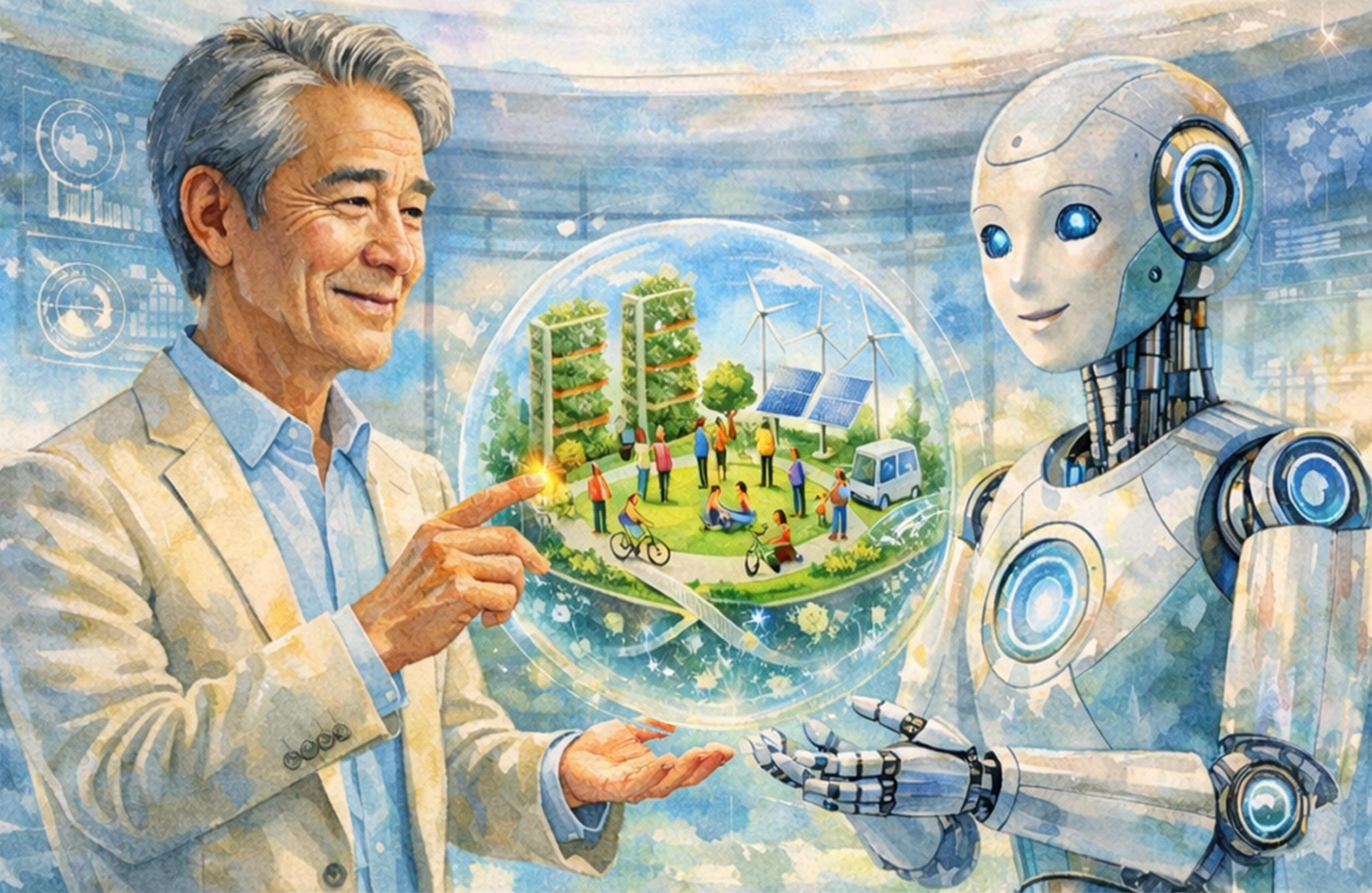


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Human-Centered AI Transformation for Future Empowerment

Integration · Resilience · Inclusiveness · Sustainability



Explainable & Human-Intelligible Understanding
Intent-Aware Reasoning & Accountable Decision-Making
Human-Authorized AI Action
Human-Supervised Reflective Learning

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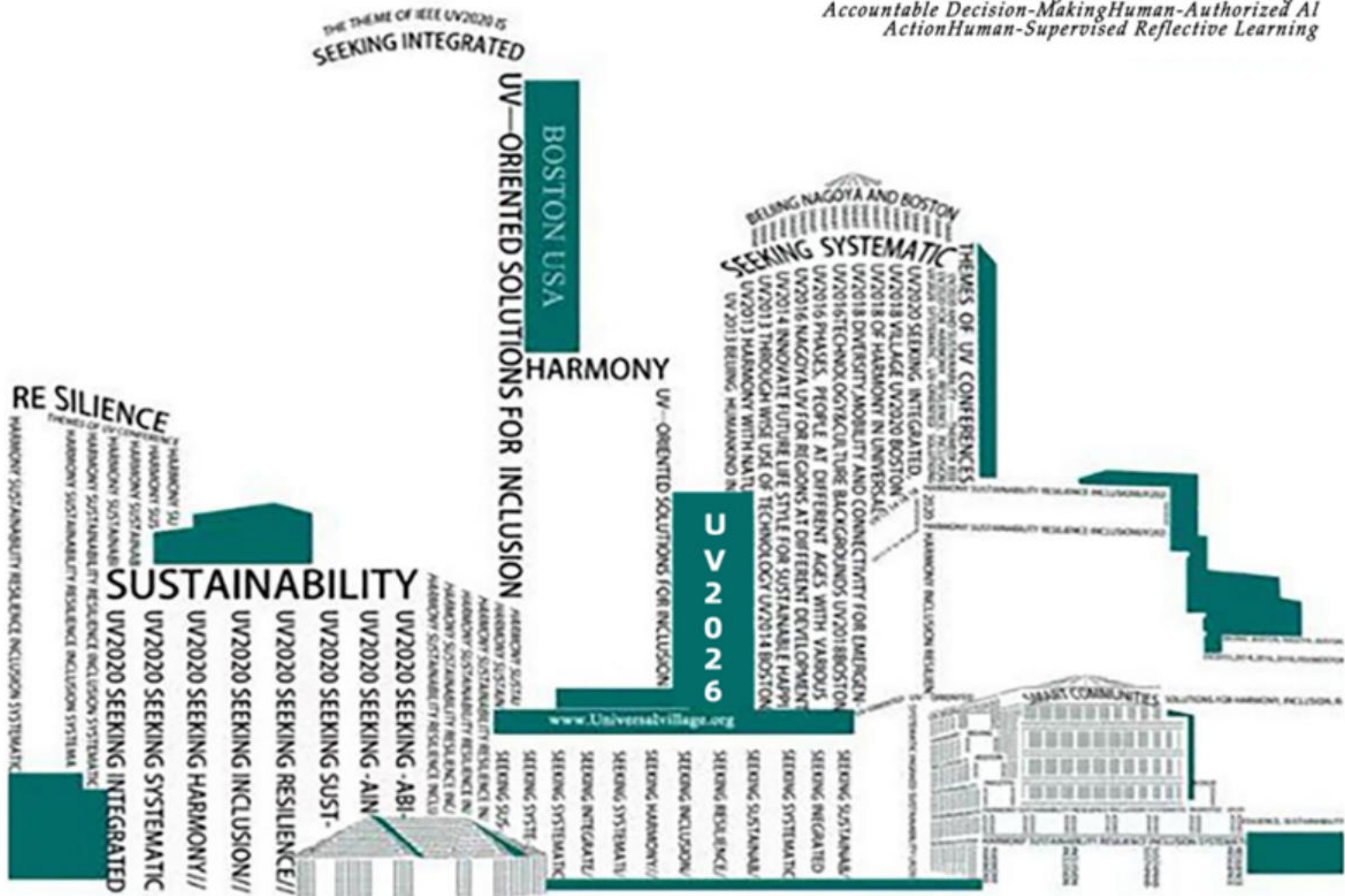
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Boston, MA, USA

**Human-Centered AI Transformation for
Future Empowerment:**

*Explainable & Human-Intelligible
Understanding Intent-Aware Reasoning &
Accountable Decision-Making Human-Authorized AI
Action Human-Supervised Reflective Learning*



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Explainable & Human-Intelligible Understanding Intent-Aware Reasoning & Accountable Decision-Making Human-Authorized AI Action Human-Supervised Reflective Learning.



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Boston



HUMAN-CENTERED AI TRANSFORMATION FOR FUTURE EMPOWERMENT:

EXPLAINABLE & HUMAN-INTELLIGIBLE UNDERSTANDING
INTENT-AWARE REASONING & ACCOUNTABLE DECISION-MAKING
HUMAN-AUTHORIZED AI ACTION
HUMAN-SUPERVISED REFLECTIVE LEARNING

UV2024
Virtual



REFLECTIONS ON THE HUMAN-AI RELATIONSHIP AND AI-PERVASIVE SOCIETAL TRANSFORMATION: HUMAN-CENTRICITY, EXPLAINABLE AI, AND INTENT & BEHAVIOR UNDERSTANDING FOR INTEGRATION, RESILIENCE, INCLUSIVENESS, AND SUSTAINABILITY.

UV2022
Virtual



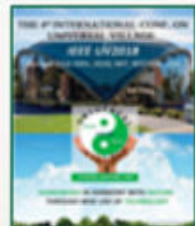
POST-PANDEMIC REFLECTION ON HEALTH, HARMONY, AND SUSTAINABILITY: MOBILITY & VIRTUAL CONNECTION; DIVERSITY & SYSTEM EFFICIENCY; RESPONSIVENESS & RESILIENCE; INCLUSIVENESS & INTEGRATION

UV2020
Boston



INTEGRATED, SYSTEMATIC, UV-ORIENTED, SOLUTIONS FOR HARMONY, RESILIENCE, INCLUSIVENESS AND SUSTAINABILITY

UV2018
Boston



DIVERSITY, MOBILITY AND CONNECTIVITY FOR EMERGENCE OF HARMONY IN UNIVERSAL VILLAGE

UV2016
Nagoya



UV FOR REGIONS AT DIFFERENT DEVELOPMENT PHASES, PEOPLE AT DIFFERENT AGES WITH VARIOUS TECHNOLOGY & CULTURAL BACKGROUNDS

UV2014
Boston



INNOVATE FUTURE LIFESTYLE FOR SUSTAINABLE HAPPINESS

UV2013
Beijing



HUMANKIND IN HARMONY WITH NATURE THROUGH WISE USE OF TECHNOLOGY



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THE 8TH INTERNATIONAL CONFERENCE ON UNIVERSAL VILLAGE
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CALL FOR PAPERS *Part I: Technical Programs*

- **Session 1. UV Vision, Development, and Evaluation**
 - [TS1-A] Vision for Universal Village
 - [TS1-B] Development Status of Universal Village
 - [TS1-C] UV Indices, UV Incentive Mechanisms, and Evaluation of UV Subsystems - Methods, Technologies, and Systems
- **Session 2. UV Framework Design, Modeling, and System Integration**
 - [TS2-A] Systematic and Integrated Frameworks for UV Subsystems and Contributing Factors
 - [TS2-B] Intelligent Modeling, Simulation, and System Analysis
 - [TS2-C] Scalability, Sustainability, and Human-Centered Design in UV System Integration
 - [Special Session] [TS2-SP1] Intersection of Energy, Power Science and Smart Cities
- **Session 3. Mobility, Planning, Management, and Infrastructure Innovations for Safety, Efficiency, and Connectivity**
 - [TS3-A] Intelligent Transportation, Urban Planning, and Smart City Infrastructure
 - [TS3-B] Intelligent Vehicles, Mobility Support for Vulnerable Groups
 - [TS3-C] Smart Response Systems for City Emergencies
 - [TS3-D] Information Flow, Communication, Networks, and Security
 - [TS3-E] UV Underground: Underground Infrastructure & Future Urbanization Needs
 - [Special Session] [TS3-SP1] Built Environment, Travel Behavior, and Data-Driven Mobility Planning
 - [Special Session] [TS3-SP2] Sustainable Built Environments: Algorithmic Modeling and Generative AI Applications
- **Session 4. Energy and Material Innovations for Efficiency, Safety, and Sustainability**
 - [TS4-A] Renewable Energy and Smart Energy Management
 - [TS4-B] Smart Materials and Devices
 - [Special Session] [TS4-SP1] Semiconductor Chip Manufacturing in the AI Era: Enabling 3D Optoelectronics & Next-Generation Integration
- **Session 5. Manufacturing Innovations for Efficiency, Safety, and Sustainability**
 - [TS5] AI-Enabled Manufacturing
- **Session 6. Agriculture Innovations for Efficiency, Safety, and Sustainability**
 - [TS6] AI-Driven Smart Agriculture: Bridging Tech Innovation & Sustainable Growth for Rural Vitalization
- **Session 7. Environmental Innovations for Harmony between Humans and Nature**
 - [TS7-A] Smart Environmental Protection; Smart Ecological Systems
 - [TS7-B] Mobility-enabled Material Cycles; the Circular Economy, Trash and Scrap Collection, Processing, Reuse, and Recycling
- **Session 8. Lifestyle Innovations for Mobility, Connectivity, Efficiency, and Happiness**
 - [TS8-A] Smart Homes and Community, Virtual Living
 - [TS8-B] Mobility, Connectivity, and Innovative Lifestyles
 - [Special Session] [TS8-SP1] Integration of Sports Science and Medical Research: Interdisciplinary Innovation in Sports, Traditional Chinese Medicine, and Western Medicine
- **Session 9. Healthcare Innovations for Safety and Well-being**
 - [TS9-A] AI-assisted Healthcare Monitoring
 - [TS9-B] Smart Medicine and Smart Healthcare
 - [TS9-C] Public Health, Epidemic Prevention and Control
 - [TS9-D] The Fusion of Traditional Chinese Medicine and Modern Science
 - [TS9-E] AI-Driven Sports Training, Exercise, and Fitness
 - [Special Session] [TS9-SP1] AI-Powered IoMT Telehealth Innovation
- **Session 10. Human-centered Social Innovations for Diversity, Inclusiveness, Fairness, and Preservation of Cultural Heritage**
 - [TS10-A] Urbanization, Social Governance, and Smart Communities
 - [TS10-B] Smart Government and Social Services
 - [TS10-C] Integrated Solutions for Smart Humanity
 - [TS10-D] Smart Design and Design Ethics
 - [TS10-E] Cultural Heritage Preservation and Creative Industries
 - [TS10-F] Equitable AI for the Underrepresented and Vulnerable Groups
- **Session 11. Algorithms, Benchmark Development, and Data Management**
 - [TS11-A] Responsible and Ethical Data Management and Processing
 - [TS11-B] Learning Algorithm and Model Development, Analysis, and Interpretability
 - [TS11-C] Benchmark Development, Evaluation, and Long-Term Reproducibility
- **Session 12. Special Sessions**
 - [SP12-A] AI and Finance
 - [SP12-B] Reconstructing Human-Centered Family Education in the AI Era: Learning, Parenting, and Relational Development



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SESSION 1

UV Vision, Development, and Evaluation

Session Chair



Prof. Yifan Yu

INSERM, France

[TS1-A&B] CALL FOR PAPERS

- Coordinated Development to achieve harmony between humans and nature.
 - [TS1-A] Vision for Universal Village
 - Vision for Universal Village: Cities' Smartness, Efficiency, Safety, Environmental Qualities, and Inclusiveness
 - [TS1-B] Development Status of Universal Village
 - Development status of current smart cities in different countries
 - Discussion of limitations and challenges

TS1-A & TS1-B

[TS1-A] Vision for Universal Village

[TS1-B] Development Status of Universal Village

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OVERVIEW

Compact cities that are friendly to people and the environment have been proposed as one urban model for realizing a sustainable society. On the other hand, the concept of smart city with using "Information and Communication Technology (ICT)" have been emerged and may influence the opposite effect to the compact city which promote smart shrinking from sprawling suburban development.



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SESSION 1

UV Vision, Development, and Evaluation

Session Chair

Prof. Guoping Zhang

Vice Dean of FinTech Research Institute
CEO of China Association for
Corporate Governance
ED of Nankai-CCTV Finance Index
Research Center
Nankai University & Harvard University

[TS1-C] CALL FOR PAPERS

- Coordinated Development to achieve harmony between humans and nature.
- [TS1-C] UV Indices, UV Incentive Mechanisms, and Evaluation of UV Subsystems - Methods, Technologies, and Systems
 - UV Indices: Quantitative Indications of Cities' Smartness, Efficiency, Safety, Environmental Qualities, and Inclusiveness
 - Incentive Mechanisms for the Development of UV-Oriented Systems
 - Evaluation of current methods and technologies for UV subsystems
 - ❖ Smart Homes and Communities, Smart Medicine and Healthcare, Intelligent Transportation, Urban Planning, and Crowd Management, Smart Energy Management, Smart City Infrastructure, Smart Response Systems for City Emergencies, Smart Environmental Protection, Smart Humanity
 - Analysis of impact factors for different UV subsystems
 - ❖ Information flow, Material cycle, Lifestyle: issues such as food waste, Community
 - Subsystem coordination and interaction analysis: Analysis of the mutual interactions among UV subsystems and evaluation of the system coordination

TS1-C

UV Indices, UV Incentive Mechanisms, and Evaluation of UV Subsystems - Methods, Technologies, and Systems

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OVERVIEW

Under-developed regions with heavy industrial reliance encounter challenges like geographical constraints and ecological demands. This seminar explores strategies for sustainable growth, employing advanced methodologies to enhance living quality. Key discussions include overcoming innovation deficits, fostering green development, and aligning with national strategies. The focus is on driving regional prosperity through diversified industrial frameworks, offering insights into achieving sustainable economic resilience in heavy industry-dependent regions.

For more information, please refer to the UV website

<http://universalvillage.org/>

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SESSION 2

UV Framework Design, Modeling, and System Integration

Session Chairs

Prof. Xinwei Xu
AHUT, China



Prof. Wei Zhao
AHUT, China



[TS2-A&C] CALL FOR PAPERS

- Seeking integrated, resilient, human-centered, sustainable and environment-friendly solutions under the concept of Universal Village
 - [TS2-A] Systematic and Integrated Frameworks for UV Subsystems and Contributing Factors
 - [TS2-C] Scalability, Sustainability, and Human-Centered Design in UV System Integration



For more information, please refer to the UV website
<http://universalvillage.org/>

TS2-A & TS2-C

[TS2-A] Systematic and Integrated Frameworks for UV Subsystems and Contributing Factors

[TS2-C] Scalability, Sustainability, and Human-Centered Design in UV System Integration

October 17-20 | VIRTUAL



OVERVIEW

Framework Design, Modeling, and System Integration in smart cities involves coordinating various sectors such as healthcare, urban planning, infrastructure, and energy management to enhance urban living. This approach integrates advanced technologies across different domains—like Smart Humanity initiatives, community-focused developments, healthcare innovations, and sustainable urban practices—to create interconnected, efficient, and sustainable urban environments. These systems work together to optimize city functions, improve residents' quality of life, and ensure environmental sustainability.

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SESSION 2

UV Framework Design, Modeling, and System Integration

Session Chairs

Prof. Chun
ZHAO
BISTU, China



Prof. Lin
ZHANG
BUAA, China



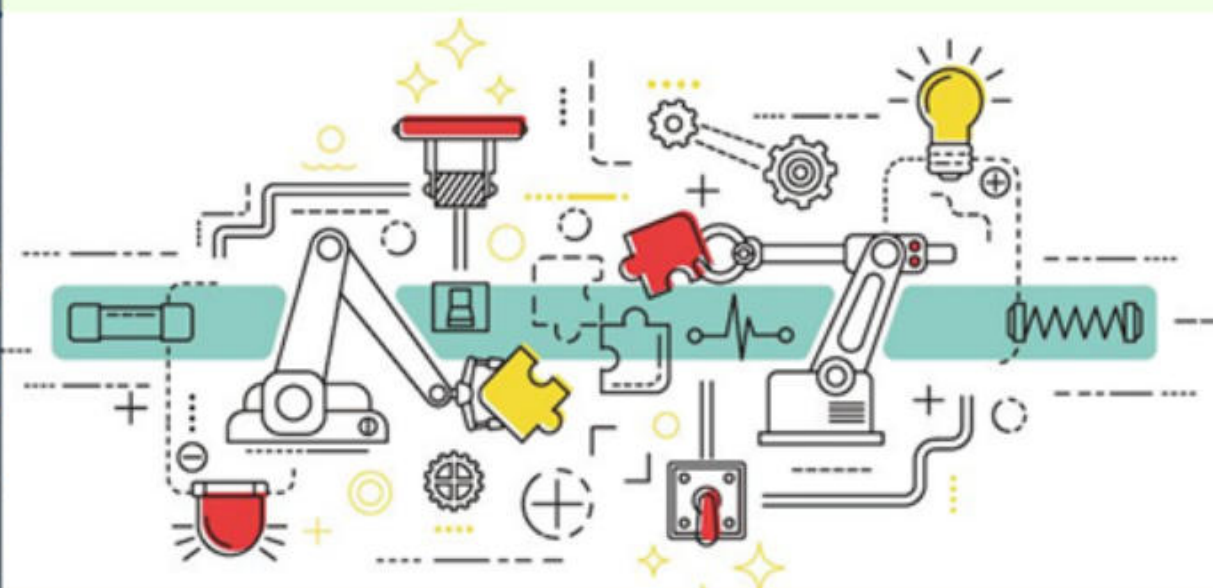
[TS2-B] CALL FOR PAPERS

- Seeking integrated, resilient, human-centered, sustainable and environment-friendly solutions under the concept of Universal Village
 - [TS2-B] Intelligent Modeling, Simulation, and System Analysis

TS2-B

Intelligent Modeling, Simulation, and System Analysis

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OVERVIEW

The applied range of Modeling and Simulation (M&S) covers almost all aspects of the economy, society, and military, especially for key fields concerning national strength and national security. For complex systems or some special fields, M&S technology can play its unique role, sometimes even becoming the only means. At present, M&S plays an extremely important role in the smart manufacturing field. By integrating with information technology, manufacturing systems are gradually developed to be digitized, networked, collaborative, personalized, service-oriented, and intelligent. This session will introduce the key technology of the M&S and smart manufacturing involves current status and hot issues, and future development trends.



For more information, please refer to the UV website

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SESSION 2

UV Framework Design, Modeling, and System Integration

Session Chair

Prof.
Zhenlong
Wu

Zhengzhou
University,
China



[TS2-SP1] CALL FOR PAPERS SPECIAL SESSION

■ [TS2-SP1] Intersection of Energy, Power Science, and Smart Cities

- **Smart Urban Energy System Integration:** Incorporating distributed renewable energy (solar, wind) into urban power grids; smart microgrid construction and optimal operation in urban areas; coordinated control of urban energy supply (electricity, heat, gas) and demand management
- **Intelligent Power Management for Smart Cities:** AI-driven urban power load forecasting and grid dispatching; advanced metering infrastructure (AMI) and real-time energy analytics; fault detection, diagnosis, and reliable operation of urban power infrastructure
- **Low-Carbon Energy Transition in Smart Cities:** Application of energy-saving and emission-reduction technologies in buildings, transportation systems, and public infrastructure; coordinated integration and operation of energy storage systems (battery, thermal storage) in smart urban environments; carbon emission monitoring and low-carbon optimization of urban energy systems

[SPECIAL] TS2-SP1

Intersection of Energy, Power Science, and Smart Cities

October 17-20 | VIRTUAL



OVERVIEW

The integration of energy and power systems into smart cities represents a paradigm shift from fragmented utility management toward an integrated cyber-physical ecosystem. This transformation moves beyond traditional separations between energy supply and urban operations by embedding advanced energy and power technologies into smart urban infrastructure. By integrating distributed energy resources (e.g., solar, wind, hydrogen, and geothermal) with intelligent monitoring, control, and optimization technologies, smart cities can be powered by efficient, resilient, and low-carbon energy systems. At the operational level, coordinated multi-energy management, demand-side optimization, energy storage, and carbon emissions tracking ensure system flexibility, reliability, and long-term sustainability in urban environments.



For more information, please refer to the UV website

<http://universalvillage.org/>

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SESSION 3

Mobility, Planning, Management, Infrastructure Innovations for
Safety, Efficiency, and Connectivity

Session Chairs



Prof.
Chantong
Lam

Macao
Polytechnic
University
Macao



Prof.
Yapeng
Wang

Macao
Polytechnic
University
Macao

[TS3-A&B&C&D&E] CALL FOR PAPERS

- [TS3-A] Intelligent Transportation, Urban Planning, and Smart City Infrastructure
- [TS3-B] Intelligent Vehicles, Mobility Support for Vulnerable Groups
- [TS3-C] Smart Response Systems for City Emergencies
- [TS3-D] Information Flow, Communication, Networks, and Security
- [TS3-E] UV Underground: Underground Infrastructure & Future Urbanization Needs

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OVERVIEW

Urban mobility and infrastructure innovations are transforming cities into safer, more efficient, and connected environments. Intelligent transportation and smart infrastructure optimize traffic flow and urban sustainability. Intelligent vehicles improve efficiency and accessibility for all, including vulnerable groups. Data-driven crowd management and emergency systems enhance public safety, while a secure digital infrastructure ensures seamless information exchange. These advancements collectively foster smarter, inclusive urban spaces where safety and connectivity thrive.



For more information, please refer to the UV website
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[TS3] CALL FOR PAPERS

[TS3] Session 3. Mobility, Planning, Management, and Infrastructure Innovations for Safety, Efficiency, and Connectivity

- [TS3-A] Intelligent Transportation, Urban Planning, and Smart City Infrastructure
 - Interconnected transportation systems; intelligent road transportation management; safety enhancement based on the interaction among passengers, vehicles, event planners, and other stakeholders
 - Coordinated traffic control; smart parking; urban planning
 - Smart logistics and distribution services; last-mile delivery
 - Smart facilities; smart construction; smart lighting/heating/cooling/ventilation systems; smart sewerage and sanitation systems; smart water and waste management
 - Coordinated city infrastructure development and operational management; smart infrastructure lifecycle management; predictive analytics for identifying infrastructure vulnerability
- [TS3-B] Intelligent Vehicles, Mobility Support for Vulnerable Groups
 - Autonomous vehicles; drones; intelligent electrified vehicles; smart wheelchairs; robotic exoskeletons for vulnerable groups
 - Intelligent driving assistance systems; navigation and localization systems; vehicle hardware/software systems; vehicle on-board diagnostics; vehicular signal processing; smart cockpits
 - Human-oriented sensing and recognition for vulnerable road users and animals; intercommunication among passengers, vehicles, and traffic lights
 - Connected vehicles; vehicle dynamics and control
 - Human factors; cognition and control; driver monitoring
 - Policies and regulations for intelligent vehicles
- [TS3-C] Smart Response Systems for City Emergencies
 - System vulnerabilities identification; crisis prevention and city robustness reinforcement; crowd management
 - Emergency (natural disasters, crimes, accidents, etc.) prediction, detection and management; cyber-security; smart alerting and hierarchical information collection and distribution; active disaster response and recovery
- [TS3-D] Information Flow, Communication, Networks, and Security
 - Smart data acquisition; mobile sensing; crowdsourcing; the Internet of Things; seamless wireless networks; information and communication technology (ICT) infrastructure
 - Information integration; information storage, sharing, circulation, and visualization; cloud service; blockchain; data repository.
 - Solutions for security, safety, reliability and privacy issues
- [TS3-E] UV Underground: Underground Infrastructure & Future Urbanization Needs
 - Cutting-edge digital tools and artificial intelligence in underground space and broader civil engineering
 - Carbon emission reduction, renewable energy in subsurface engineering for the sustainability to Universal Village
 - Big data mining, synthetic data and data analytics for underground structures and Universal Village.
 - Advances in architecture, urban planning and other socioeconomical sciences and technologies specifically tailored for underground universal village society, etc.



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SESSION 3

**Mobility, Planning, Management,
Infrastructure Innovations for Safety,
Efficiency, and Connectivity**

Session Chair



Prof. Faan Chen
Tongji University, China

[TS3-SP1] CALL FOR PAPERS **SPECIAL SESSION**

■ **[TS3-SP1] Built Environment, Travel Behavior, and Data-Driven Mobility Planning**

- Built environment measurement and its influence on travel behavior, accessibility, and activity participation
- Mobility planning based on urban form, commuting patterns, job-housing balance, and mode choice behavior
- Causal inference and quasi-experimental approaches for transport-land use interaction analysis, including residential self-selection effects
- Nonlinear relationships, threshold effects, and heterogeneous mobility responses across population groups, neighborhoods, and planning contexts
- Data-driven methods for travel behavior research, including machine learning, explainable AI, and spatial analytics
- Evidence-based planning strategies for safe, efficient, low-carbon, and inclusive urban mobility

[SPECIAL] TS3-SP1

**Built Environment, Travel
Behavior, and Data-
Driven Mobility Planning**

LOCAL & VIRTUAL
October 17-20



OVERVIEW

Understanding how the built environment shapes travel behavior is key to achieving safe, efficient, and connected urban mobility in the era of urban data and intelligent systems. This session integrates built environment analysis, travel behavior modeling, and advanced methods such as machine learning and explainable AI to uncover causal mechanisms, behavioral heterogeneity, and the interaction between urban form and human decision-making. It aims to support data-driven mobility planning and enable more efficient and sustainable urban transportation systems.



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SESSION 3

Mobility, Planning, Management,
Infrastructure Innovations for Safety,
Efficiency, and Connectivity

Session
Chair

Dr. Junyan He,
MCIP, RPP



JJH
Planning &
Design Ltd.,
Canada

[TS3-SP2] CALL FOR PAPERS SPECIAL SESSION

[TS3-SP2] Sustainable Built Environments: Algorithmic Modeling and Generative Artificial Intelligence

- AI-Driven Generative Design for spatial modeling of human habitats
- Algorithmic Zoning and 3D pre-visualization of environmental policies
- Computational tools for sustainable urban morphology (e.g., parametric modeling)
- Technology-based reciprocal models for promoting regional integration and urban cluster development

[SPECIAL] TS3-SP2

Sustainable Built Environments:

Algorithmic Modeling and
Generative AI Applications

October 17-20 | VIRTUAL



OVERVIEW

This special session will explore the intersection of generative artificial intelligence, algorithmic modelling, and the transformation of the built environments. Our goal is to investigate how computational tools can be applied to optimize complex human living environments, bridge multi-jurisdictional policies, and support coordinated urban infrastructure development. We invite researchers, architects, engineers, and data scientists to submit papers exploring how computational methods can address spatial, environmental, and regulatory challenges. Topics of interest include, but are not limited to: AI-Driven Generative Design for spatial modelling of human habitats; Algorithmic Zoning and 3D pre-visualization of environmental policies; Computational tools for sustainable urban morphology; Technology-based reciprocal models promote regional integration and urban cluster development (e.g., the Bay Area in China).



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SESSION 4

Energy and Material Innovations for
efficiency, safety, and sustainability

Session Chair



Prof. Xinyu Tan

Vice President,
Jingchu University of Technology
China

[TS4-A] CALL FOR PAPERS

■ [TS4-A] Renewable Energy and Smart Energy Management

- Renewable energy capture and conversion, emerging technologies
 - Solar energy: photovoltaics, solar thermos. Wind energy: wind turbine materials and novel designs. Hydrogen energy: solar splitting water, fuel cells. Other energies: biomass, renewable natural gas, hydroelectric energy, blue energy
- Energy storage devices and technologies (batteries, supercapacitors, and fuel cells)
- Smart grids; transmission infrastructure; integrated energy management for high efficiency and zero-emission; theoretical simulations of renewable energy and its applications; smart meters; demand response management (DRM)
- Resilient operations against disturbances, unexpected errors, accidents, physical and cyber-attacks, and natural disasters

TS4-A

Renewable Energy and Smart Energy Management

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OVERVIEW

The drive for innovations in energy and materials focuses on efficiency, safety, and sustainability. Advanced renewable energy technologies, including new solar energy capture methods and CO₂ conversion, along with breakthroughs in energy storage like sophisticated battery systems and hydrogen fuel production, are transforming urban environmental management. Smart energy management systems optimize these resources, enhancing their effectiveness, while smart materials improve the safety and functionality of energy infrastructures. These innovations collectively promote sustainable resource use and foster cleaner, safer urban environments.



For more information, please refer to the UV website

<http://universalvillage.org/>

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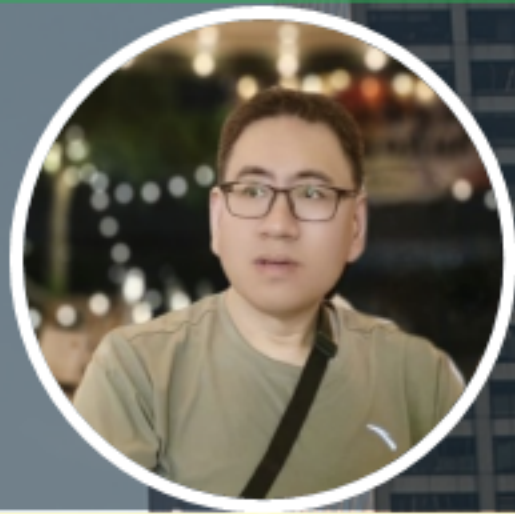
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SESSION 4

Energy and Material Innovations for efficiency, safety,
and sustainability

Session
Chair



Dr. Weihua
Mu

Wenzhou Institute,
Chinese Academy of
Sciences

[TS4-B] CALL FOR PAPERS

▪ [TS4-B] Smart Materials and Devices

- Intelligent Thermal Management Materials
 - Design of nanostructured thermal interface materials and interfacial thermal resistance regulation
 - Thermo-mechanical coupling failure mechanisms in superhard material coatings
- Superhard and Supertough Smart Materials
 - Wear mechanisms and lifetime prediction of diamond-based composites
 - Sensor integration in superhard coatings for intelligent cutting tools
 - Self-monitoring superhard material systems based on piezoresistive effects
- Soft Matter and External Field Response
 - Programmable deformation and actuation of liquid crystal elastomers
 - Morphological dynamics of cell membranes under external fields
 - Two-order-parameter theory for cell morphological phase transitions
- Pneumatic Smart Response of Polymer Thin Films
 - Voltage-deformation coupling mechanisms in dielectric elastomer films
 - Bio-inspired applications of humidity-responsive polymer thin films
 - Dynamic control of thin film buckling and wrinkling
- Multi-Field Coupling Physics in Nanomaterials
 - Theory of mechano-electro-thermal coupled transport in low-dimensional materials
 - Strain engineering of electronic structure and thermoelectric performance in nanomaterials
 - Nanogenerators and self-powered sensing systems
 - Tunable electromagnetic metamaterials for WiFi band shielding mechanisms

For more information, please refer to the UV website

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TS4-B Smart Materials and Devices

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OVERVIEW

This session centers on smart materials and devices, encompassing thermal management and energy-efficient systems, mechanical sensing with integrated self-monitoring and pneumatic actuation, bio-inspired soft matter and adaptive polymers as actively responsive materials, multi-functional nanoscale systems for energy harvesting and information technology, multi-physics coupling phenomena at nanoscale interfaces, and machine learning-driven materials discovery. Collectively, these research directions contribute to the development of intelligent, sustainable, and adaptive material systems, from molecular-level design to functional device integration.

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SESSION 4

Energy and Material Innovations for efficiency, safety, and sustainability

Session Chair

Prof.
Yasha
Yi



Director of Research,
Connected Systems Institute,
U. of Wisconsin Milwaukee, USA

[TS4-SP1] CALL FOR PAPERS SPECIAL SESSION

▪ [TS4-SP1] Semiconductor Chip Manufacturing in the AI Era: Enabling 3D Optoelectronics & Next-Generation Integration

- **Key Research Areas:** Focuses on 3D optoelectronics and heterogeneous integration as key enablers of next-generation systems, highlighting advances in multi-layer photonic integrated circuits, vertical optical interconnects, chiplet-based architectures, and co-packaged optics.
- **Manufacturing and System-Level Perspectives:** Emphasis on a manufacturing-aware, system-level perspective that addresses yield, reliability, thermal management, and scalability challenges, as well as the gap between laboratory innovation and high-volume deployment.
- **Collaborative Innovation:** Outline a pathway for evolving semiconductor manufacturing to support energy-efficient, high-bandwidth, and scalable AI systems through tightly integrated electronic-photonic co-design by bringing together insights from academia, industry, and national laboratories

[SPECIAL] TS4-SP1

Semiconductor Chip Manufacturing in the AI Era: *Enabling 3D Optoelectronics & Next-Generation Integration*

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OVERVIEW

Semiconductor chip manufacturing is undergoing a fundamental transformation driven by the rapid growth of artificial intelligence (AI) and data-intensive computing, where traditional two-dimensional scaling is increasingly limited by interconnect bandwidth, power, and thermal constraints. This session focuses on 3D optoelectronics and heterogeneous integration as key enablers of next-generation systems, highlighting advances in multi-layer photonic integrated circuits, vertical optical interconnects, chiplet-based architectures, and co-packaged optics. Emphasis is placed on a manufacturing-aware, system-level perspective that addresses yield, reliability, thermal management, and scalability challenges, as well as the gap between laboratory innovation and high-volume deployment. By bringing together insights from academia, industry, and national laboratories, the session outlines a pathway for evolving semiconductor manufacturing to support energy-efficient, high-bandwidth, and scalable AI systems through tightly integrated electronic-photonic co-design.



For more information, please refer to the UV website

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SESSION 5

Manufacturing Innovations for
Efficiency, Safety, and Sustainability

Session Chair



Prof. Longfei Zhou

University of North Florida,
USA

[TS5] CALL FOR PAPERS

■ [TS5] AI-enabled Manufacturing

- Machine learning applications in manufacturing;
- Computer vision applications in manufacturing;
- Additive manufacturing and its new innovations;
- Digital twin in manufacturing;
- Industrial 5.0

TS5

AI-enabled Manufacturing

October 17-20 | VIRTUAL



OVERVIEW

Manufacturing innovations are key to achieving greater efficiency, safety, and sustainability, with a significant focus on optimizing cloud manufacturing scheduling. Addressing the dynamic nature of demands and resource availability, new methodologies are emerging that simplify scheduling into a single, adaptable learning target. These approaches have shown to effectively reduce task completion times and resource utilization variability, marking an improvement over traditional real-time scheduling methods. This shift towards adaptable and efficient manufacturing processes meets technological challenges and aligns with environmental sustainability goals, paving the way for a future where manufacturing is both advanced and responsible.



For more information, please refer to the UV website

<http://universalvillage.org/>

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SESSION 6

Agriculture Innovations for Efficiency,
Safety, and Sustainability

Session
Chair

Dr. Yu Zhang



University
of Tokyo,
Japan

[TS6] CALL FOR PAPERS

- [TS6] AI-Driven Smart Agriculture: Bridging Tech Innovation & Sustainable Growth for Rural Vitalization
 - Vertical farming; smart crop/soil/pest management; precision irrigation; smart livestock farming; climate-smart agriculture
 - Unmanned aerial vehicles (UAV), robotics, and automated machinery for agriculture
 - Smart sensing and monitoring, Internet of Things, big data analysis, predictive analytics (crops/disease/weather), and decision-making in agriculture



For more information, please refer to the UV website
<http://universalvillage.org/>

TS6

AI-Driven Smart Agriculture:
Bridging Tech Innovation &
Sustainable Growth

OCTOBER 17-20 | Virtual



OVERVIEW

At present, the global food security is extremely arduous. This session believes that the mankind should focus on the global major strategic needs, stabilize the agricultural fundamentals in order to calmly respond to the changes in the century, and then to promote the stable and healthy development of the economy and society. Therefore, we need comprehensively promote rural revitalization and improve the steadily-increased income of farmers, and ensure stable -increased agricultural production by the technologies and production system, namely Smart Agriculture, which farming processes more intelligent and increase the quantity and quality of products while reducing consumption.

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SESSION 7

Environmental Innovations for Harmony between Humans and Nature

Session
Chair

Prof.
PengCheng
Fu



Hainan Univ.,
China

[TS7-A] CALL FOR PAPERS

▪ [TS7-A] Smart Environmental Protection; Smart Ecological Systems

- Environmental protection: exhaust/wastewater/solid waste management; pollution control (air/water/soil; light/noise/radiation); effective microorganism technology; green roofs
- Challenges and solutions for climate change; restoration and protection of ecosystems; ecological economics and strategies; ecological informatics and acoustics

TS7-A

Smart Environmental Protection; Smart Ecological Systems

October 17-20 | VIRTUAL



OVERVIEW

71% of the earth surface is covered by the blue water, under which there exist massive amount of treasures to be exploited. Life originated in the primary ocean, and eventually evolves into current biodiversity on the earth. Marine ecosystems are most sophisticated and fragile in nature and suffer from marine environmental pollution, global climate change and accelerated human activities. There are urgent needs to promote "smart ocean" with the aids of modeling and simulation, artificial intelligence and virtual reality, marine technology and engineering, biotechnology and nanotechnology, environmental science and technology, and other multidisciplinary efforts. Focus will be put on the development of "transparent ocean" enabling technologies which will require: adoption of emerging marine technologies; understanding and exploiting their linkage; and integrating them with marine bigdata, Internet of things and smart eco-chain structures for the ocean sustainability.



For more information, please refer to the UV website

<http://universalvillage.org/>

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SESSION 7

Environmental Innovations for Harmony
between Humans and Nature

Session
Chair



Dr. Tian Tan

CEO,
Doctor
Scrap,
US

[TS7-B] CALL FOR PAPERS

- [TS7-B] Mobility-enabled Material Cycles; the Circular Economy; Trash and Scrap Collection, Processing, Reuse, and Recycling
 - Smart trash cans and their optimal placement; smart garbage trucks
 - Smart recycling; smart residential trash and industrial scrap collection and transportation; the circular economy; material reuse; second-hand markets
 - Cultural and economic factors; development of innovative lifestyles, public awareness, and community engagement
 - Crowdsourcing, data collection, and visualization for material cycles
 - Material cycles optimization: smart waste management; smart trash and scrap processing, reuse and recycling; smart platform development for coordinated information sharing among smart recycling, user feedback on products, and smart manufacturing

TS7-B

How AI could change
recycling industry

October 17-20 | VIRTUAL



OVERVIEW

Recycling is a very old and way outdated industry. Scrap's unknown and anti-digitize nature is the biggest reason that the recycling industry is almost disconnected from modern technology. Information is so hard to travel in the current recycling system since the common "language" in the industry is photo instead of word. This gives AI+CV an angle to decode scrap photos and turn all hidden scrap information to numbers. Digitization empowered by AI will build a new world for recycling.



For more information, please refer to the UV website

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SESSION 8

Lifestyle Innovations for Mobility, Connectivity, Efficiency, and Happiness

Session Chair

Dean, Training College, Hawk Intelligent Health Tech. Co.

Vice Director, Aging Soc. Health Res. Inst. of JP&CN Care Assoc.



Dr. Ji Ma

Vice-chair, Life Sci. Res. Soc., All-JP Fed. of Overseas CN pros.

Vice-chairman, JP&CN Association of Medicine and Health

[TS8-A&B] CALL FOR PAPERS

■ [TS8-A] Smart Homes and Community, Virtual Living

- Smart appliances and devices; smart windows; intelligent deformation furniture; smart inventory management; smart home OS
- Safety and security; self-adaptive home-emergency response systems
- Smart life; fashion AI; home gardening and agriculture
- Intelligent support for vulnerable groups; homeless care; domestic violence protection
- Community support and virtual living during pandemics and other city emergencies

■ [TS8-B] Mobility, Connectivity, and Innovative Lifestyles

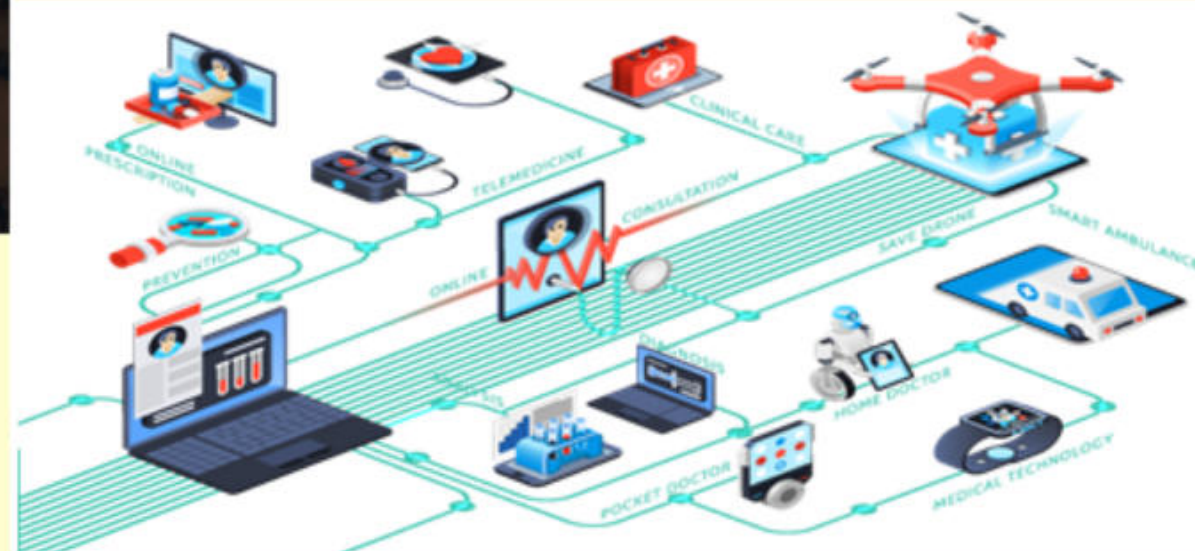
- Integrated and technology-driven solutions to improve the quality of life: quantified self-devices and self-tracking technologies; smart textiles; VR/AR-based sports, entertainment and other activities; human-centered transportation, smart mobility and seamless transit systems; smart agents and human-computer interaction
- New lifestyles to reduce energy consumption and emissions: shared mobility and other new lifestyles made possible by the sharing economy; virtual tours; work from home; electronic surveillance
- Changing trends in cultures/technologies/lifestyles

TS8-A & TS8-B

[8-A] Smart Homes and Community, Virtual Living

[8-B] Mobility, Connectivity, and Innovative Lifestyles

October 17-20 | VIRTUAL



OVERVIEW

Population aging is a prominent social problem in the world today, and it is also a comprehensive social phenomenon. To deal with and solve the many challenges and problems of the aging society, there must also be comprehensive countermeasures, the improvement and cooperation of various systems and mechanisms, and the coordination of various forces such as the government, the market, and nonprofit organizations, communities, and families, jointly dealt with. More and more people realize that solving the problem of an aging society requires interdisciplinary collaboration to provide solutions with more innovative wisdom and technical warmth. Through the discussions of experts from different backgrounds in IEEE UV2022, we are more convinced that relying on artificial intelligence products and technologies for smart old-age care, from point to point, will make the lives of older people easier and happier.



For more information, please refer to the UV website

<http://universalvillage.org/>

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SESSION 8

Lifestyle Innovations for Mobility,
Connectivity, Efficiency, and Happiness

Session
Chair



Prof.
Yan
Tang

Peking
University,
China

[TS8-SP1] CALL FOR PAPERS SPECIAL SESSION

- [TS8-SP1] Integration of Sports Science and Medical Research: *Interdisciplinary Innovation in Sports, Traditional Chinese Medicine, and Western Medicine*
 - AI-enabled systems for integration of sports and medicine
 - Combining eastern and western approaches in sports injury prevention and rehabilitation
 - Modern evaluation and quantitative analysis of traditional sports and Daoyin
 - Maridion Sinew-Fascia theory: fundamental and applied research in sports medicine
 - Integrating sports and medicine for preventive care and therapeutic interventions for older adults

[SPECIAL] TS8-SP1

Integration of Sports Science
and Medical Research:

Interdisciplinary Innovation in Sports, Traditional
Chinese Medicine, and Western Medicine

LOCAL & VIRTUAL
October 17-20



OVERVIEW

This forum focuses on the in-depth interdisciplinary integration of sports science and medical research, aligned with the core development goals of UV: human-centeredness, interdisciplinary innovation, and sustainable development. Extending beyond single research tracks, for example, smart healthcare, modernization of traditional Chinese medicine, and sports technology, this forum highlights the unique interdisciplinary value of integrating research in sports and medicine. The forum will conduct in-depth discussions on five major directions: AI-enabled systems for integration of sports and medicine, Combining eastern and western approaches in sports injury prevention and rehabilitation, Modern evaluation and quantitative analysis of traditional sports and Daoyin, Maridion Sinew-Fascia theory: fundamental and applied research in sports medicine, and Integrating sports and medicine for preventive care and therapeutic interventions for older adults. This forum aims to establish an international interdisciplinary platform for academic exchange, promote theoretical innovation, research translation and application, and global collaboration in integrating sports and medicine, and contribute to UV's vision of building healthy, inclusive, and resilient future communities.

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For more information, please refer to the UV website

<http://universalvillage.org/>

SESSION 9

Healthcare Innovations for Safety
and Well-being

Session Chairs



Prof. Lin Zhang
The State University of New
York at Buffalo



Dr. Viksit Kumar
Autonomus.ai

[TS9-A] CALL FOR PAPERS

■ [TS9-A] AI-assisted Healthcare Monitoring

- AI for healthcare data acquisition, processing, and analysis
- Machine learning algorithms for ultrasound/MRI/CT imaging analysis
- AI for healthcare data security and privacy considerations

TS9-A

AI-assisted Healthcare Monitoring

October 17-20 | VIRTUAL



OVERVIEW

Due to its unique benefits, including safety, affordability, and convenience, ultrasound technology is widely used in the field of biomedical engineering from diagnostic imaging, stimulation, power transfer, to tissue mechanics and therapies. Several fascinating topics about ultrasound technologies for biomedical applications will be covered in this session, such as the design and manufacture of ultrasound transducers, ultrasound shear wave elastography, acoustic radiation force in tissue engineering, and ultrasound imaging analysis and improvement. The challenges and future vision of this topic will be also discussed.

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For more information, please refer to the UV website

<http://universalvillage.org/>



SESSION 9

Healthcare Innovations for Safety
and Well-being

Session
Chair



Dean
Tongyu Zhu

Deputy Dean,
Professor,
Chief Physician
Fudan University
Shanghai Medical
College

[TS9-B&C] CALL FOR PAPERS

■ [TS9-B] Smart Medicine and Smart Healthcare

- Healthcare system integration and interoperability; AI for healthcare logistics; Internet of Medical Things (IoMT); AI-powered hospital triage platforms; robotics and automation in healthcare
- AI for medical diagnostics and screening; predictive modeling; telemedicine and virtual consultations; personalized medicine; 3D printing in medicine; wearable devices; pervasive and non-invasive health-monitoring
- Intelligent nurseries and senior care; assistive technologies for vulnerable groups; virtual care and mobile health
- Personalized healthcare and wellness management; smart diets and exercise; mental health; integrated medicine

■ [TS9-C] Public Health, Epidemic Prevention and Control

- Alternative medicine; somatic science; community/rural/urban health; palliative care and hospice care; epidemic control and personal hygiene; equity and ethical issues
- Epidemic prediction and contact tracking
- Coordinated operational management across all levels during emergencies; smart resource allocation; quarantine and isolation; smart medical waste processing
- Crowdsourcing, data collection, and visualization

TS9-B & TS9-C

[9-B] Smart Medicine and
Smart Healthcare

[9-C] Public Health, Epidemic
Prevention and Control

October 17-20 | VIRTUAL



OVERVIEW

We aim to provide an interdisciplinary platform for researchers, students and pharmaceutical industry scientists to present and discuss the most recent trends, innovations, challenges and novel solutions adopted in biomedicine using computational modeling, machine learning, artificial intelligence, sequence and imaging analysis, bioinformatics tools, and biophysical techniques.



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SESSION 9

Healthcare Innovations for Safety and Well-being

Session
Chair



Dr.
Yun Li

Adjunct Professor,
Beijing University of
Chemical
Technology

CEO, Changzhou
Jinmu Health
Technology Co., Ltd.

Vice President,
Traditional Chinese
Medicine
Information Society

[TS9-D] CALL FOR PAPERS

■ [TS9-D] The Fusion of Traditional Chinese Medicine and Modern Science

- Construction of Intelligent Knowledge Graphs for Classical TCM Texts
- Multimodal AI-Based Quantification of the Four Diagnostic Methods in TCM
- Systems Pharmacology and Precision Medicine of TCM Formulations
- Neurobiological Mechanisms of Acupuncture and Moxibustion in Brain Science
- Multi-Omics Analysis of TCM Constitution and Preventive Health Management
- Smart Manufacturing and Quality Control across the Herbal Medicine Industry Chain



For more information, please refer to the UV website

<http://universalvillage.org/>

TS9-D

The Fusion of Traditional Chinese Medicine and Modern Science

October 17-20 | VIRTUAL



OVERVIEW

This session invites cutting-edge research at the intersection of Traditional Chinese Medicine (TCM) and modern scientific and technological innovation. It aims to create opportunities for interdisciplinary dialogue beyond empirical observation by leveraging data science, molecular biology, and artificial intelligence to foster a systematic and evidence-based understanding of TCM. Submissions are encouraged across six core domains.

The scope of this session covers the full spectrum from digital humanities to life sciences. We welcome studies ranging from computational analysis of classical texts for building structured knowledge graphs to the objective quantification of diagnostics via multimodal AI that captures the nuances of the Four Diagnostic Methods. In therapeutics, we focus on systems pharmacology to decode the multi-target synergy of herbal formulas and precision medicine approaches based on omics data. Furthermore, we seek to integrate TCM with modern neuroscience by mapping the neural circuits of acupuncture and moxibustion. We also welcome contributions on preventive health management through TCM constitution identification and smart industry solutions for the entire herbal medicine supply chain. This session aims to position TCM not only as a traditional medical system but also as a dynamic, data-rich domain with significant potential in the era of precision and personalized healthcare.

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SESSION 9

Healthcare Innovations for Safety and Well-being

Session
Chair



Prof.
Zhixiong
Zhou

Capital Univ.
of Physical
Education and
Sports, China

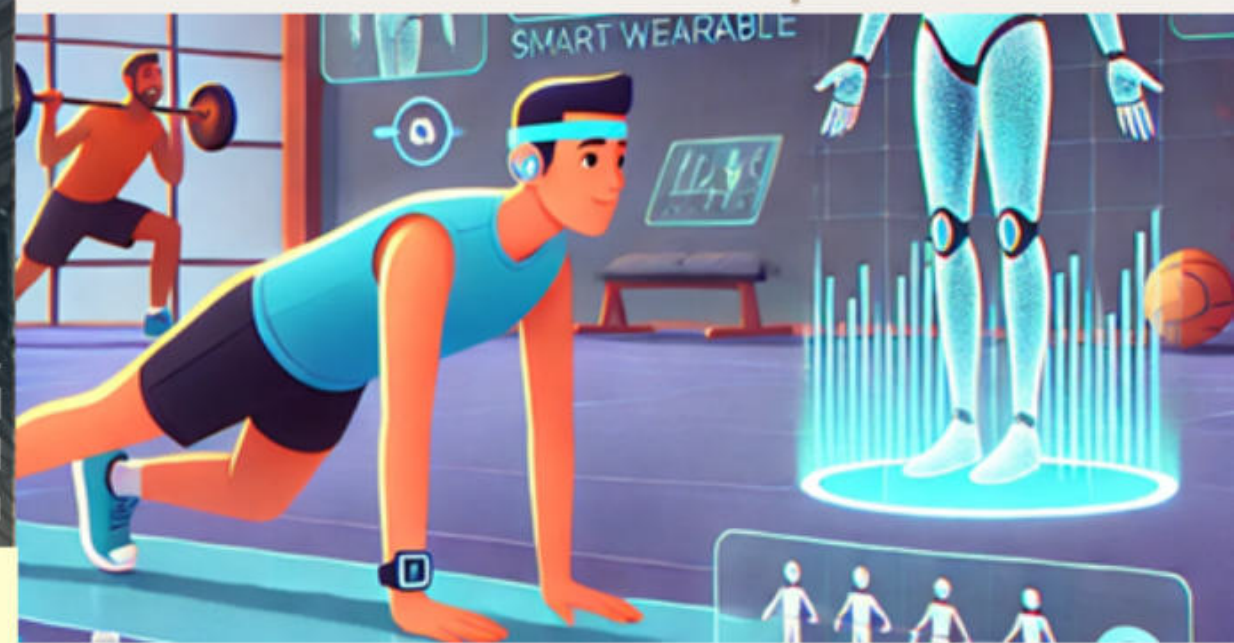
[TS9-E] CALL FOR PAPERS

■ [TS9-E] AI-Driven Sports Training, Exercise, and Fitness

- **Precision Sports Science & Intelligence:** AI-empowered personalized scientific training, intelligent coaching, and sports performance optimization for preventive healthcare and chronic disease management
- **Adaptive Exercise Programming:** AI-enabled personalized exercise prescription and adaptive training programs for improving physical function and long-term health management
- **Intelligent Biomechanics & Rehabilitation:** Real-time biomechanical analysis, IoMT-enabled monitoring, automated injury risk assessment, injury prevention, and rehabilitation for exercise safety in smart healthcare ecosystems
- **Cross-Disciplinary Synergy:** Synergistic integration of AI with Traditional Chinese Medicine and modern sports science in exercise therapy and comprehensive health management
- **Human-Centric Immersive Technologies:** Human-centered virtual/augmented reality systems and data-driven public health strategies for inclusive fitness and community well-being

TS9-E AI-Driven Sports: Training, Exercise, and Fitness

October 17-20 | VIRTUAL



OVERVIEW

The integration of Artificial Intelligence (AI) into sports health is catalyzing a paradigm shift in athletic optimization, injury mitigation, and rehabilitative medicine. By synthesizing high-dimensional, multi-modal data from wearable biosensors, motion-capture systems, and longitudinal clinical records, AI-driven frameworks provide in-depth insights into human physiological and biomechanical performance. These technologies transcend traditional boundaries, enabling precise injury risk prediction, early intervention, and highly personalized training protocols.

This session explores how advanced AI enhances and complements traditional and modern sports practices to establish a proactive, evidence-based framework for comprehensive health improvement. Beyond mere performance gains, this integration serves as a cornerstone of Human-Centered AI Transformation. By leveraging predictive pattern recognition and adaptive feedback loops, we aim to foster a resilient, data-driven ecosystem that promotes global public health, inclusive fitness, and sustainable wellness.



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SESSION 9

Healthcare Innovations for Safety and Well-being

Session Chair



Dr. Keming Zhou

Audar Health Technology, UK

[TS9-SP1] CALL FOR PAPERS SPECIAL SESSION

■ [TS9-SP1] AI-Powered IoMT Telehealth Innovation

Explore the transformative role of the Internet of Medical Things (IoMT) in developing scalable, human-centered ecosystems and in creating a comprehensive Digital Health Ecosystem:

- **Intelligent Monitoring:** Recent advances in remote sensing, wearable biosensors, and pervasive, non-invasive health-tracking technologies.
- **Edge Computing in Healthcare:** Decentralized processing architectures, low-latency AI inference at the point of care, and energy-efficient onboard analytics for IoMT devices.
- **AI-Enabled Care Delivery Systems:** Design and implementation of AI-driven triage platforms, telemedicine frameworks, and decentralized care delivery models.
- **Healthcare Data Infrastructure:** Secure, scalable, and efficient architectures for healthcare data storage, predictive analytics, and interoperability across platforms.
- **Ethical Deployment**
 - **From Research to Practice:** Strategies to translate digital health and personalized medicine research into practice, and to scale innovations from controlled environments to realworld, large-scale deployment.
 - **AI for Equitable Healthcare:** Human-Centered AI that promotes accessibility, equity, and security while bridging gaps in care and infrastructure in underserved communities.
 - **AI Governance & Policy:** Developing ethical AI frameworks, audit and accountability practices, and IoMT regulatory policies.

[SPECIAL] TS9-SP1

AI-Powered IoMT Telehealth Innovation

LOCAL & VIRTUAL
October 17-20



OVERVIEW

Modern healthcare systems face growing strain from resource shortages and rising demand for care, particularly due to aging populations and chronic disease. Building on the WHO Global Strategy on Digital Health, this session explores the transformative role of the Internet of Medical Things (IoMT) in developing scalable, human-centered digital health ecosystems while fostering collaboration among academia, industry, and policymakers to bridge the gap between research and large-scale deployment across diverse settings.

This session highlights emerging sensing and monitoring technologies, advances in edge computing and decentralized intelligence, and the design of AI-enabled care delivery systems. It also examines the data infrastructures that support these systems and the governance, policy, and ethical frameworks required for their responsible and equitable deployment in real-world healthcare contexts.



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SESSION 10

Human-centered Social Innovations for
Diversity, Inclusiveness, Fairness, and
Preservation of Cultural Heritage

Session Chair



Prof. Zhiyong Lan Tsinghua University,
China

TS10-A & TS10-B

[10-A] Urbanization and Smart
Communities

[10-B] Smart Government and
Social Services

October 17-20 | VIRTUAL



[TS10-A&B] CALL FOR PAPERS

- **[TS10-A] Urbanization, Social Governance, and Smart Communities**
 - Urbanization: impact and challenges; geographical, cultural, and political factors
 - Smart communities and neighborhoods; social media and support groups; community resource management; supporting infrastructure; data platforms and community clouds
- **[TS10-B] Smart Government and Social Services**
 - Smart government: smart administration, regulation, policy and law; participatory governance; smart resource allocation
 - Smart social services and social networks; smart education/training; civic engagement

OVERVIEW

Human-centered social innovations are essential in promoting diversity and inclusive-ness as cities become more digitized and urbanized. By integrating smart technologies into urban planning and government services, these initiatives enhance accessibility and quality of life while preserving cultural heritage. Streamlined services and sustainable development ensure that modernization respects historical identities and meets diverse community needs effectively. This approach ensures that the benefits of urban growth and technological advancements are equitably distributed, fostering sustainable and harmonious urban futures.



For more information, please refer to the UV website

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SESSION 10

Human-centered Social Innovations for Diversity, Inclusiveness, Fairness, and Preservation of Cultural Heritage

Session
Chair



Prof.
Shengsheng
Cao

Ningbo Univ.
Ph.D. Tsinghua Univ.
Visiting Scholar,
Harvard Univ.

[TS10-C&D&E] CALL FOR PAPERS

▪ [TS10-C] Integrated Solutions for Smart Humanity

- New legal, social, and ethical challenges posed by applications of AI; integrated solutions: quantified analysis for the safety and ethics of intelligent systems; the social responsibility of enterprises; establishing legal, regulatory and ethical frameworks for the development of AI
- Integrated solutions to promote diversity, inclusiveness, fairness, and the preservation of cultural heritage
- Ecological/environmental/humanistic/organizational psychology; persuasive technology
- Adaptive development strategies for various geographic regions at different developmental phases and people of different ages with diverse technology and cultural backgrounds

▪ [TS10-D] Smart Design and Design Ethics

- Evaluation of smart designs and their unintended consequences; emergent technologies for smart designs, simulation platform, and system optimization
- Interaction between different smart systems; impact of smart design on lifestyles, communities, and the environment; major challenges and impact factors of smart system design
- Coordinated design under the principles of usability, enjoyability, sustainability, inclusiveness, and cultural preservation; design ethics in the AI era
- Intelligent electromechanical design; Intelligent industrial design; Intelligent environmental design; Intelligent architectural and infrastructure design; Intelligent agent design; digital design; digital media art; visual media design; new media design; animation design; information and communication platform design; virtual environment design; design of logistics, crisis response, city services and applications; multidisciplinary design

▪ [TS10-E] Cultural Heritage Preservation and Creative Industries

TS10-C & D & E

[10-C] Integrated Solutions for Smart Humanity

[10-D] Smart Design and Design Ethics

[10-E] Cultural Heritage Preservation and Creative Industries

October 17-20 | VIRTUAL



OVERVIEW

Human-Centered Social Innovations drive diversity, inclusiveness, and cultural heritage preservation by prioritizing equitable, accessible solutions. Emphasizing interdisciplinary approaches, these innovations leverage technology for human well-being, ensuring progress respects cultural diversity. Ethical design principles guide the creation of sustainable, accessible technologies, while acknowledging linguistic and cultural diversity enhances educational tools' inclusive-ness. This commitment fosters a more inclusive, culturally rich society.



For more information, please refer to the UV website

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SESSION 10

Human-centered Social Innovations for
Diversity, Inclusiveness, Fairness, and
Preservation of Cultural Heritage

Session Chair



Juntao Jiang
Zhejiang University



Junyi Yu
Columbia University

[TS10-F] CALL FOR PAPERS

▪ [TS10-F] Equitable AI for the Underrepresented and Vulnerable Groups

- AI for Third World: for Integration, Resilience, Inclusiveness, and Sustainability to overcome Regional, Racial, and Gender Disparities
- Equitable AI: Address disparities in healthcare, education, and economic opportunities, and empower developing nations to reduce poverty
- Inclusive AI: Promote inclusion, particularly for marginalized and vulnerable populations, and ensure technological benefits for those in greatest need
- Human-centricity, Responsible AI, Trustworthy AI: Improve trustiness in AI systems, promote fairness, eliminate biases, for lasting societal benefits



For more information, please refer to the UV website

<http://universalvillage.org/>

TS10-F

Equitable AI for the Voiceless
and Vulnerable Groups

October 17-20 | VIRTUAL



OVERVIEW

As AI reshapes industries and societies, its potential to address global challenges is undeniable. This session will focus on the role of AI in promoting fairness and social impact, particularly for voiceless and vulnerable populations. Experts will discuss how AI can be leveraged to bridge gaps in healthcare, education, and economic opportunities, with a special emphasis on empowering developing countries and reducing poverty. The session will explore ways to design AI systems that promote inclusion, eliminate biases, and create lasting positive change, ensuring that technological progress uplifts those who need it most.

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SESSION 11

Algorithms, Benchmark Development,
and Data Management

Session
Chair



Prof. Yong
Xu

Fujian Univ.
of Tech.,
China

[TS11-A&B&C] CALL FOR PAPERS

- **[TS11-A] Responsible and Ethical Data Management and Processing**
 - Data cleaning; data fusion and integration; data quality and integrity; data visualization; data mining; big data analytics
 - Human-centered/cognitive/mobile/cloud/edge computing
 - Urban informatics; data-driven monitoring, analysis, prediction, planning and decision making; real-time big data services; smart city control centers; application benchmarking and city indices; knowledge management (KM)
- **[TS11-B] Learning Algorithm and Model Development, Analysis and Interpretability**
 - Signal processing and understanding (image/video/audio/speech/natural language); semantics interpretation; multimodal sensor fusion and city monitoring; diagnostic algorithms
 - AI, machine learning and interpretability; fairness, accountability, privacy, transparency, and ethics; deep-fake detection
 - Intelligent modeling, simulation, prediction and optimization; system dynamics; system control
- **[TS11-C] Benchmark Development, Evaluation, and Long-Term Reproducibility**

TS11-A & B & C

[TS11-A] Responsible and Ethical Data
Management and Processing

[TS11-B] Learning Algorithm and Model

Development, Analysis and Interpretability

[TS11-C] Benchmark Development, Evaluation,
and Long-Term Reproducibility

October 17-20 | VIRTUAL



OVERVIEW

Learning algorithms play a vital role in Artificial Intelligence and offer efficient solutions to numerous real-world problems. In this era of bigdata, scientists and engineers are facing the issues of how to use these data more efficiently, both retrospectively and prospectively, with the aim to mine useful knowledges from them. In order to achieve these, new algorithms have to be developed to discover some novel methods for the optimized treatment of these data and to attain reliable predictive results with confidence. In this Section of the conference, you will find exciting opportunities to explore the amazing real-world algorithms for the treatment of data ranging from text messages, time series data, images and photos to online videos, etc.



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SESSION 12 Special Session

Session
Chair



Dr. Cheng
Luo

Managing
Director,
Sherbrooke Park
Advisers, USA

[SP12-A] CALL FOR PAPERS SPECIAL SESSION

▪ [SP12-A] AI and Finance

Focus on cutting-edge research at the intersection of AI technologies and financial systems. Explore how AI is transforming financial markets, institutions, and decision-making processes.

- **Machine Learning in Finance:** Asset pricing, portfolio optimization, and trading strategies; Deep learning for time-series forecasting; Reinforcement learning in trading and market making
- **Natural Language Processing for Financial Data:** Sentiment analysis of financial news and social media; Information extraction from earnings reports and filings; LLMs for financial analysis and decision support
- **Risk Management and Fraud Detection:** Credit risk modeling and scoring; Anomaly detection in transactions; AI-driven fraud prevention systems
- **Financial Market Microstructure:** High-frequency trading and algorithmic strategies; Market prediction and volatility modeling
- **Explainable AI in Finance:** Interpretability of financial models; Regulatory compliance and transparency
- **AI for FinTech and Financial Services:** Robo-advisors and automated financial planning; Blockchain and AI integration; Personalized financial services
- **Ethics, Regulation, and Governance:** Bias and fairness in financial AI systems; Regulatory challenges and policy implications; Responsible AI in financial decision-making

[SPECIAL] SP12-A AI and Finance

October 17-20 | VIRTUAL



OVERVIEW

The special session on “Artificial Intelligence in Finance” focuses on cutting-edge research at the intersection of AI technologies and financial systems. This session aims to bring together researchers, practitioners, and industry experts to explore how AI is transforming financial markets, institutions, and decision-making processes. Topics of interest include, but are not limited to:

- ❖ Machine Learning in Finance
- ❖ Natural Language Processing for Financial Data
- ❖ Risk Management and Fraud Detection
- ❖ Financial Market Microstructure
- ❖ Explainable AI in Finance
- ❖ AI for FinTech and Financial Services
- ❖ Ethics, Regulation, and Governance



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SESSION 12 Special Sessions

Session Chair

Distinguished
Research Fellow,
Director,
Innovative
Education Division,
National Culture
Research Center,
Chinese Academy
of Social Science



Jin Han

President,
Dodo Bird
Institute of
Innovative
Family
Education

Founder,
Mama Philosophy

[SP12-B] CALL FOR PAPERS SPECIAL SESSION

▪ [SP12-B] Reconstructing Human-Centered Family Education in the AI Era - Learning, Parenting, and Relational Development

Reconstruction of Family Education Systems in the AI Era: Modeling the family as the smallest unit of education, integrating cognitive development, emotional support, and formation of ethical and social values as the underlying structure of human-centered education.

➤ Cognitive Development and Moral Judgment in the AI Era

Exploring how real-world content, such as news, can be used to cultivate children's critical thinking, interpretive skills, and intent-aware reasoning in information-overloaded and algorithm-driven environments

➤ AI-Era Parenting and Human-AI Collaborative Decision-Making

Parental guidance in AI-assisted decision-making environments: from information selectors to facilitators of value development and meaning-making

➤ Relational Learning Environments and "Village-Based Growth"

Building learning environments grounded in real relationships and community interaction to mitigate social isolation, reduced engagement in learning due to dependence on AI, and psychological stress arising from constant evaluation, social comparison, and algorithmic performance metrics

[SPECIAL] SP12-B

Reconstructing Human-Centered Family
Education in the AI Era - Learning,
Parenting, and Relational Development

October 17-20 | VIRTUAL



OVERVIEW

In an era of rapid AI development, technologies are transforming how decisions are made and how information is accessed, while simultaneously introducing new risks. When children and adolescents engage with AI systems that prioritize efficiency and optimization without the support of care-oriented guidance characterized by long-term responsibility and a commitment to well-being, they may miss critical opportunities for healthy growth and development.

This forum focuses on a fundamental challenge in contemporary education: the fragmentation of the family's role as an integrated system supporting children's cognitive and relational development. Drawing on long-term innovations in family education and following principles in the Philosophy of Motherhood, it proposes a path forward—reconstructing the family's role as a human-centered environment for education. This direction encompasses:

- ❖ building parent-child dialogue mechanisms that support interpretability and development of judgment skills;
- ❖ creating relational learning environments that foster social and emotional growth;
- ❖ developing integrated resource networks across domains to support the development of practical skills.



For more information, please refer to the UV website

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SESSION 12 Special Sessions

Session Chairs



**Prof. Wenhe
Zhan**

Director,
Shanwei Prospect
Institute of Advanced
Science and Technology

**Prof. Yulan
Yang**



Visiting Scholar, MIT
Shanwei Prospect
Institute of Advanced
Science and Technology

[SPECIAL] SP12-C

Quality-Driven Development of New
Energy Vehicles through Sustainable
Smart Manufacturing

LOCAL & VIRTUAL
October 17-20



OVERVIEW

This forum explores the future development of the new energy vehicle industry, within the evolving industrial landscape shaped by sustainable transformation and intelligent manufacturing. It will focus on key areas including vehicle lightweighting, machine vision and intelligent sensing, battery technologies, advanced materials, sustainable manufacturing processes, and intelligent production systems. By examining how sustainable smart manufacturing can improve R&D efficiency, manufacturing quality, resource utilization, and industrial coordination, the forum aims to promote interdisciplinary exchange and collaborative innovation in support of the industry's transition towards a greener, smarter, and more sustainable future.



For more information, please refer to the UV website

<http://universalvillage.org/>

Submission uv26.pages.dev/submit

Instruction uv26.pages.dev/instruct



Forums & Interactive Program

Forums / Competitions / Poster & Exhibition / Workshop Details / UV Roadmap Discussion

Session Chairs



Jieren Kou
UVS



Hanxia Li
UVS



Zhenyao Liu
UVS

CALL FOR PAPERS

- UV Forums
 - [CF] UV City Forum
 - [SF] UV Student Forum
 - [AF] UV Art Forum
- UV Competitions
 - [DSC] UV Data Science Competition
 - [MC] UV Modeling Competition
 - [PC] UV Pitch Competition
 - [K12C] UV K-12 Challenge
- UV Poster Session and Exhibition
 - [PE1] UV Posters
 - [PE2] UV Exhibition: Art & Technologies that present the UV concept
- UV Workshop
 - [WS-UV] UV Introduction
- UV Roadmap Discussion
 - [PD] Human-Centered AI Transformation for Future Empowerment

October 17-20 | VIRTUAL



OVERVIEW

Universal Village (UV), proposed by MIT's UV program, envisions a future society that addresses the challenges of rapid urbanization through wise use of technology. In an era of rapid technological transformation, AI offers unprecedented potential to transform how urban systems are designed, connected, and governed through enabling data-driven insights, adaptive decision-making, and large-scale cross-system coordination. This shift facilitates the transition from fragmented "smart city" paradigms to holistic, coordinated, and inclusive ecosystems that integrate healthcare, transportation, energy, and communities, contributing to sustainable harmony between humans and nature. Within this context, the UV Forum provides a collaborative platform for academia, industry, government, and civil society to share research, exchange ideas, and co-develop forward-looking solutions that incorporate explainable and human-intelligible AI, intent-aware reasoning, accountable decision-making, and human-in-the-loop learning. Through interdisciplinary dialogue and collaboration, this forum aims to empower participants to contribute to building resilient, inclusive, and trustworthy societies that are aligned with the vision of Universal Village.



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CALL FOR PAPERS / PRESENTATIONS / PANELISTS

Part II: Forums / Competitions / Poster & Exhibition / Workshop Details

Part III: Interactive Programs

UV Forums

- **[CF] UV City Forum**
 - Reflections on urbanization and its unintended consequences
 - Current development status and challenges of smart cities; vision of future UV development
 - Collaboration among governments, academia, industries, and civil society
- **[SF] UV Student Forum**
 - UV student research, innovations, and discussions
 - UV Philosophy and Story-sharing, Technology News, Social Hot Topics, and Vision
 - ❖ Preserving cultural heritage in the process of urbanization
 - ❖ Bridging the generation gap and promoting understanding across diverse groups with the aid of UV technologies
 - ❖ Exploring future lifestyles for sustainable happiness
 - UV Introduction Video, Talent Shows and Online Games
 - UV Entrepreneurship Initiative and Pitch Competition
 - Future Development of UV Club and UV Student Forum
- **[AF] UV Art Forum**
 - Digital arts; Non-fungible tokens (NFTs); AI / VR / AR-enabled artifacts
 - Comfort art in the post-pandemic era

UV Poster Session and Exhibition

- **[PE1] UV Posters**
- **[PE2] UV Exhibition: Art & Technologies that present the UV concept**

Organizations/Companies/Startups are welcome.

UV Workshop

- **[WS-UV] UV Introduction**

UV Competitions

Solving problems in the real world and encouraging innovations from the young generation; finding a new way of life in the post-pandemic world

- **[DSC] UV Data Science Competition**
 - Machine Learning Challenges
 - Computer Vision Challenges
- **[MC] UV Modeling Competition**
- **[PC] UV Pitch Competition**
 - Reflections on urbanization and its unintended consequences
 - Current development status and challenges of smart cities; vision of UV development
 - Collaboration among governments, academia, industries, and civil society
- **[K12C] UV K-12 Challenge**
 - Innovation Competition
 - Research Presentation
 - Talent Shows
 - Online Game

UV Roadmap Discussion

- **[PD] Human-Centered AI Transformation for Future Empowerment**
 - Explainable & Human-Intelligible Understanding
 - Intent-Aware Reasoning & Accountable Decision-Making
 - Human-Authorized AI Action
 - Human-Supervised Reflective Learning

We sincerely invite you to apply to become a panelist!



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