



2024

IHiet

International

12th International Conference on

Human Interaction and Emerging Technologies (IHiet 2024)

August 26-28, 2024

**IUAV University of Venice
Venice, Italy**

Final Program

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IHIET 2024

Conference Reception

MONDAY AUGUST 26, 2024 - 18:00-22:00

RECEPTION LOCATION: BW PREMIER COLLECTION VENICE
RIO TERÀ LISTA DI SPAGNA, 166, 30121 VENEZIA VE, ITALY
(Dress is business casual, Conference Registered Participants, Photo ID required)

Conference Organization

Scientific and Technical Session: August 27-28, 2024

Location: IUAV University of Venice

Location: Calle de la Laca, 2468, 30125 Venezia VE, Italy

CONFERENCE ADMINISTRATOR:

ADMIN@IHIET.ORG

CONFERENCE SUPPORT:

SUPPORT@IHIET.ORG

Scientific Tracks

ACRONYM	TRACK
IHIET 1	Human-centered Design
IHIET 2	Artificial Intelligence, Computing and Intelligent Design
IHIET 3	Augmented, Virtual and Mixed Reality Simulation
IHIET 4	Wearable Technologies, Social and Affective Computing
IHIET 5	Human–computer Interaction
IHIET 6	Human-Technology and Future of Work
IHIET 7	Emerging Technologies and Business Applications
IHIET 8	Applications in Medicine and Healthcare
IHIET 9	Management, Training and Business Applications
IHIET 10	General Engineering Applications

Conference at a Glance

Scientific and Technical Session: August 27-28, 2024
Location: IUAV University of Venice
Location: Calle de la Laca, 2468, 30125 Venezia VE, Italy



Tuesday - Wednesday, August 27-28, 2024

#	SESSION TITLE	ROOM	TRACK
Day 1: Tuesday, August 27 - Session Time: 9:00 - 9:45 CEST			
1	Plenary: Human-computer Interaction	Rome	IHIET 1
9:45 - 10:00 • Sessions Break			
Day 1: Tuesday, August 27 - Session Time: 10:00 - 11:30 CEST			
2	Human-centered Design: Robotics and Intelligent Machines	Rome	IHIET 1
3	Artificial Intelligence, Computing and Intelligent Design I	Milan	IHIET 2
4	Augmented, Virtual and Mixed Reality Simulation I	Florence	IHIET 3
11:30 - 12:00 • Sessions Break			
Day 1: Tuesday, August 27 - Session Time: 12:00 -13:00			
6	Human-computer Interaction: Focus on Artificial Intelligence	Rome	IHIET 5
7	Human-Technology and Future of Work: Visualization and Analytic	Milan	IHIET 6
Day 1: Tuesday, August 27 - Session Time: 13:00 -14:00			
8	Emerging Technologies and Business Applications I	Rome	IHIET 7
9	Applications in Medicine and Healthcare	Milan	IHIET 8
10	Human-centered Design: Transportation Research	Florence	IHIET 1
End of Day 1 Sessions – Enjoy Lunch at the restaurant of your choice			
Day 2: Wednesday, August 28 - Session Time: 9:00 - 10:30 CEST			
11	Artificial Intelligence, Computing and Intelligent Design II	Rome	IHIET 2
12	Augmented, Virtual and Mixed Reality Simulation II	Milan	IHIET 3
13	UX Design and Human Perception	Florence	IHIET 5
10:30 - 11:00 • Sessions Break			
Day 2: Wednesday, August 28 - Session Time: 11:00 - 12:30 CEST			
15	Emerging Technologies and Business Applications II	Rome	IHIET 7
17	Wearable Technologies, Social and Affective Computing	Milan	IHIET 3
19	Human-centered Design: Decoding User Preferences	Florence	IHIET 1
12:30 - 13:00 • Sessions Break			
End of Day 2 Sessions – Enjoy Lunch at the restaurant of your choice			

Detailed Program

DAY 1

Room

SESSION 1 Plenary: Human-computer Interaction

Rome

Tuesday, August 27 9:00 – 9:45 CEST

Plenary Speech: Understanding “Searching as Learning” in the AI Era
Speaker: Dr. Chei Sian Lee, Associate Chair, Wee Kim Wee School of Communication and Information, Nanyang Technological University.

Plenary Summary: Searching as Learning (SAL), a learning process with potential knowledge gain that occurs during searches in a digital environment, is an emerging field in human-computer interaction (HCI) research, especially with the recent technological advancements such as generative artificial intelligence (GAI). Many studies have investigated SAL’s learning perspective and facets supported by traditional search systems, such as web search engines, to access, search, and retrieve information to fulfill users’ learning intentions. The impacts of GAI and emerging technologies and their disruption to the existing SAL process need to be clarified. This presentation presents a series of studies related to SAL and to understand how GAI can help learners during SAL.



Speaker Bio: Dr. Chei Sian Lee is currently an Associate Professor at the Wee Kim Wee School of Communication and Information at the Nanyang Technological University in Singapore, where she is also the Associate Chair (Faculty). She is actively involved in research on issues related to everyday user-information interaction at work, school or play. Specifically, her research focuses on how digital and emerging technologies can be designed to facilitate everyday user-information exchanges and be used to change social behaviors, benefit communities, and create social good. She has been involved in several funded projects in varying capacities as principal investigator, co-investigator and collaborator. More recently, she has

been investigating the deepfakes phenomena from an information-oriented perspective. Her work has been widely published in international journals. Dr Lee is currently on the Editorial Advisory Board for Computers and Education, Online Information Review, The Electronic Library and Journal for STEM Education Research. Dr Lee received her B.Sc. and M.Sc. degrees in Computer and Information Sciences from the National University of Singapore and her PhD in Management Information Systems from the University of Illinois at Chicago, Liautaud Graduate School of Business.

DAY 1



SESSION 2

Human-centered Design: Robotics and Intelligent Machines

IHIET 1

Rome

**Tuesday,
August 27**

Session Chair(s): Mahdis Smith, Australia and Ana Colim, Portugal

**10:00 -
11:30 CEST**

Autonomy at the Crossroads: Knowledge Workers Teamed with Intelligent Machines: A Qualitative Systematic Review
Mahdis Smith, Luke Houghton, Carla Riverola, Ali Intezari, Australia

Ergonomics and Collaborative Robotics: The synergy to prevent workload in industrial assembly tasks
Ana Colim, Estela Bicho, André Cardoso, Carla Alves, Amin Salimi, Duarte Fernandes, Nuno Sousa, Nelson Costa, Paula Carneiro, Sérgio Monteiro, Luís Louro, João Gaspar Cunha, Pedro Arezes, Portugal

How many Robots is too many? Findings about Single-Human Multiple-Robot Systems
Estefany Rey-Becerra, Sascha Wischniewski, Colombia

Robotisation of work - what are the experiences among employees in automotive industry company in the Czech republic
Vladimira Lipsova, Czech Republic

Empirical analysis of social implications during the development of automated driving
Nuria Brüggemann, Sebastian Preis, Heinrich Claus Arnd Engeln, Germany

The Best Fit Framework for Human Computer Interaction Research – Is it possible?
Benjamin Botha, Lizette De Wet, South Africa

DAY 1



SESSION 3

Artificial Intelligence, Computing and Intelligent Design I

IHIET 2

Milan

**Tuesday,
August 27**

Session Chair(s): Dennis Bakir, Germany and M G R Harsavardhan, Singapore

**10:00 -
11:30 CEST**

Beyond Age: Cultural Variations in Conversational AI (CAI) Reliance
Jijin Elippatta, Ali Intezari, Australia

Exploring The Use of ChatGPT4 API in Approaching Math Word Problems
Joe Wong, Harsavardhan M G R, Kenneth Y T Lim, Swee Ling Leong, Singapore

An Exploration of Machine Learning and Reinforcement Learning for Emotional Well-Being

Kenneth Y T Lim, Ryan T S E Chio, Zhi Wen Lim, Singapore

SME-capable Innovations-Management-System as a Service: Artificial Intelligence by click

Robin Bakir, Maximilian Müller, Dennis Bakir, Germany

DAY 1



SESSION 4

Augmented, Virtual and Mixed Reality Simulation I

IHIET 3

Florence

**Tuesday,
August 27**

Session Chair(s): Jingoog Kim, United States and Jendrik Bulk, Germany

**10:00 -
11:30 CEST**

Design Process for Augmented Reality (AR) Experiences from the Perspectives of UX and Game Designers

Jingoog Kim, Lina Lee, United States

Verification of an alternative wheelchair control in a virtual environment

Jendrik Bulk, Benjamin Tannert, Germany

Collaborative Learning through XR. A study of eye- and hand-based XR interactions to support collaborative learning in the chemistry classroom

Frank Heidmann, Boribun Wisanukorn, Germany

Virtual Ergonomics - Ergotyping in Virtual Environments

Stefan Pfeffer, Marc Roessler, Simone Maag, Lisa Langwaldt, Lara Schunggart, Markus Strigel, Abigail Senger, Moritz Ochtrop, Germany

Development of an Innovative Augmented Reality-Assisted Digital Twin Human-Machine Interface for Advanced Monitoring Capabilities

Tzu-Chieh Hsieh, Shana Smith, Taiwan

11:30 - 12:00 • Sessions Break

DAY 1



Human-computer Interaction: Focus on Artificial Intelligence

IHIET 5 Rome

**Tuesday,
August 27**

Session Chair(s): Violetta Victoria Prossinger-beck, Germany and Boris Djartov, Germany

**12:00 -
13:00 CEST**

Using an Artificial Neural Network Pre-trained for a Different, yet Comparable Task to Evaluate Extreme-Affect Vocalizations that Are Indistinguishable by Humans
Hermann Prossinger, Violetta Victoria Prossinger Beck, Silvia Boschetti, Jakub Binter, Germany

Through the Psychological Lens: Unveiling Biases in Multi-Criteria Decision-Making
Boris Djartov, Falk Maria Oswald, Jörn Jakobi, Germany

Redefining Creativity and Artistic Endeavours: Exploring the Impact of AI-Generated Digital Art on Human Society
Amic Ho, Hong Kong Sar China

An AI-Driven User-Centric Framework reinforced by Autonomic Computing: A case study in the Aluminium sector
Ramon Angosto Artigues, Andrea Gregores Coto, Jonathan Josue Torrez Herrera, Fernando Lou Tomás, Sabrina Verardi, Mattia Giuseppe Marzano, Andrea Fernandez Martinez, Spain

Document Sharing without Internet Connectivity during Study Abroad Programs
Saumick Pradhan, Nathan Wick, Cedrick Kwuimy, United States

DAY 1



Human-Technology and Future of Work: Visualization and Analytic

IHIET 6 Milan

**Tuesday,
August 27**

Session Chair(s): Franziska Scharold, Germany and Sonja Anna Mangold, Germany

**12:00 -
13:00 CEST**

Algorithmic management and data protection issues on work platforms
Sonja Anna Mangold , Germany

Interactions among digital maturity, organizational conditions and use of Building Information Modeling (BIM) in the Swedish AEC-industry
Katarina Olofsson Hallén, Sweden

Automated Visualization for Visual Analytics: Trends, Challenges, and Opportunities
Vinay Kumar Uppalapati, Bo Sun, United States

Classification of uncertainties in agile development of mechatronic systems
Kristin Paetzold - Byhain, Franziska Scharold, Germany

Interpolation and Depth Extraction: A Case Study of Shan Shui Artwork Generated by AI
Lai Man Tin, Hong Kong Sar China

Enabling Factors in Complex Operations. Lessons from Jazz
Pedro Água, Vítor Conceição, Portugal

Smart IoT soundproofing panels for enhanced environmental comfort
Luca Casarotto, Lisa Battagliarin, Giulio Pitteri, Filippo Carnovalini, Antonino Di Bella, Antonio Rodà, Italy

DAY 1



SESSION 8

Emerging Technologies and Business Applications I

IHIET 7

Rome

**Tuesday,
August 27**

Session Chair(s): Rachael Boyle, United States and Ingvar Tjostheim, Norway

**13:00 -
14:00 CEST**

AdTech's AI Appetite: A Case Study in Advertisers' Perceptions and Concerns of AI Integration
Rachael Boyle, Ruslana Pledger, Hans-Frederick Brown, United States

Privacy Policy Analysis and Evaluation of Mobile Psychological Consultation Services in Saudi Arabia
Abdulmajeed Alqhatani, Saudi Arabia

Human Detection Method by 3D-LiDAR with Low Calculation Costs
Haruki Mochizuki, Ryozi Kiyohara, Japan

Exploring the impact of Disruptive Technologies on Talent and Innovation Management. A Case study assessment and business evaluation
Juan Ramon Campos Blazquez, Luis Jesus Rios Pita, Mónica Segovia Perez, Spain

Sexting, age and digital vulnerabilities
Ingvar Tjostheim, Chris Wales, John A Waterworth, Norway

DAY 1



Applications in Medicine and Healthcare

IHIET 8 Milan

**Tuesday,
August 27**

Session Chair(s): Yuna Haas, Germany and Elton Moura, Brazil

**13:00 -
14:00 CEST**

Stress, Anxiety, and Depression in Young Adults: Findings from a User Diversity-based Analysis
Victoria Knieling, Nirmalya Thakur, United States

Establishing Sustainable Health Services for the Medication of Elderly Chronic Diseases: An Analysis Based on SAPAD
Yuxin Sheng, Tingmin Yan, Yanhao Geng, Zijing Dai, China

Conceptual approach of an online correction system for the stent production
Yuna Haas, Eric Sax, Germany

Sustainable Use of Resources in Hospitals: A Machine Learning-Based Approach to Predict Prolonged Length of Stay at the Time of Admission
Paolo Perliti, Anita Giovanetti, Federico Bolelli, Costantino Grana, Italy

Systematic Gathering of Requirements for Macroergonomic Analysis and Design for Organizations in Brazil
Elton Moura Nickel, Flávio Anthero Nunes Vianna Dos Santos, Patrícia Teixeira Parrela, Isadora Pedreira De Assis, Brazil

DAY 1



**Human-centered Design:
Transportation Research**

IHIET 1 Florence

**Tuesday,
August 27**

Session Chair(s): Barry Kirwan, France and Nao Ito, Japan

**13:00 -
14:00 CEST**

A Human Centric Design Approach for Future Human-AI Teams in Aviation
Barry Kirwan, Roberto Venditti, Nikolas Giampaolo, Miguel Sanchez, France

Analysis and Interview Survey to Detect Subjective Fatigue and Accident risk of Truck Drivers
Nao Ito, Takeshi Tanaka, Yun Li, Shunsuke Minusa, Hiroyuki Kuriyama, Japan

Revolutionizing Automotive Industry for Servicing An Autonomous Adaptive Lift System
Haissam El-Aawar, Omar Mohammad, Lebanon

Age-based Differences in Pedestrians' Feeling of Trust and Safety when Crossing in Front of a Real Communicating Self-driving Car During Daytime or Nighttime
Aïsha Sahai, Onoriu Puscasu, Natacha Métayer, France

The Rolling Robot and the Human Brain: Handover of the Driving Task in Automated Vehicles
Peter Roessger, Germany

End of Day 1 Sessions

DAY 2

Track

Room



SESSION 11

Artificial Intelligence, Computing and Intelligent Design II

IHIET 2

Rome

**Wednesday,
August 28**

Session Chair(s): Vanessa Mai, Germany and Toby Lu, Canada

**9:00 -
10:30 CEST**

AI-based Chatbot Coaching for Interdisciplinary Project Teams: The Acceptance of AI-based in Comparison to Rule-based Chatbot Coaching
Vanessa Mai, Johanna Nickel, Anna Gähl, Rebecca Rutschmann, Anja Richert, Germany

Empowering K-12 Educators to Address AI Integration Barriers
Wanju Huang, Wonjin Yu, United States

Unravelling the Aesthetics and Emotion: Exploring the Artistic Value of AI-Generated Artworks
Amic Ho, Hong Kong Sar China

BlindSpot: An AI-Powered Intelligent Mirror Assisting with Facial Hygiene Analysis for Blind People
Toby Lu, Canada

DAY 2



**Augmented, Virtual and Mixed Reality
Simulation II**

IHIET 3

Milan

SESSION 12

**Wednesday,
August 28**

Session Chair(s): Florian Rudolph, Germany and Michael Prieto, United States

**9:00 -
10:30 CEST**

Combining system dynamics and agent-based simulation to evaluate and visualise sustainable airport operations.
Florian Rudolph, Martin Jung, Axel B. Classen, Germany

Identifying Users and User Needs for AR Head Mounted Displays in Enterprise Settings
Mohammad Jeelani, Michael Prieto, United States

The construction of egocentric and allocentric spatial representations in visual-spatial working memory in highly immersive virtual reality (CAVE)
Olga Saveleva , Boris Velichkovsky, Galina Menshikova, Grigory Bugriy, Russia

GlasgowSim - Glasgow Coma Scale Simulation
Dominique Correia Deoliveira, Yassin Rekik, Stéphane Malandain, Switzerland

Hybrid Improvisational Theatre: A Thematic Review of the Production Processes
Daniel Lock, David Gochfeld, Ben Kirman, United Kingdom

DAY 2



UX Design and Human Perception

IHIET 5

Florence

SESSION 13

**Wednesday,
August 28**

Session Chair(s): Alice Paracolli, Italy and Gautam Vishwanath, Finland

**9:00 -
10:30 CEST**

Evaluation of Human Perception for Pneumatic Tactile Feedback
Tzu Ying Li, Chen-Tsai Yang, Hung-Hsien Ko, Wan-Hsin Hsieh, Shana Smith, Taiwan

Gamification to Enhance the Mini-Conference: A Case Study from Researching Digital Cultural Heritage
Gautam Vishwanath, Lily Diaz-Kommonen, Finland

UX Sustainability in AI-infused Objects: a systematic literature review of available tools for Designers
Alice Paracolli, Venanzio Arquilla, Italy

Data Visualization in the Public Energy Sector: A Study on User Experience and Satisfaction
Amanda Lentez, Gabriela Mager, Brazil

Exploring the Use of Universal Design for Learning Features within a Technology-Based Essay Writing Intervention
Anya Evmenova, Kelley Regan, United States

10:30 - 11:00 • Sessions Break

DAY 2



SESSION 15

Emerging Technologies and Business Applications II

IHIET 7

Rome

**Wednesday,
August 28**

Session Chair(s): Mina Kim, United States and Deborah Middleton, United States

**11:00 -
12:30 CEST**

Digital Transformation for Sustainability: Industry 5.0 in UK SMEs
Mohammad Rashed Khan, United Kingdom

GoodMaps: Assessing a Navigation App Built on Camera-Based Positioning
Jennifer Palilonis, United States

Integrating space syntax methods in building environmental simulations and urban studies to enhance designer's critical reflective practice.
Deborah Middleton, United States

Impact of Cultural Values and Norms in Trusting Biometric Technology
Zhaleh Semnani-Azad, Shih-Yi Chien, Yannick Forster, Stephanie Schuckers, Katia Sycara, Michael Lewis, United States

Deep Surface Liquid Crystal Displays for Extended Reality Applications
Ian Gonsheer, Maya Magavi, Minji Kim, Monica Bhyrappa, Claire Yang, Selia Jindal, John Finberg, United States

DAY 2



SESSION 17

Wearable Technologies, Social and Affective Computing

IHIET 3

Milan

**Wednesday,
August 28**

**Session Chair(s): Sedef Süner-Pla-Cerdà, Turkey and
Margherita Pillan, Italy**

**11:00 -
12:30 CEST**

Formative Usability Assessment of a Rehabilitative Hand Exoskeleton – Directions for User-Friendly Physical Interfaces
Sedef Süner Pla Cerdà, Batuhan Şahin, Kutluk Bilge Arıkan, Turkey

Exploring the potentials of wearable devices in research on wellbeing and stress in workplaces
Margherita Pillan, Isabella Ruina, Italy

Evaluating Ergonomic Design: A User Command Interface for Industrial Exoskeletons
Olmo Alonso Moreno Franco, Chiara Lambranzi, Roberto Pitzalis, Matteo Sposito, Mahnaz Asgharpour, Daegeun Park, Christian Di Natali, Luigi Monica, Darwin Caldwell, Jesus Ortiz, Italy

Haptic (tactual), portable, hands-free communication for body compliant interfaces
Nils-Krister Persson, Sweden

DAY 2



SESSION 19

Human-centered Design: Decoding User Preferences

IHIET 1

Florence

**Wednesday,
August 28**

Session Chair(s): Anurag Mathews, United States and Shihan Tang, China

**11:00 -
12:30 CEST**

Exploring the Risks of Password Reuse across Websites of Different Importance
Anurag Mathews, S M Taiabul Haque, United States

Human Factors in Alarm Response Procedures: an Empirical Analysis of Paper versus Digital support
Chidera Amazu, John Mcgrory, Maria Chiara Leva, Gabriele Baldissoni, Davide Fissore, Micaela Demichela, Italy

Inclusive smart navigation service design for the blind and visually impaired: a proposal for the city of Genoa
Francesco Burlando, Federica Maria Lorusso, Boyu Chen, Italy

Designing Communities of Inquiry using Evidence-Based Practices
Jennifer Richardson, Holly Fiock, Stefan Stenbom, Janet Alsup,
United States

The design of Generation Z camping car system based on
Grounded Theory-AHP method
Shihan Tang, Qijun Ye, Wenjing Wei, Bowen Zhou, China

Bridging the Gap: A Comparative Analysis in Creative Processes
between AI-Generative and Traditional Art
Amic Ho, Ruth Chau, Hong Kong Sar China

12:30 - 13:00 • Sessions Break



The 81st Venice International Film Festival
ART - ARCHITECTURE - CINEMA - DANCE - MUSIC - THEATRE -
HISTORICAL ARCHIVE
Organised by "La Biennale di Venezia" will be held on the Lido di
Venezia from 28 August to 7 September 2024. For more
information please visit La Biennale official site



Poster Demonstrations



SESSION A - Poster Demonstration Session

Tuesday - Wednesday, August 27-28 [10:30 - 14:00]

A-1	The Probable Impact of Social Media on Your Brain Jihyun Ryou, Sang Hee Kweon, Bo-young Kang, South Korea
A-2	Survey of Research Issues and Proposed Solutions for Detecting Parameter Anomalies in System Logs Hironori Uchida, Keitaro Tominaga, Hideki Itai, Yujie Li, Yoshihisa Nakatoh, Japan
A-3	Predicting Key Substance Levels in Aquaculture through AI-Based Water Quality Monitoring Ki-hwan Kim, Young-jin Kang, Seok-chan Jeong, South Korea
A-4	Virtual nature and psychological outcomes: A systematic review Angelo Panno, Italy
A-5	Establishing a Virtual Ward Simulation Environment at Arcada Patient Safety Simulation Center (APSLC) at Arcada University of Applied Sciences Lotta Eronen, Pauleen Mannevaara, Finland
A-6	Storage optimization through removal and visualization of unnecessary data in continual learning Nobuhito Manome, Shuji Shinohara, Shunji Mitsuyoshi, Ung-il Chung, Japan
A-7	Legal implications for the development of automated driving and AI based Systems Felix Amadeus Flick, Germany
A-8	Using Artificial Intelligence to Enhance Military Leadership Training Performance Feedback Rory O'brien, Jay Brimstin, Randy Brou, United States
A-9	The role of negative emotions in videogames Thais Arrias Weiller, Pedro Campos, Vanessa Cesário, Finland
A-10	Harmony in Cognition: A Melodic Review of AI and Neuromarketing Synergy in Unraveling Consumer Behavior Ezgi Delen, Abdulkadir Hızıroğlu, Turkey

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Call for Papers

Please join us for the

13th International Conference on

Human Interaction and Emerging Technologies (IHiet-AI 2025)

**Artificial Intelligence &
Future Applications**

April 22-24, 2025

**Universidad de Málaga
Costa Del Sol, Spain**

WWW.IHIET-AI.ORG

Call for Papers

Please join us for the

**14th International Conference on
Human Interaction and
Emerging Technologies
(IHiet 2025)**

August 25-27, 2025

**University of Vienna
Vienna, Austria**

WWW.IHIET.ORG