
203	Teaching/Learning Interaction Chair: Terence Andre, USA	TELS
17:00-18:30 - AHFE 7	<p>MOOC courses as a tool for the development of digital competencies of teachers Petr Svoboda, Lenka Mynaříková, Czech Republic</p> <p>Online mentoring platform for developing leaders of character Terence Andre, David Huston, Anne-Marie Ireland, Andrew Stewart, Rod Ford, Christy Carr, Hannah Staller, USA</p> <p>Architectural design for the implementation of learning analytics: Case study at Salesian Polytechnic University Santiago Teodoro Castro Arias, Miguel Angel Quiroz Martinez, Maikel Leyva, Angela Cecilia Flores Ortiz, Ecuador</p> <p>Activity design of nature experience teaching Ronglin Zhou, Ding-Bang Luh, China</p> <p>Teaching of design: Emphasis on research of media characteristics Lei Ming, Shengzhao Yu, China</p> <p>Risks to student achievement in higher education Bettina Mrusek, Angie Atwell, John Keith Wilson, Jim Solti, USA</p>	

204	Aviation and Space Co-Chairs: Simon Cookson and Ivana Moerland-Masic Japan/Germany	AVI
17:00-18:30 - AHFE 8	<p>Post-pandemic flight: Establishing the mission of the aircraft cabin of the future from the passenger's point of view Ivana Moerland-Masic, Fabian Reimer, Thomas-Mathias Bock, Frank Meller, Germany</p> <p>A conceptional design of a multifunctional and medical separation area within future aircraft cabin concepts Fabian Reimer, Ivana Moerland-Masic, Thomas-Mathias Bock, Werner Granzeier, Frank Meller, Germany</p> <p>Communication on the flight deck: what lessons can we learn from past accidents? Simon Cookson, Japan</p> <p>Effects and challenges of operational lighting illuminance in spacecraft on human visual acuity Shizhu Lu, Ao Jiang, Irene Schlacht, Bernard Foing, Stephen Westland, Caroline Hemingray, Xiang Yao, Yuqing Guo, China</p> <p>Relationship among fatigue, psychomotor vigilance and physiological index in a flight simulation context Zhuhan Zheng, Jinglu Sun, Mengxi Zhang, Lei Wang, China</p> <p>The effect on subjective alertness and fatigue of three colour temperatures in the spacecraft crew cabin Shizhu Lu, Ao Jiang, Irene Schlacht, Ayako Ono, Bernard Foing, Xiang Yao, Stephen Westland, Yuqing Guo, China</p> <p>A systematic design method of civil aircraft flight crew alerting system Li Qian, Hongtao Liu, Lingchen Zhou, China</p>	
205	Lean and Agility and Enterprise Co-Chairs: Stefan Trzcielinski and Brian Tarazona, Poland/Peru	MFG
17:00-18:30 - AHFE 9	<p>Productivity improvement of a footwear manufacturing company through lean tools Luis Cardenas, Jose Castillo, Brian Tarazona, Claudia León-Chavarri, Peru</p> <p>Warehouse management model under the lean warehousing philosophy to reduce product returns in the marketer Wilder Namay, Maria Isidro, Angel Susaya, Gino Viacava, Peru</p> <p>Process improvement model based on lean manufacturing and plant distribution to reduce production times Wilder Namay, Josue Arias, Ruth Condori, Victor Aparicio, Alejandro Barbachan, Peru</p> <p>A lean manufacturing and RCM-Based production process improvement model for increasing the production capacities of carbonated beverage bottling companies Luis Cardenas, Esthefani Capcha, William Vila, Gino Viacava, Juan Quiroz, Peru</p> <p>Lean manufacturing model for production management based on SAP-LAP to reduce delays in the production line in Mypes of the metalworking sector Carlos Raymundo, Adeir Leon, Leslie Zamora, Ernesto Altamirano, Peru</p> <p>The impact of changes perceived in the environment on the agility of the enterprise Stefan Trzcielinski, Poland</p> <p>The concept of Management by Objectives and Kaizen implementation on the basis of production intelligent facility Joanna Kałkowska, Hanna Wlodarkiewicz Klimek, Poland</p>	

206	Modeling and Simulation for Human-Human and Human-Agent Teaming Co-Chairs: Shan Lakhmani and Ryan Wohleber, USA	HFSIM
17:00-18:30 - AHFE 10	<p>Examining vigilance decrement in a simulated unmanned aircraft system (UAS) monitoring task Maria Chaparro, Meredith Carroll, USA</p> <p>Human-autonomy teaming with learning capable agents: Performance and workload outcomes Julia Wright, Justin Lee, Jacquelyn Schreck, USA</p> <p>The Wizard of Oz paradigm in a command-and-control task environment: Driving the development of a synthetic teammate Mary Freiman, Mustafa Demir, Christopher Myers, Nancy Cooke, Michelle Caisse, Tim Halverson, USA</p> <p>Quantifying survivability via measurement of bodily exposure during simulated combat engagements Stephanie Brown, Clifford Hancock, K. Blake Mitchell, USA</p> <p>A user interface prototyping tool for exploring supervisory control of automation during event-paced scenarios Lisa Guo, David Kellmeyer, Glenn Osga, USA</p> <p>Establishing expectations for cohesion in multi-human human-autonomy teams Shan Lakhmani, USA</p>	
207	Emotional Design II Co-Chairs: Keiichi Muramatsu and Shuichi Fukuda, Japan	APD
17:00-18:30 - AHFE 11	<p>Gamification of movement exercises in rehabilitation and prevention: A framework for smart training in AI-based exergames Steffen Willwacher, Oliver Korn, Germany</p> <p>Ergonomics and lifestyle: The future roles of television sets in the Chinese family Pengyu Du, Kin Wai Michael Siu, Yi-Teng Shih, China</p> <p>Design method of subway station wall decoration based on emotional design theory: Take the Exhibition Center Station of Suzhou Line 7 as an example Lifeng Wu, Xuechun Cui, China</p> <p>Do we perceive people as more attractive during a pandemic? Muriel De Boeck, Kristof Vaes, Belgium</p> <p>Analysis support for communication information in information equipment by clustering of multivariate time series data and word embedding Ryusei Homma, Keiichi Watanuki, Hayata Sato, Kenji Fujinami, Japan</p> <p>Cultural creative product design based on regional culture: Taking Tangshan Shadow Puppetry as an example Tian Ge, China</p>	
208	Ergonomics in Urban Design III Co-Chairs: Wojciech Bonenberg and Mo Zhou, Poland	SUPI
17:00-18:30 - AHFE 12	<p>Public space as a metropolitan network. Making the bridge between policy and design in Lisbon metropolis. João Rafael Santos, Maria Matos Silva, Portugal</p> <p>Post-pandemic public space: The challenges for the promotion of well-being and public health in the post-Covid city Cristiana Cellucci, Michele Di Sivo, Italy</p> <p>Revitalizing traditional villages through adaptive design strategies: Selected case studies of Chinese and French traditional villages Mo Zhou, Wojciech Bonenberg, Xia Wei, Ling Qi, Poland</p> <p>Management of stormwater within the consolidated public city. The case of Chelas in Lisbon, Portugal Maria Matos Silva, Beatrice Mazza, Carolina Esteves, Selma Beatriz Pena, Portugal</p> <p>Intermittent practices in the Contemporary City. The case of Lisbon Alessia Allegri, Rita Ochoa, Portugal</p> <p>Guidelines for the master plan of landscape rehabilitation in the heritage center of the Jipijapa canton Gina Samaniego Alcívar, Laura de Jesús Calero Proaño, Ecuador</p>	

209	Human Factors in Cybersecurity II Co-Chairs: Wayne Patterson and Aryn Pyke, USA	CYBER
17:00-18:30 - AHFE 13	<p>Analysis of risks to data privacy for family units in many countries Wayne Patterson, USA</p> <p>Exploring understanding and usage of two-factor authentication account recovery Jeremiah Still, Lauren Tiller, USA</p> <p>Strategies of naïve software reverse engineering: A qualitative analysis Salsabil Hamadache, Markus Krause, Malte Elson, Germany</p> <p>How safely do we behave online? An explanatory study into the cybersecurity behaviors of Dutch citizens Rick van der Kleij, Rutger Leukfeldt, Steve Van de Weijer, Susanne Van't Hoff, Netherlands</p> <p>Evaluating the BOLT application: Supporting human observation, metrics, and cognitive work analysis Aryn Pyke, Ben Barone, Blaine Hoffman, Michael Kozak, Norbou Buchler, USA</p>	
210	Human Factors in Energy: Oil, Gas, Nuclear and Electric Power Industries Co-Chairs: Claas Digmayer and Casey Kovesdi, Germany/USA	ENERGY
17:00-18:30 - AHFE 14	<p>What niche design can learn from acceptance mining Claas Digmayer, Eva-Maria Jakobs, Germany</p> <p>Examining the use of the technology acceptance model for adoption of advanced digital technologies in nuclear power plants Casey Kovesdi, USA</p> <p>Autonomous emergency operation of nuclear power plant using deep reinforcement learning Deail Lee, Jonghyun Kim, South Korea</p> <p>When Dullscreen is too dull Ronald Boring, USA</p> <p>Application of nano materials for photovoltaic solar cell design, based on industry 4.0 integration scheme Rosine Mouchou, Timothy Laseinde, Tien-Chien Jen, Kingsley Ukoba, South Africa</p>	

Interactive Poster Demonstrations

Posters will be displayed Tuesday, July 27, Wednesday, July 28, and Thursday, July 29, 2021, during the designated timeslots listed below.

POSTER/DEMONSTRATION SESSIONS, TUESDAY, JULY 27, 2021

Time: 10:00-16:30

Virtual Room: AHFE Posters

- A1. Safety culture and risk perception in a furniture manufacturing company: A case study
Ana Colim, André Cardoso, Sílvia Martins, Jorge Mano, Paula Carneiro, Pedro Arezes, Portugal
- A2. Examining UX perspectives of medication non-adherence when living with chronic diseases: Themes & opportunities based on a 9-month program
Alisan Atvur, Denmark
- A3. Establishing a relationship between VOMS performance and changes in EEG signatures for a rapid assessment and diagnosis of concussions
Tristan Bennett, Jeff Feng, USA
- A4. Innovation in value chain in the medical tourism industry in Tijuana, Baja California
Alma Laura Bonilla-Hernández, Rodolfo Martinez Gutierrez, Mexico
- A5. JOSY: Development of a digital companion for elderly people – a new way to experience technology
Franziska Braun, Sebastian Stegmüller, Lukas Block, Germany
- A6. Identifying soft biometric features from a combination of keystroke and mouse dynamics
Sally Earl, James Campbell, Oliver Buckley, UK
- A7. AI evolution trend analysis based on using semantic network analysis
Hyeon Ju Cha, South Korea
- A8. Assessment of muscle fatigue using on-board inertial sensors
Béatrice Moyen-Sylvestre, Fabien Dal Maso, Jason Bouffard, Etienne Goubault de Brugiere, Canada
- A9. Understanding fashion brand awareness using eye-tracking: The mix-and-match approach
Pilar Contero-López, Carmen Torrecilla, Carmen Escribá-Pérez, Manuel Contero, Spain
- A10. Requirements for a mHealth-app for hearing aids
Verena Wagner-Hartl, Sophia Maria Saat, Maximilian Luther, Amelie Sophie Bauer, Germany
- A11. Evaluation of achievement effect on visual tools for online teaching-learning program in China during the Covid-19 pandemic
Wenyu Wu, Chengqi Xue, China
- A12. Improving the usability of visual displays for a COVID-19 household screener
Aubree Honcoop, Ellen Kerns, Russell McCulloh, Bethany Lowndes, Martina A. Clarke, USA
- A13. Implementing participatory ergonomics among indigenous women of Ecuador to preserve ancestral customs and knowledge
Alejandra Lascano, Thalía San Antonio, Fernando Urrutia, María Augusta Latta, Ecuador
- A14. Evaluating user experience for Sandbox game's development environment in higher education
Tengfei Xian, China

Interactive Poster Demonstrations

POSTER/DEMONSTRATION SESSIONS, TUESDAY, JULY 27, 2021

Time: 10:00-16:30

Virtual Room: AHFE Posters

- B1. A qualitative study of caregiving in support of aging in place to inform analyses of caregivers' work and design of robot caregivers
Keith Jones, Dennis Harris, Barbara Cherry, Mohan Sridharan, USA
- B2. Manual wheelchair tire pressure and ride comfort when pushed by a caregiver
Shoichiro Fujisawa, Katsuya Sato, Shin-ichi Ito, Junji Kawata, Jiro Morimoto, Yoshio Kaji, Mineo Higuchi, Masayuki Booka, Japan
- B3. Analysis of context-specific behavior patterns in cross-industry innovations using the example of media use in automated vehicles
Mira Kern, Sebastian Stegmüller, Germany
- B4. Improving physical activity with a data-analyzing smart insole that assesses root causes of chronic pain and physical inactivity
Meher Khan, Zain Hussain, Faasel Khan, USA
- B5. Civil aircraft cockpit human factor assessment based on system level
Qun Kuang, Yao Zhu, Shasha Lu, Wenjun Dong, China
- B6. People's perception of artificial intelligence objects-focus on people's emotion to robot cleaners' design
Jungjin Lee, Dokshin Lim, South Korea
- B7. Study of anxiety in car transportation to understand its determinants and to infuse human factors solutions in order to reduce them
Céline Lemerrier, Rousseau Amélie, Sejourne Natalène, Delmas Maxime, Loïc Caroux, France
- B8. Virtual simulation experiment of curtain wall design based on behavior logic of construction
Manhai Li, Chenguang Ma, China
- B9. Interface zooming and planning task experiment under multiple interactive perspectives
Qiuyu Liu, Bei Zhang, Ning Li, Chao Peng, China
- B10. Haptic device for manual assembly simulation in VR
Kathrin Konkol, Andreas Geiger, Rainer Stark, Germany
- B11. Medical work during the pandemic, risk perception and fear
Laura Lima, Gabriela Netto, Brazil
- B12. Serendipity encountered in recommender interfaces
Insil Huh, Sangwon Lee, South Korea
- B13. Usability of reprocessing instructions for single use medical devices
Mark Livingstone, Stephen Gerrits, Kennedy Kashmiry, Manuel Gutierrez, Zach Hargett, David Neyens, Melinda Harman, USA
- B14. Use of non-contact infrared thermometers for COVID-19 screening likely to yield false negative results due to improper use
Sarthak Kumar, Maximilian Wagner, William Pozehl, James Bagian, USA

Interactive Poster Demonstrations

POSTER/DEMONSTRATION SESSIONS, WEDNESDAY, JULY 28

Time: 10:00-16:30

Virtual Room: AHFE Posters

- C1. Natural color system quantization design of economy class seat driven by perceptual imagery
Jianghua Xu, Shuangle Ding, China
- C2. Computer Science Engineer profile and competencies for Generations X, Y and Z
Carlos Hurtado Sanchez, Rodolfo Martinez Gutierrez, Carmen Esther Carey Raygoza, Artemio Lara Chavez, Mexico
- C3. Exploring the factors influencing driver inattention using retrospective data
António Lobo, Sara Ferreira, Antonio Couto, Portugal
- C4. Spacial needs for non-driving related tasks
Martin Fleischer, Germany
- C5. User perceptions of phishing consequence severity & likelihood, and implications for warning message design
Eleanor Foster, Keith Jones, Miriam Armstrong, Akbar Siami-Namin, USA
- C6. Differences in the perception of the quality of work life according to gender for health care workers
Raquel Gonzalez-Baltazar, Silvia G. Leon-Cortes, Monica I. Contreras-Estrada, Liliana Hidalgo-Gonzalez, Brenda J. Hidalgo-Gonzalez, Mexico
- C7. Effect of color weight balance on visual aesthetics based on gray-scale algorithm
Tangling He, Jianrun Zhang, China
- C8. Inserting llugs into electric sockets in visually disturbed situations
Seung-Kweon Hong, South Korea
- C9. Analysis of generic competences needed onboard a ship
Ana Gundic, Dino Zupanovic, Luka Grbic, Dalibor Ivanisevic, Croatia
- C10. The influence of psychosocial risk factors on the appearance of accumulative trauma disorders in working women in the administrative health sector
Luisa Fernanda Becerra Ostos, Luis Gabriel Gutierrez, Alejandra Valenzuela Cases, Colombia
- C11. Leveraging human-centered design to improve cyber situation awareness and cyber hygiene
Janine Mator, Jeremiah Still, USA
- C12. Musical experience and neurocognitive timing: A pilot study
Gary Boykin, Petra Alfred, Valerie Rice, USA
- C13. Qualitative changes of communication activities in nursing organization
Yuki Mizuno, Motoki Mizuno, Yasuyuki Yamada, Yasuyuki Hochi, Emiko Togashi, Takumi Iwaasa, Yumi Arai, Hidenori Hayashi, Hideko Aida, Aya Okada, Japan
- C14. Awareness of leadership and teamwork in nursing organization
Motoki Mizuno, Yasuyuki Hochi, Yasuyuki Yamada, Takumi Iwaasa, Emiko Togashi, Yumi Arai, Aya Okada, Hideko Aida, Hidenori Hayashi, Yuki Mizuno, Japan

Interactive Poster Demonstrations

POSTER/DEMONSTRATION SESSIONS, WEDNESDAY, JULY 28

Time: 10:00-16:30

Virtual Room: AHFE Posters

- D1. Postgraduate Administration Education: Profiles and skills of contribution to the knowledge society
Rodolfo Martinez Gutierrez, Eduardo Ahumada-Tello, Ramon Galvan Sanchez, Carlos Hurtado Sanchez, Beatriz Chavez Ceja, Mexico
- D2. Hospital Escape VR: A virtual reality simulation for hospital fire evacuation training
Victor Saint Martin, Eduardo Palmeira, Victor Gonçalves, Alexandre Siqueira, Edgard Lamounier, Alexandre Cardoso, Brazil
- D3. Assessment of relapse and poly-drug use among heroin addicts patients treated with the methadone
Wafae Idrissi Samlali, Tarik Ghailan, Khadija Karjoui, Ahmed Omar Touhami Ahami, Morocco
- D4. Methods for reducing the complexity of driving workplaces in commercial vehicles
Lasse Schölkopf, Alicia Kneuper, Veronika Hutmann, Frank Diermeyer, Germany
- D5. Perceptual quantitative evaluation of the design appearance of garbage can
Lin Sheng, Li Xu, China
- D6. Evaluation and analysis of how to remove advertisements based on ad avoidance
Sadahiro Suzuki, Namgyu Kang, Japan
- D7. Multifunctional design of portable baby carriage
Xiuxia Wang, Lixia Hua, Yuan Cheng, Ling Jin, Ye Junnan, China
- D8. An investigation of smart glasses for motorcyclists as a Head-Up-Display device - performed on a riding simulator
Arthur Werle, Frank Diermeyer, Germany
- D9. Quality evaluation of measurement service in online clothing mass customization mode
Yu Xiaoli, Zhenzhen Huang, China
- D10. Challenges and opportunities of applying the human reliability analysis (HRA) techniques for the petrochemical industry in China
Renyou Zhang, Dingsen He, Peiyuan Shang, Jun Ge, China
- D11. The development of an agent-based simulation system for maritime traffic with ship officer's behavior model
Hongtae Kim, Younghoon Yang, Young-Joong Ahn, Seung-Kweon Hong, South Korea
- D12. Prediction model of one-handed pull strength in the sagittal plane
Hailiang Wang, Mian Yan, Da Tao, China
- D13. The neglected consumer: Tailoring the out-of-box experience of smart home devices for older adults
Shivani Patel, Paige Lawton, Jade Lovell, Elaine Choy, Alex Chaparro, USA

Interactive Poster Demonstrations

POSTER/DEMONSTRATION SESSIONS, THURSDAY, JULY 29

Time: 10:00-16:30

Virtual Room: AHFE Posters

- E1. Application of virtual simulation experimental system of curtain wall based on educational transformation and upgrading
Chenguang Ma, Manhai Li, China
- E2. Competitiveness and innovation on the frontier of knowledge: 25th anniversary postgraduate in administration TecNM Tijuana
Rodolfo Martinez Gutierrez, Maria Esther Ibarra Estrada, Carlos Hurtado Sanchez, Carmen Esther Carey Raygoza, Mexico
- E3. Challenges for an observatory of the 2030 goals, SDG and social economy, in northern Mexico
Rodolfo Martinez Gutierrez, Maria Marcela Solis-Quinteros, Carlos Hurtado Sanchez, Carmen Esther Carey Raygoza, Mexico
- E4. Assessment of work posture of CFA workers and designing a new workstation
Pallavi Murarka, India
- E5. Integrating cognitive work analysis in software engineering: A systemic approach for the design of rail traffic alarm interface
Chenxu Niu, Ke Niu, Yihang Du, Hui Zhao, Changliu Li, China
- E6. Evaluation of the support system using the expression of a plate margin ratio
Ono Shunsuke, Namgyu Kang, Japan
- E7. 3D SEM Based functional nanostructure for medical imaging
Eva Pajorova, Ladislav Hluchy, Slovakia
- E8. Disease-specific networking strategy to increase public value: Latvian's approach
Mara Petersone, Karlis Ketners, Dainis Krievins, Ingars Erins, Ona Grazhina Rakauskiene, Inga Eriņa, Latvia
- E9. Business Management Engineers: Profile and competencies of Generations X, Y and Z
Rodolfo Martinez Gutierrez, Carmen Esther Carey Raygoza, Carlos Hurtado Sanchez, Beatriz Chavez Ceja, Artemio Lara Chavez, Mexico
- E10. Estimation of spine loads during daily activities and its relationship with musculoskeletal disorders in elderly indigenous women
Alejandra Lascano, Thalia San Antonio, David Guevara, Anita Larrea, Ecuador
- E11. Morbidity and mortality in Colombia: A statistical analysis of occupational risks in times of Covid-19
Luis Gabriel Gutierrez, Maria Alexandra Malagon, Wilder Hernández, Colombia
- E12. Absenteeism, musculoskeletal disorders and healthy living habits in active uniformed national police
Wilder Hernández, Luis Gabriel Gutierrez, Colombia
- E13. Corporate governance model for customs agency in accordance with Federal Customs Law Article 167-D in Mexico
Rodolfo Martinez Gutierrez, Jorge Vicente Villa Garcia, Mexico

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