IEEE SWC 2025

August 18-22, 2025, Calgary, Canada

Program at a Glance (All times local)

Time/Day	Monday, August 18	Time/Day	Tuesday, August 19	Time/Day	Wednesday, August 20	Time/Day	Thursday, August 21	Time/Day	Friday, August 22
		08:45 - 09:35	Keynote 1	08:30 - 09:00	Opening	08:30 - 09:30	Keynote 4	08:30 - 09:30	Keynote 6
		09:35 - 10:35	Invited Talk 1	09:00 - 10:00	Keynote 3	09:30 - 09:50	Coffee Break	09:30 - 10:00	Coffee Break
		10:35 - 10:50	Coffee Break	10:00 - 10:30	Coffee Break	09:50 - 10:50	Panel Discussion 2	10:00 - 11:30	Technical Session 6
		10:50 - 11:55	Invited Talk 2	10:30 - 12:00	Technical Session 1	10:50 - 12:20	Technical Session 4	11:30 - 12:30	Panel Discussion 3
		11:55 - 12:30	Panel Discussion 1	12:00 - 13:00	Lunch	12:20 - 13:15	Lunch		
		12:30 - 13:30	Lunch	13:00 - 14:30	WIE 1	13:15 - 14:15	Keynote 5		
13:00 - 15:00	Tutorial Session 1	13:30 - 14:15	Keynote 2	14:30 - 15:30	Technical Session 2	14:15 - 15:45	WIE 2		
15:00 - 15:30	Coffee Break	14:15 - 15:00	Invited Talk 3	15:30 - 16:00	Coffee Break	15:45 - 16:00	Coffee Break		
15:30 - 17:30	Tutorial Session 2	15:00 - 15:15	Coffee Break	16:00 - 17:30	Technical Session 3	16:00 - 17:30	Technical Session 5		
		15:15 - 16:00	Invited Talk 4				Poster Session		
		16:00 - 16:40	Technical Presentation						
18:00 - 20:00	Reception					18:00-21:00	Banquet		

Technical Program (All times local)

Monday, Aug 18

13:00 – 15:00 - Tutorial Session 1

Intelligent Network Management for Next-Generation Networks
Room: Macleod E1

Dr. Huaqing Wu, University of Calgary

Advances in Knowledge Graph Computation in the Era of Generative AI
Room: Macleod E2

Dr. Xiaokun Zhang, Athabasca University, Canada

15:30 – 17:30 - Tutorial Session 2

Roadmap of Federated Learning: from Motivation to Practice
Room: Macleod E1

Guojun Tang, University of Calgary
Dr. Jiayu Zhou , University of Michigan
Dr. Steve Drew, University of Calgary

The Practice of Using Language Models: A Look at the Common Challenges and How to Overcome Them
Room: Macleod E2

Dr. Jason Bernard, Athabasca University, Canada

Towards Resilient and Ultrasafe Energy Systems for the Next-Gen Smart Grid
Room: Macleod E3

Dr. Saher Javaid, Kanazawa Gakuin University, Japan

Tuesday, Aug 19

08:45 – 09:35 - Keynote 1

Room: Macleod Ballrooms B & C

Jan Bradley - Chief Information and Technology Officer, The City of Calgary
Co-presented with The City of Calgary IT team

The City of Calgary is leading the way in technological innovation for municipal services. In this keynote, Jan, joined by a team of City of Calgary IT engineers and Engineers-in-Training (EITs), will spotlight the City's advancements in leveraging emerging technologies to improve service delivery. The presentation will feature practical applications of artificial intelligence (AI), Calgary's award-winning Internet of Things (IoT) network, robotic process automation (RPA), and other state-of-the-art tools driving smart city initiatives. Key strategic frameworks, including Calgary's AI Strategy and Enterprise Data Strategy, will be highlighted to demonstrate the City's forward-thinking approach. The keynote will also underscore Calgary's sustained investment in digital infrastructure, notably its city-wide fibre optic network, which now stretches over 650 kilometers—enabling smart city capabilities and promoting digital equity across the city.

09:35 – 10:35 – Invited Talk 1

Modernize public services with emerging technologies

Room: Macleod Ballrooms B & C

Byron Riemann, COO of Rocky View County, and Katelyn Petersen, Chief Experience Officer of RWI Synthetics
Melanie MacKenzie, Manager, Geospatial Business Solution, The City of Calgary - Digital Twins
Zi Wang, Leader of Congestion Mgmt and Smart Mobility - The City of Calgary traffic management

10:50 – 11:55 – Invited Talk 2

Latest technology development in AI and other emerging technologies at AWS

Room: Macleod Ballrooms B & C

Diego Magalhaes, Principal Technologist of AWS Canada

11:55 – 12:30 – Panel Discussion 1

Panel presentations - Building a strong innovation ecosystem

Room: Macleod Ballrooms B & C

Moderator: Luis Moura
Ali Talakshi, Director of Partnerships, Platform Calgary
Nicole Shokoples, Alberta Innovates
Tracey Nyholt, CEO and Co-founder of Techjutsu
Jordan Smith,CEO and Co-founder of Quantized Tech

This panel discussion will show case multiple Canadian tech companines' innovative solutions, and offer insights on Calgary's innovation ecosystem, accelerators, incubators, funding opportunities, and talent development support.

13:30 – 14:15 - Keynote 2

Room: Macleod Ballrooms B & C

Martin Dinel - Assistant Deputy Minister & CISO, Cybersecurity Division, Government of Alberta

Martin's keynote will provide a comprehensive overview of Alberta's evolving cybersecurity landscape, emphasizing its critical importance to the province's digital resilience. It will highlight the growing threat of ransomware, phishing, APTs, and DoS attacks, along with recent incidents that underscore the urgency of robust defenses. Key threat actors—including nation-states, cybercriminals, hacktivists, and insiders—will be examined to contextualize Alberta's risk environment. The Government of Alberta's CyberAlberta program will be showcased for its strategic initiatives, partnerships, and measurable impact. The address will also explore the province's efforts to cultivate cybersecurity talent through education, training, and professional development, with a vision of positioning Alberta as a global hub for cyber excellence. The session will conclude with a call to action for collaborative innovation to strengthen Alberta's cybersecurity posture.

14:15 – 15:00 – Invited Talk 3

Dell's latest technology development in AI and other emerging technologies

Room: Macleod Ballrooms B & C

Rob Lucas, Principal Solutions Consultant, Dell Technologies Canada

15:15 – 16:00 – Invited Talk 4

Beyond Tomorrow: A Look at Google's Innovations in AI, Agents and Computing

Room: Macleod Ballrooms B & C

Mike Craigen, Customer Engineer, Google Canada

Join us for a look inside Google to explore how the next wave of technology is reshaping our world. This session covers the forefront of AI innovation with our progress on helpful models like Gemini, the emergence of autonomous AI agents that can act on your behalf, and other recent breakthroughs. We will connect these powerful advancements to their transformative applications across industries, offering a clear vision of how Google is combining AI and computing innovation to unlock a new era of discovery and solve some of humanity's greatest challenges.

16:00 – 16:40 – Invited Talk 4

Youth AI for Good presentations

Room: Macleod Ballrooms B & C

Moderator: Dr. Henry Leung

Our bright young minds will share their perspectives and visionary ideas on harnessing AI and other emerging technologies for social good.

Wednesday, Aug 20

09:00 – 10:00 - Keynote 3 – Dr. Runhe Huang

Room: Macleod Ballrooms B & C

10:30 – 12:00 Technical Session 1

UIC-1: Intelligent/Smart Object & Interaction (I)

Room: Macleod A1

Session Chair: TBD

1. Marker-Based Lightweight Monocular Visual Localization for Low-Cost Mobile Robot
Haijiang Gao; Ziyang Lu; Yubin Zhao; Xiaofan Li; Huaming Wu

2. Group Cohesion-Aware Social Robot Navigation with Attention-Based Deep Reinforcement Learning
Haoyu Li; Bin Guo; Yan Liu; Yasan Ding; Zhaotie Hao; Hao Wang; Yao Li; Shiqi Liu; Zhiwen Yu

3. Dual-Modality Smart Shoes for Health Assessment: a Primary Study in Heart Failure Using the 6-Minute Walk Test
Qijun Ying; Chenghao Deng; Kangyu Chen; Yuchen Zhong; Huajun Long; Xiaohui Cai

4. M3ET: Efficient Vision-Language Learning for Robotics Based on Multimodal Mamba-Enhanced Transformer
Yanxin Zhang; Liang He; Zeyi Kang; Zuheng Ming; Kaixing Zhao

5. LanPerAct: a Framework for Language-Driven Perception and Robotic Manipulation
Haoning Wu; Shaowu Wu; Youyuan Tu; Zhou Hao; Steve Drew; Xiaoguang Niu

6. RailDefect-MPL: Multimodal Prompt Learning for Railway Defect Detection
Zhongchuan Wang; Weiwei Xing; Guanjia Zhang; Zhengyang Zhao; Cheng Zhang

DigitalTwin-1: Digital Twin Fundamentals

Room: Macleod A2

Session Chair: TBD

1. Enhancing Data-Driven Modelling of UAV Digital Twin System with Generated Time-Series Data
Changqing Ji, Jixing Cao, Jing Qin, Xin Zhao, Zhe Sun, Fangye Lai, Zumin Wang

2. TWRNet: Adaptive Multi-Res Wavelet Filtering for Enhanced Time Series Forecasting
Changqing Ji, Yu Chen, Jing Qin, Zhe Sun, Wenzhu Zhang, Zumin Wang

3. Toward a Model- and Pattern-Based Method for the Engineering and the Maintenance of Digital Twin Systems
Rindra Mbolamananamalala, Souad Rabah, Vincent Chapurlat

4. A Data-Based Digital Twin Model for Distributed Systems in the Field
Atefeh Gooran Orimi, Rayen Hamlaoui, Christian Backe, Veit Birken, Roland Lachmayer

5. Threat Analysis in Real World Computer Networks Possessing a Digital Twin: Graph Visualization and Markov Clustering
Hamid Zargariasl, Siddique Reza Khan, Christian Borck, Martin Behm, Christian Herglotz

6. Digital Twin Engineering Guided by MBSSE and Digital Thread
Dalil Zeamari, Clarissa Genevieve Gregory, Souad Rabah, Vincent Chapurlat

ATC-3: Industrial System Modeling & Optimization

Room: Macleod A3

Session Chair: TBD

1. An Intermittent Energy Forecasting Method for the Iron and Steel Industry Integrating Production Planning and Process Characteristics
Jinzhe Wang, Tianyu Wang, J. Zhao, W. Wang, L. Wang

2. Multi-Process Load Forecasting in Steel Industry Based on Hierarchical Multi-Head Attention Mechanism
Chenhui Zhang, Tianyu Wang, J. Zhao, W. Wang

3. Operation Optimization for Coordinated Control System of Coal-Fired Units Based on Background Knowledge Graph
Shuxian Peng, Xinyu Zhang, Zhongyang Han, J. Zhao, W. Wang

4. Knowledge-Constrained POD-LSTM Modeling for Multi-Physical Fields Prediction in CDQ Furnaces with Extremely Sparse Measurements
Jiawei Guo, Wange Li, J. Zhao, W. Wang

5. A Steel Industry Smoke Feature Extraction Method Based on Variable Selective Convolution
Fan Zhou, Jiyuan Li, Zhongyang Han, Tianyu Wang, J. Zhao, W. Wang

6. Fourier Single Pixel Imaging via Spatial-Temporal 3D Joint Priors
Duo Chen, Zixin Tang, Zhiqin Zhu, Hao Zhu

UIC-7: Personalization and Social Aspects (I)

Room: Macleod A4

Session Chair: TBD

1. Wolf Raven Optimization Algorithm of Partition for Pythagorean Fuzzy Time Series Forecasting
Hanchu Zhang; Weiwei Xing; Xiang Wei; Yue Cheng; Weibin Liu

2. EEG Emotion Recognition Using Dual-Stream Graph Convolutional Fusion Networks and Conditional Contrastive Domain Generalization
Yufei Chen; Pengwei Wang; Yaoyi Xi; Gang Zhou; Ziyang He

3. PENER: a Chinese NER Model Based on Pinyin-Enhanced
Jiarun Lin; XiaoLi Ren; Xiaoyong Li; Chengcheng Shao; Xiang Zhu; Xinyu Chen; Kaijun Ren

4.DA-Mamba Stega: Linguistic Steganography Based on Data Augmentation and Mamba Blocks
Qing Chang; Qianmu Li; Yingquan Chen; Huifeng Li

5. A Federated Learning-Based EEG Emotion Recognition Method Integrating Dual-View Frequency Domain and Spatiotemporal Features
Pengwei Wang; Yufei Chen; Xuzhe Yan; Aobo Wu; Ziyang He

6. Reliable Crowdsourcing Scheme Based on Blockchain
Mengya Cai; Pengcheng Ma; Yuan Ji; Lingyun Jiang; Yuanxi Zhuang; Bowen Li

Metaverse-1: Metaverse Computing and Communications

Room: Macleod E1

Session Chair: TBD

1. Gamified Constructivist Teaching in the Metaverse: Motivating University Student Participation in Climate Change Education
Winnie C. L. Leung, Peter H. F. Ng, Ken S. K. Tai, Joe K. H. Lam, Helen K. W. Law, Frankie T. K. Har, Laura Zhou, Chen Li, Yan Yan Lam, and Qing Li

2. Bridging the Skills Gap: Evaluating the Effectiveness of Virtual Reality Simulations for Enhancing Job-Readiness Among Vocational Education Students
Rasha Abousamra

3. Effective Security Administration Interface in 6G Using Virtual and Immersive Reality
Anmol Agarwal and Clifton Fernandes

4. Impact of Latency on User Experience in Immersive Teleoperation: A Study with Motion Capture Gloves and Dexterous Robotic Hand
Shravan Kumar Pattiwar, Myrthe E. J. Tilleman, Konstantinos Kousias, Paresh Saxena, OÅN zguÅN Alay, and Carsten Griwodz

5. Towards AI-Assisted Immersive Learning: Factor Analysis of Learning Effect in K-Cube Edu-Metaverse
Ye Jia, Chen Li, Zackary P. T. Sin, Xiangzhi Eric Wang, Jiongning Lian, Peter H. F. Ng, Xiao Huang, George Baciu, Jiannong Cao, and Qing Li

6. Enhancing Immersive Virtual Worlds: The Role of AI, NLP, and Generative Models in the Metaverse
Azza Mohamed and Suha Khalil Assayed

SWC-7: IAIDDT (II)

Room: Macleod E2

Session Chair: TBD

1. LLM PhishGuard: A GPT-3.5-Driven Framework with Heuristics, Virus Total Reputation, and OCR for SME Email Security
Adil Khan and Suleiman Y. Yerima

2. Spam Email Detection Using Artificial Intelligence and Machine Learning Techniques
Azza Mohamed and Suha Khalil Assayed

3. Deep Classification of Colon Cancer Histopathology
Hadil Salman, Abdalla Gad, Maha Yaghi, Marah Alhalabi, Abdalla Abdelkhalek, Mohamed Abdelbari, Fares Alsharafi, Omar Abdellatif, and Mohammed Ghazal

4. Advanced Machine Learning for House Price Prediction
Juan (Stella) Pang and Rossitza S. Marinova

5. IT-Infused Financial Performance Evaluation: Comparing Islamic and Conventional Banks
Adnan Jawabri, Mohammad Husam Odeh, Meera Albaloshi, Amajd Suri, Waheed Ur Rehman, and Nael Sayedahmed

6. Cyber Risk Prediction and Management Using Random Forest-Based Risk Scoring Models
Baba Shaheer Gutappa

UIC-13: Intelligent/Smart Systems & Services (V)

Room: Macleod E3

Session Chair: TBD

1. GeNIUS: Generative Neurodivergent-Inclusive User Styles with Style Transfer for Personalized Design
Mareike Victoria Keil, Oliver Bleisinger, Heiner Stuckenschmidt

2. YoViNet: Remote Sensing Object Detection with Multi-Scale Attention and Vision Transformers
Song Yeqing

3. A FAN-Enhanced iTransformer Model for Cold Chain Logistics Demand Forecasting
Wenqi Zhang, Zhenyan Ji, Jiuqian Dai, Xiaoqiang Zhu, Jiqiang Liu, Huihui H Wang

4. MRec-Diff: Diffusion-Based Hierarchical Restoration for Ancient Manchu Book Images
Jiahao Fan, Siyang Lu, Haoran Li, Xiang Wei, Xiaojun Bi, Yingjun Qi

5. Scene Chinese Recognition with Mix Attention and LLM
Xiahan Yang, Hui Zheng, Yinting Wang

6. Efficient Reconstruction of High-Resolution Human Avatars from Monocular Videos via a Hybrid Representation
Jiang Wu, Yuhui Wen, Weibin Liu, Weiwei Xing, Liping Jing

13:00 - 14:30 – Women in Engineering 1

Room: Macleod Ballrooms B & C

14:30 - 15:30 - Technical Session 2

UIC-11: Smart Environment Application (III)

Room: Macleod A1

Session Chair: TBD

1. HADCoD: Large-Sized Hyperspectral Anomaly Detection via Dedicated Algorithm and Optical Accelerator Co-Design
Yuwen Jiang, Shu Li, Zhaoyuan Zhang, Haidong Wu, Zhihao Liang, Enze Li, Mengquan Li, Keqin Li

2. Graph Partitioning for Accuracy and Scalability in Training GNN-Based Traffic Prediction Models for Intelligent Transportation Systems
Ashish Agnihotri, Bao Ngo, Khuc Nguyen, Aniket Mahanti, Ying Ying Liu, Parimala Thulasiraman

3. Integrative ITS Platform for Enhanced Urban Mobility in Smart Cities
Mostafa Zaman, Ahmed Malik, Daniel D Gubay, Aiden S DeWitt, Salma Ghafouri Varzaneh, Nasibeh Zohrabi, Sherif Abdelwahed

4. AquaFed: Leveraging Federated Learning for Real-Time Schistosomiasis Prevention Through Water Quality Monitoring
Mohamed Mohsen Haikal, Hamada Rizk, Moustafa Youssef

5. Analysis of a Variable Region Size in Regional Voting
Jared C Hirt, Liang Chen

DigitalTwin-2: Digital Twin Interaction

Room: Macleod A2

Session Chair: TBD

1. Enhanced Spatiotemporal Coordination for Multi-Robot Systems in Smart Warehousing: a Digital Twin-Enabled Approach
Changqing Ji, Songtao Jiang, Zuxu Wang, Landi Z Zhu, Zhe Sun, Xiaoyu Nie

2. An Open-Source Digital Twin Framework for Energy Management: the Campus Heartbeat Case Study
Luke R Macy, Jian Gong, Almountassir Aljazwe, Aysegul D Dilsiz

3. Digital Twin of Textile Fabric in Draping Test
Chengyu Chen, Victor Kuzmichev

4. User Experience in Digital Twin-Based Systems
Ana Beatriz Fontão, António J. Baptista, Romão Filipe Santos, António Lucas Soares

ATC-1: Smart Data Fusion and Target Tracking

Room: Macleod A3

Session Chair: TBD

1. MambaMOTR: Spatiotemporal Decoupling for Memory-Efficient Multi-Object Tracking
Xinhao Zhang, Dongfu Yin, Ji Chen, Yong Qu

2. AM3DMOT: Adaptive Motion-Based 3D Multi-Object Tracking Method
Yonggang Zhao, Yuanjiang Tang, Cao Chen, Sin-Chi Kuok, Hao Zhu

3. Noninvasive Hemoglobin Quantification via Neural Network Optimization for Spectral Partialities
Tara R Kim, Semin Kwon, Sang Mok Park

4. EQDAT-RE: Explainable Qualitative Data Analysis for Transparent Requirements Engineering
Syed Tuahid Ullah Shah, Henry Leung, Ann Barcomb

ScalCom-1: Scalable Computing and Communications (I)

Room: Macleod A4

Session Chair: TBD

1. VXLAN-Based BGP EVPN Architecture for Dynamic and Flexible Workflow Deployment in Multi-Vendor Supercomputing Environments
Ronal Kumar, Jun Liu

2. Poultry Health Monitoring Through Plumage Status Recognition Using R-CNN and Improved Feature Fusion Single Shot Detection
Ryann Alimuin

3. Privacy-Utility Trade-Offs in Federated Learning for 6G Networks: a Systematic Evaluation of Software-Based Privacy Mechanisms
Jawaad Ahmar, Iqra Batool, Mostafa M Fouda, Mohamed I. Ibrahem, Zubair Md Fadlullah

4. A Scalable System for Classifying Illicit Addresses on the Bitcoin Network
Carson K. Leung

Metaverse-2: Applications and Emerging Techniques

Room: Macleod E1

Session Chair: TBD

1. The Metaverse and Medical Education: A Policy Perspective on Government Engagement
Hagar M. Mohamed and Mahmoud Khalifa

2. Harnessing Metaverse Technologies for Sustainable Healthcare: An Integrative Approach to Medical Education and Practice
Ray Al-Barazie, Imen Zalila, and Azza Mohamed

3. Multi-View Feature Fusion with Cross-Attention for Robust Leukemia Detection in Microscopic Imaging
Jagan Mohan Dudala and Anmol Bhatnagar

4. Enhancing Pathology Education with AI-Driven Virtual Reality for Lung Cancer Histopathology Analysis
Hadil Salman, Abdalla Gad, Maha Yaghi, Marah Alhalabi, Abdalla Abdelkhalek, Mohamed Abdelbari, Fares Alsharafi, Omar Abdellatif, and Mohammed Ghazal

5. Integrating Generative AI and Metaverse Environments in Education: A Study on Pedagogical Innovation and Impact
Faiza Qasmi

SWC-12: 5G-ML-IoT-UAV (I)

Room: Macleod E2

Session Chair: TBD

1. Real-Time FPGA-Based Object Detection with Bit-Width Adaptive Quantization
Bita Asghari, Henry Leung

2. Comparison of Small Object Detection Approaches in Unmanned Aerial Vehicle (UAV) Images
Mahdi Sadeghi Bakhi, Ali Adib Arnab, King F Ma, Henry Leung

3. Cell-Free MIMO Communication Enhanced with Kronecker-Based Intelligent Reflective Surfaces for xG Wireless Systems
Inshi Nimnadini, Amine Mezghani, Ekram Hossain

4. Receiver Algorithms for Satellite-Terrestrial ISAC-RIS Systems
Nathanael Danso-Ntiamoah, Aseni Jayarathne, Ibrahim Al-Nahhal, Octavia A. Dobre

SWC-2: Smart Cybersecurity and Privacy, Monitoring

Room: Macleod E3

Session Chair: TBD

1. Towards Secure and Scalable Energy Theft Detection: A Federated Learning Approach for Resource-Constrained Smart Meters
Diego Labate, Dipanwita Thakur, Giancarlo Fortino

2. Learning to Attack: Objective-Guided FDIA Generation for Smart Grids
Xiao Yue, Guangzhi Qu, Lige Gan

3. Secure Fog-Edge and 5G-Enabled Architecture for AI-Driven Mobility, Real-Time Traffic Analytics, and Accessibility in Aging-Focused Intelligent Transportation Systems
Victor Balogun, Sayed Saminur Rahman, William K Watt

4. Automatic Defect Detection of Chain Link Fences Using Artificial Intelligence
Saksham Puri, Neha Gianchandani, Choudhury A Rahman, Nan Xie

16:00 - 17:30 - Technical Session 3

UIC-9: Intelligent/Smart Object & Interaction (III)

Room: Macleod A1

Session Chair: TBD

1. Resource-Sensor-Battery Unified Scheduling for UAV Swarms in Complex DAG-Driven Missions
Hong Xu, Zhou Zhou, Yuxia Cheng, Gangyong Jia, Qing Wu

2. A mmWave Radar Based System for Fine-Grained Sleep Postures Monitoring Under Blanket
Baoqi Zhou, Kaiquan Zhou, Weiping Zhu, Xianlong Jiao

3. DigitIMU: High-Precision Microgesture Detection with Wearable Finger Sensors
Xing Gao, Minghui Sun, Yubo Jin, Jun Qin, Kaixing Zhao

4. Confidence-Aware 3D Gaze Tracking and Assessment Metric
Qiaojie Zheng, Jiucai Zhang, Xiaoli Zhang (Invited talk)

5. Digital Twin of Soil Moisture Sensors Using LoRaWAN Connectivity
Adem Mehda, Antonino Pagano, Fabrizio Giuliano, Daniele Croce

6. AI-Powered Muscle Tracking Genie
Vanchhit Khare, Sujay Shrivastava

DigitalTwin-3: Digital Twin Systems and Applications (I)

Room: Macleod A2

Session Chair: TBD

1. Coronary Artery Stenosis Degree Classification Model Based on Graph Neural Network
Jing Qin, Baotong Liu, Xiaoyu Nie, Xin Kang, Lu Liu, Lisha Pei

2. HDNet: a Deep Learning Model for Diagnosing Hypertension Using Electrocardiogram Images
Jing Qin, Yutian Wei, Zumin Wang, Jianqiang Jin, Weilong Zhao, Lisha Pei

3. Digital Twins for Cross-Domain Interoperability Supporting Hybrid Energy Storage System Optimisation
Tim D Farnham, Ajith Sahadevan, Jagdeep Singh

4. Digital Twins for Data-Driven Path Finding on University Campus Navigation
Jaime Boanerjes Fernandez Roblero, Sr, Tomas Ward, Noel E O'Connor, Muhammad Intizar Ali

5. A Digital Twin for a World Heritage Destination
Duarte Sampaio Almeida, Fernando Brito e Abreu

ATC-2: Environment Perception & AI for Vehicles

Room: Macleod A3

Session Chair: TBD

1. Implicit Representation of Multispectral Images in Autonomous Driving
Yiting Xu, Jiaxuan Shi, Xia Hua

2. The Dual-System Hierarchical Architecture: a Future Paradigm for Vision-Language-Action Models
Chen Wenlong, Zhen Tian, Zhou Zhou, Youhua Xia

3. Multi-Scale Attention and Adaptive Bilinear Fusion for Target Fine-Grained Classification in Optical Remote Sensing Images
Guisong Hu, Hou Bingzhen, ZuoWei Zhang

4. CausalTrack: Integrating Causal Inference and Visual-Language Models for Adaptive Multi-Target Tracking

Chaohui Li, Jianpeng Wang, Ming Cen, Zhen Tian

5. Small Language Models for Emergency Departments Decision Support: a Benchmark Study
Zirui Wang, Jiajun Wu, Braden Teitge, Jessalyn Holodinsky, Steve Drew

UIC-10: Smart Environment Application (II)

Room: Macleod A4

Session Chair: TBD

1. BiScalar-AA: BiScalar Attentive Amplifier Network for NLOS Object Detection and Tracking Using Millimeter-Wave Radar
Yang Yu, Shijie Hu, Junaid Abdul Wahid, Han Zhang, Qiujie Lv and Yazhou Hu

2. Confronting Challenges of the Neuro-Symbolic AI (NSAI) in Human-Centered Computing (HCC), Healthcare, Education and Research, Emphasizing Ethics and Safety - an Interdisciplinary Qualitative Survey
Aniqa Afzal

3. Label Semantic and Sample Relationship Collaborative Learning for Domain Adaptation
Zhen Wang, Shaohua Teng, Zefeng Zheng, Wei Zhang, Peipei Kang

4. Cognitive-Inspired Lightweight Semantic Mapping in Weak Texture Environments
Shiqi Liu, Bin Guo, Yasan Ding, Zhaotie Hao, Tingting Gao, Linwei Li, Haoyu Li, Sicong Liu, Zhiwen Yu

5. AGER: Angular Embedding Rectification for Class-Incremental Learning
Chenglin Feng, Weiran Rong, Yichen Zhang, Ruotong Hao, Xingang Liu

Metaverse-3: Law and Ethics in Metaverse & Metaverse Interaction

Room: Macleod E1

Session Chair: TBD

1. Government Communication in the Metaverse in the UAE: Integrating Virtual Crime Prevention with Healthcare Promotion Strategies
Hagar M. Mohamed, Mohamed Rashad, and Mahmoud Khalifa

2. Investment Disputes in the Metaverse - An Emerging Frontier for Investor-State Dispute Settlement
Afolabi Adekemi

3. Enhancing Adaptive Learning Through Market Basket Analysis in the Educational Metaverse
Walaa saber Isamil, Saif Al Shemeili, Mohammed El Bayaa, and Merra Alalwi

4. AR7ebo: An Interactive AR and AI-Driven System for Enhancing UAE Tourism and Cultural Heritage Exploration
Sima Ayham Sabouni, Aryam Mohammed, Farah Amjad Ahmad, Ziad Eslam Idris, Farid Ibrahim, and Heba Ismail

5. Metaverse Telework and EU Social Security Conflict Rules: Reform With a View to International Tax Law Discussions on 'Virtual Presence'?
Christina Digeser

SWC-13: 5G-ML-IoT-UAV (II) + FUSION

Room: Macleod E2

Session Chair: TBD

1. Movable Antenna for Air-Sea-Ground Networks
Ahmed A. A. Al-Habob, Octavia A. Dobre, Yindi Jing

2. Wearables, Sensors, and Smart Dispensers: a Multimodal Approach to Improving Hospital Hygiene
Frank Russow, Richard Meinhart, Thomas Mundt

3. Exploring Neuromorphic Computing for UAV Navigation
Gaganpreet Jhajj, Fuhua Lin

4. Beamforming and Performance Analysis for Interference Systems with UAV and Ground Users
Azar Hakimi, Yindi Jing, Xinwei Yu

5. Autonomous Drone Operator Localization Using UAVs with Reinforcement Learning
Longhao Qian, Jitendra Yuvaraja Singam, Hugh Liu

6. Robust Normal-Gamma Distribution Based Kalman Filter for MEMS/UWB Indoor Localization in the NLOS Scenario
Xingshi Zhang and Guangle Jia

SWC-6: IAIDDT (I)

Room: Macleod E3

Session Chair: TBD

1. Co-Regulating Intelligence: Designing Emotionally Responsive Human-AI Collaboration Models for K-12 Classrooms
Rouhi Faisal

2. Digital Transformation Policy in the UAE Healthcare
Hagar M. Mohamed, Amina Toumi, Mahmoud Khalifa

3. Impact of Digital Human Resource Management on Organizational Efficiency from AI perspective
Ayman Mustafa Al Armoti, Samer Abdel Hadi, Reema Al-Qaruty, Adnan Jawabri, Munther Balawi, and Badriya Mohammed

4. From Data to Action: Leveraging AI and Student Insights to Drive Sustainable Transformation in Medical Laboratory Education
Ashgan A. Ahmed, Sura Al-Hiyali, and Azza Mohamed

5. A Blockchain-Integrated Biometric Authentication Framework Using Fingerprint Recognition and Machine Learning
Syed Amma Sheik, Prataparaju Moola, and Shamganth

6. Employee Retention in Digital Age: The Role of Organizational Justice, Commitement, and Digital Transformation in UAE
Gamal S. A. Khalifa, Hasan Toubat, Rasha Abousamra, Basma Abdulla, Safaa A. M. El-Aidie, Anji Benhamed, Aisha Ahmed, Mohsina abdulla Al Seiari, Sheikha abdulla Al Zaidi

SWC-4: Energy Systems and IoT + Next-Gen Networking

Room: Macleod Ballrooms B & C

Session Chair: TBD

1. Performance Evaluation and Optimization of Energy Storage in Renewable-Powered Nanogrid Systems
Saher Javaid, Iacovos Ioannou, Yasuo Tan, Yuto Lim, Jahangir Hossain

2. Adaptive Thermal Comfort Modeling Using Machine Learning: a Generalizable, Low-Sensor Approach for Diverse Climates and Buildings
Rashedul Hasan, Md Sakif Uddin Khan, Anandi Dutta

3. Hybrid ML-RL Approach for Smart Grid Stability Prediction and Optimized Control Strategy
Kazi Sifatul Islam, Anandi Dutta, Shivani Mruthyunjaya

4. Introducing AI-Driven IoT Energy Management Framework
Kazi Sifatul Islam, Anandi Dutta, Shivani Mruthyunjaya

5. Can LLMs Aid Expert Elicitation for Causal Modeling?
Olha Shaposhnyk, Daria Zahorska, Svetlana Yanushkevich

6. Towards Carbon-Aware Container Orchestration: Predicting Workload Energy Consumption with Federated Learning
Zainab Saad, Jialin Yang, Henry Leung, Steve Drew

Thursday, Aug 21

08:30 – 09:30 - Keynote 4 – Dr. Chunsheng Yang

Room: Macleod Ballrooms B & C

9:50 – 10:50 – Panel Discussion 2

Panel presentations – AI's transformative influence on higher education

Room: Macleod Ballrooms B & C

10:50 - 12:20 - Technical Session 4

UIC-2: Intelligent/Smart Object & Interaction (II)

Room: Macleod A1

Session Chair: TBD

1. IFG-Net Channel Info Fusion Guidance for Retinal Vessel Segmentation
Qixiu Li; Xiang Zhu; Xiaoyong Li; Chengcheng Shao; XiaoLi Ren

2. DSPViT: Vision Transformer Accelerator with Dynamic Semantic-Aware Pruning
Xiaobin Zhuang; Cen Chen; Xiaofeng Zou; Yeerlan Minaer; Huiping Zhuang; Gang Liu; Ziqian Zeng

3. Class Incremental Learning with Analytic Learning for Facial Emotion Recognition
Zhiyuan Chen; Shaoze Zhu; Wenjie Li; Jing Bi

4. Optimizing Multi-Task Offloading in LEO Satellite Networks with Q-Transformer and Lagrangian
Yongdai Qian; Ruizhi Wang; Xiaolong Xu; Binghan Chen

5. Relaxed Hashing and Dual-Semantic Complementary for Domain Adaptive Retrieval
Jianbin Wang; Shaohua Teng; Zefeng Zheng; Wei Zhang; Peipei Kang

6. FreqUNet: Learning Frequency-Aware Representations for Exposure Correction in Grayscale Railway Track Images
Xin Tian; Xiang Wei; Yue Cheng; Weiwei Xing

DigitalTwin-4: Digital Twin Systems and Applications (II)

Room: Macleod A2

Session Chair: TBD

1. Advances in Digital Twins for Supply Chain
Dhanashree Dashrath Pokale

2. Evaluating 2.5D Digital Twin Based Generation of Historical Women's Jackets Using AI
Zhiduan Yin

3. BIM-Aided Digital Twin of Long-Span Pratt Truss Modeling and GNSS Displacement Monitoring for Bridge Lifecycle Management
Elfrido Elias Tita, Gakuho Watanabe, Yushi Tomoeda

4. PHSFF: Parkinson's Diagnosis via Heterogeneous Stream Fusion with Spiking-GAT Framework
Jing Qin, Boao Wang, Zumin Wang, Ming Cai, Qiang Ma, Qiufeng Xu

5. PRIMAD: Build Digital Twins for Software Development Lifecycle Within an Evolutionary Architecture
Miguel Ángel Guinea-Cabrera, Juan Antonio Holgado-Terriza, Pablo Antonio Pico-Valencia

ATC-5: LLM and its Applications & Multimodal AI

Room: Macleod A3

Session Chair: TBD

1. Hybrid Sensor Fusion Approach for Robust Perception
Berk Calabakan, Anton Kuznietsov, Steven Peters

2. GaryAI: a Hybrid Symbolic & Generative Conversational Agent for Domain Specific Environments
Chaima Khalfaoui, Vincent Lambert, Mathieu Gros, Nicolas Loisy

3. TrustBlockFL: a Blockchain-Enhanced Federated Learning Framework for Secure and Trustworthy IoV Systems
Muhammad Naveed, Wenjia Li

4. SPEAR: Soft Prompt Enhanced Anomaly Recognition for Time Series Data Leo Wei, Jiajun Wu, Jialin Yang, Henry Leung, Steve Drew

5. Intelligent Power Grid Design Review via Active Perception-Enabled Multimodal Large Language Models
Tao Liang Tan, Cheng wei Ma, Zhen Tian, Zhao Lin, Dongdong Li, Si Shi

6. A Novel Particle Swarm Optimization Algorithm with Adaptive Parameter Tuning
Jinze Liu, J. Zhao, W. Wang

UIC-12: Intelligent/Smart Systems & Services (IV)

Room: Macleod A4

Session Chair: TBD

1. Quantitative Evaluation Framework for Pen-Style Tools in Filling Tasks: Filling Quality and Variation Tendencies
Qianxi Zhang, Jiayi Li,Yize Li, Ruimin Lyu

2. Construction and Application of Emergency Response Knowledge Graph
Lanjian Chen, Zhang Kehong

3. A General Dynamic Channel Compression Framework for Feature Fusion in Self-Supervised Monocular Depth Estimation
Ronghua Wu, Dai Zhenzhao

4. Spatiotemporal-Aware Joint Optimization of Service Deployment and Request Scheduling in Satellite Edge Computing Networks
Lulu Guo, Jian Zhou, Lu Zhao, Xiaoyong Yan, Weidu Ye, Xin He

5. LungListener: Bootstrapping a Large-Scale Audio-Language Model for Lung Sound Classification and Analysis
Zhenghan Liao, Guofeng Luo, Haolun Yan, Jiaru Wang, Shiyi Zhang, Jinzhun Wu, Rongshan Yu, Liang Xu, Longbiao Chen

6. Incremental Update of Diffusion Network Topologies
Mingxin Wang, Yulan Yang, Qian Yan, Kudereti Kuerban, Ting Gan, Ling Han, Zhigao Zheng, Hao Huang

UIC-3: Smart Environment Application (I)

Room: Macleod E1

Session Chair: TBD

1. A Novel Constant False Alarm Rate Method Based on Two-Dimensional Cross Self-Calibration
Jieming Yang; Mingchen Han; PeiJin Yang; Yun Wu

2. Self-Supervised Graph Multi-Head Attention Networks for Network Intrusion Detection
Haiyang Diao; Xiang Li; Xiaoqian Jiang; Jing Zhang

3. Privacy-Aware Energy and Trajectory Optimization for Multi-UAV in Edge Computing
Ziyue Wang; Xiaolong Xu; Haolong Xiang; Guangming Cui; Lianyong Qi; Wanchun Dou

4. Multi-Scale Target Detection of Unmanned Ground Vehicles Based on YOLO-MAC
Yimeng Wang; Yujing Qin; Weibin Liu; Xiao Kang

5. DynPrice-MG: Trajectory Privacy Protection Based on Dynamic Pricing with Mamba-GAN
Shoukai Liao; Suiming Guo; Chao Chen

6. Optimization of Meteorological Data Retrieval Based on Spatial Grid Encoding
Zhiang Zhu; Boyang Gao; Zhuoran Li; Shaohui Yang; Xiang Zuo; XiaoLi Ren; Xiaoyong Li

SWC-9: SEGA (II)

Room: Macleod E2

Session Chair: Michael Hsiao

1. Navigating the Future of AI in Education: Promise, Practice, and Principles (Invited Talk)
Kaila Khreisat

2. Practical Visualization of Learning and Teaching Behaviour Patterns Using Moodle Blocks
Angela Smith, Sabine Graf

3. Fine-Tuning GPT-4o-Mini to Detect and Extract Teachers' Opportunity-to-Respond Quotes in Noisy Classroom Transcripts
Kemal Berk Kocabagli, Jessica Vitale, Shyamoli Sanghi,Alyssa Van Camp; Berk Coker

4. AI-Assisted PBL Integration Fostering Computer Programming Competence
Christian B. Omeh, Sr, Musa Adekunle Ayanwale, Faizan Ahmad, Nthama Matsie, Mapulane Mochekele, Allwell Sunny Njigwum

5. Smart and Ethical Education in the Age of GenAI
Grace Shi, Richard Dixon

SWC-10: SEGA (III)

Room: Macleod E3

Session Chair: Eric Poitras

1. Navigating the Future of AI in Education: Promise, Practice, and Principles (Invited Talk)
Kaila Khreisat

2. Using an Immersive Virtual Reality Game Guided by Generative AI for Fifth-Grade Science Learning
Vivien Lin, Cheng-Ji Lai, Kim Koh

3. Designing a Conversational Agent for Competence Development
José Pedro Schardosim Simão, Letícia Sophia Rocha Machado, Juarez Bento Silva, Patricia Behar

4. Adapting the AI Ecological Education Policy Framework to Canadian Context
Johanathan Woodworth, Emily Ballantyne

5. Governance Supports for Smart Education with Generative AI
Stella George

13:15 – 14:15 - Keynote 5 – Dr. Shauna Zenteno

Room: Macleod Ballrooms B & C

14:15 - 15:30 – Women in Engineering 2

Room: Macleod Ballrooms B & C

16:00 – 17:30 - Technical Session 5

UIC-4: Intelligent/Smart Systems & Services (I)

Room: Macleod A1

Session Chair: TBD

1. Fairness-Aware Graph Unlearning with Knowledge Distillation
Liu Li; Shunmei Meng; Jielong Zhou; Nan Liu; Qianmu Li

2. A Contextually Enhanced Self-Attention Dilated RNN for Load Forecasting
Heng Li; Hanzhao Lv; Qi Liu; Xiaodong Liu; Yonghong Zhang; Xiaokang Zhou

3. Decision Optimization for Electronic Products Based on Multi-Stage Planning and Multi-Layer Perceptron
ShuDong Zhang; JiaHang Wang; Hao Zhu; Wei Wu; Biyuan Yao; Jinyue Deng

4. DIA-IL: Dynamic Interest-Aware Incremental Learning via Continuous-Time Graph Distillation for Recommendations
Shuaiqi Zhang; Qianmu Li; Qingqing Zhao

5. Sentiment Analysis Based on Cross-Modal Multi-Head Attention and Temporal Fusion
Boxiong Chen; Caimao Li; Biyuan Yao; Shaofan Chen; Haoyang Zhang; Shutao Chen

6. Check-in Sequence Representation Learning for LBSNs with Embedding Spatio-Temporal-Semantic Contexts
Ruizhi Wu; Renxiang Jia; Weiwei Xing

UIC-5: Intelligent/Smart Systems & Services (II)

Room: Macleod A2

Session Chair: TBD

1. LCMF: Lightweight Cross-Modality Mambaformer for Embodied Robotics VQA
Zeyi Kang; Liang He; Yanxin Zhang; Zuheng Ming; Kaixing Zhao

2. A Privacy Preserving Framework for Iris Recognition Combining Differential Privacy and Denoising Diffusion Models
Heng Zhang; Zhaowei Jiang; Jian Zhang; Ming Li; Meng Huang

3. FedROCK: a Federated Learning Framework with Region-Oriented Cultural Knowledge Distillation for Recommendations
Ruizhi Wu; Renxiang Jia; Jiacheng Liu; Ying Zhou; Weiwei Xing

4. Counterfactual Adversarial Learning for Fair LLM Recommenders
Xiangwei Wang; Haolong Xiang; Hongsheng Dong; Xiaolong Xu

5. AgentSME for Simulating Diverse Communication Modes in Smart Education
Wenxi Yang; Tian-Fang Zhao

6. Mitigating Item-Side Unfairness in LLM-Enhanced Recommender Systems
Miaolin Xing; Jielong Zhou; Shunmei Meng; Qixin Guan

UIC-6: Intelligent/Smart Systems & Services (III)

Room: Macleod A3

Session Chair: TBD

1. A Combinatorial Auction for Crowdsourced Video Streaming in Cooperative Edge Networks
Min Guo; Di Zhang; Weiwei Xing; Xun Shao

2. Aspect-Based Sentiment Analysis Model Based on Nested Attention Mechanism and Transformer
Jiaqi Li; Hui Gao

3. HybridLog: LLM-Powered Log Anomaly Analysis with Heterogeneous Semantic Collaboration Training
Hongwei Zuo; Fengxiao Tang; Yang Fan Li; Ming Zhao; Rui Wang; Jinke Liu

4. Multipath Attention-UNet for Multimodal Prostate Image Segmentation
Zhao Qiu; Liang He; Yuan Ding; Junhao Pan; Hancheng Huang; Yuqi Hong

5. CFL-RS: Relation-Enriched Similarity for Clustered FL with Dynamic Layer Optimization
Xinhao Wang; Yuxian Chen; Ying Zhang; Bin Guo; Zhiwen Yu

6. An Optimization Method of Trajectory Planning for UAV-Enabled Power Line Inspection
Sheng Lu; TingTong Zhu; Hao Tian; Zheng Li; Hua Deng; Hanwen Wang; Wanchun Dou

SWC-8: SEGA (I)

Room: Macleod A4

Session Chair: Michael Hsiao

Session Chair: Stella George

1. Perceiving Generative AI in Teacher Practice: a Design-Based Case Study in a Graduate Course
Michael Pin-Chuan Lin, Fuhua Lin, Yu-Feng Lan, Jeeho Ryoo

2. Can Question Validation Criteria Improve the Quality of LLM-Generated Multiple-Choice Questions?
Raymond Morland, Gaganpreet Jhajj, Hongxin Yan, Fuhua Lin, Jacob Mellick, Roland Treu, Glen Farrelly, Archie Zariski, Farook Al-Shamali, Zengxiang Wang, M. Ali Akber Dewan

3. Linguistic Analysis of Japanese Text Simplification and Implications for AI-Driven Educational Tools
Gaganpreet Jhajj, Fuhua Lin

4. Augmenting Japanese Language Acquisition via LLMs and ASR
Gaganpreet Jhajj, Fuhua Lin

5. Generative AI in Education: Applications, Challenges, and Future Directions
Sirine Bouguettaya, Francesco Pupo, Giancarlo Fortino

6. Clustering and Profiling Student Study Behaviors and Interactions with an AI Coding Assistant
Eric Poitras, Jeffry Paul Suresh Durai, Jonathan Boisvert, Keaton Doucette, Michael Pin-Chuan Lin, Marta Kryven, Raghav V. Sampangi

7. GPT-Based Conversational Agents for L2 Speaking Development: a Feedback-Optimized Task Design Framework
Jiyoung Lee

SWC-11: SEGA (IV)

Room: Macleod E1

Session Chair: Grace Shi

1. Representing and Tracing Students' Cognitive Processes in Project-Based Learning Through the Function-Behavior-Structure Framework and Knowledge Graphs
Jerry Ryan David Gustafson, Xiaokun Zhang, Gaganpreet Jhajj, Fuhua Lin

2. Repurposing Generative AI for Learning a Topic Modeling Approach Beyond EdTech
Saeed Saffari, Michael Pin-Chuan Lin

3. A Hybrid Multi-Agent Prompting Approach for Simplifying Complex Sentences
Pratibha Zunjare, Michael Hsiao

4. Automated Grading: Methods, Implementations, and Opportunities in Higher Education
Gabriel Dumoulin, M. Ali Akber Dewan, Dunwei Wen, Fuhua Lin

5. Simulating a ZPD-Based Knowledge Tracing Model for Enhanced Adaptive Practicing
Hongxin Yan, Raymond Morland, Dr Kinshuk, Cindy A Ives, Fuhua Lin

6. AI Literacy Through a Project-Based Learning Course
Marco Ho, Carly Orr, Rebecca Jeon, Michael Pin-Chuan Lin, Jeeho Ryoo

7. Evaluating a GPT-Driven Educational Platform for Training English Learners' Question-Asking Skills
Yujong Park, Junghyun Bum, Lim Dongjun

SWC-1: Smart Environment, Industry, Manufacture

Room: Macleod E2

Session Chair: TBD

1. From Plant Identification to Digital Soil Mapping: A Deep Learning Approach
Naila Aziza Houacine, Mouaadh Hamed Abdelouahab, Widad Hassina Belkadi, Ahmed Aigoun, Habiba Drias

2. Benchmarking Few-Shot Learning Techniques for Steel Surface Defect Detection
Rayen Ghali, Zhor Benhafid, Sid-Ahmed Selouani

3. Classification of Critical Infrastructures with Varying Resolution Satellite Imagery Using a Pre-Trained Vision Transformer
Laura Z. Vietz, Krystiane S. Otis, Shiloh N. Elliott, Ashley D. Spear

4. Improving Bathroom Action Recognition Using Millimeter Wave Radar with DBSCAN and KDE-Based Denoising
Kenjiro Takahashi, Runhe Huang

5. Visual language models and generative artificial intelligence for smart workplace safety: a comparative study
Pasquale Molinaro, Francesco Pupo, Giancarlo Fortino

SWC-3: Smart Learning, Simulation, Modeling

Room: Macleod E3

Session Chair: TBD

1. Integrating Peer Teaching in a Modeling and Simulation Course
Wenbing Zhao, Xiongyi Liu

2. Human-Centered Building Energy Modeling and Simulation for Retrofit
Wenbing Zhao, Yongxin Tao

3. Exploring Decentralized User Profiles with Large Language Models: a Case Study on Uniswap V4
Matthew Verschoor, Chunyang Li, Wei Cai, Yan Bai

4. Automated Grading of Discussion Posts in Online Courses
Gabriel Dumoulin, Nazmus Sakeef, M. Ali Akber Dewan, Dunwei Wen

5. Robust Pattern Recognition via Fuzzy Boundaries and Three-Way Decisions in the Electoral College Model
Liang Chen, Ledan Qian, Qing Zhao, Fan Jiang

SWC-5: Data-driven Modeling and Frameworks

Room: Macleod Ballroom B & C

Session Chair: TBD

1. Generating Synthetic Categorical Data for Causal Modelling of Accessibility Barriers
Olha Shaposhnyk, Noor Kahtan Abid, Mouri Zakir, Svetlana Yanushkevich

2. Cardiovascular Stress Detection: How to Make It Explainable and Privacy-Preserving
Daria Zahorska, Olha Shaposhnyk, Svetlana Yanushkevich, Ievgen Nastenko,

3. A Validated Framework for Modelling Infectious Disease Spread in Long-Term Healthcare
Philip Ciunkiewicz, Jenna Naylor, Liping Fei, Svetlana Yanushkevich

16:00 – 17:30 - Poster Session

DigitalTwin-P: DigitalTwin Posters

Room: Macleod Hall

1. ReLU-KAN: New Kolmogorov-Arnold Networks That Only Need Matrix Addition, Dot Multiplication, and ReLU
Qi Qiu, Tao Zhu, Helin Gong, LiMing Chen, Huansheng Ning

2. Predictive Control and the Tracking Model: MFPC – SyncLMKD
Fabiano Stingelin Cardoso, Ronnier Frates Rohrich, Andre de Oliveira

3. Affordable Digital Twin Design for SMEs: a Hybrid Unity-FlexSim-IoT Approach Aligned with DMAIC
Roberto Andrade, Sonia Valeria Avilés-Sacoto, Diego Parra

4. A Novel Naive Bayes Classifier for Detecting AI-Generated Text in Digital Twin Systems Using Word Pair Probabilities
Seyedeharezou Golchoubian, Runqiu Zhang, Liang Chen, Fan Jiang

5. Exploring the Digital Thread: a Comprehensive State of the Art Review
Clarissa Genevieve Gregory, Souad Rabah, Vincent Chapurlat

6. TwIndex: a Framework for Measuring the (Hidden) Value of Digital Twins by Mapping Atypical Interaction Patterns
Mareike Victoria Keil, Julius Umsonst, Andrew G Peck

7. Digital Triplets Enabled Applications in Mechatronic System Lifecycle
Zhexin Cui, Jiguang Yue, Qian Xia, Chenhao Wu, Feng Lyu

8. A Digital Twin Engineering Method for Nuclear Vitrification Process: from Capabilities Analysis to Architectures
Guilhem Galand, Souad Rabah, Vincent Chapurlat, Caroline Chabal, Alain Ledoux

9. Efficient and Representative Mission Profiles Generation from Historical Field Data
Xiao MA, Niels Divens, Koen Laurijssen, Jan Stroobants

10. Digital Twins in Energy Infrastructure: Frameworks and Deployment Pathways
Mayur V Parulekar, Faruk Kazi, Rahul Gupta, Dipak Gupta, Mohammad Ikram, Rahul Rane

11. Monitoring Brain Tumor Alterations in Radiotherapy: a Microwave Sensing-Based Approach Assessed Through Digital Twins
Mariella Särestöniemi, Juha Nikkinen, Daljeet Singh, Teemu Samuli Myllylä

UIC-P: UIC Posters

Room: Macleod Hall

1. Ratio-Based Differential Feature Enhancement: a Generic Framework for Enhanced Feature Selection in Android Malware Detection
Peng An; Ruiyang Huang; Nan Hu; Zhuohang Guo; Huansha Wang; Fangjie Wan

2. A TDMA-Based Tactical Data Link Service Availability Assessment Model and Validation
A TDMA-Based Tactical Data Link Service Availability Assessment Model and Validation

3. Data-Driven Prediction of Tunnel Propagation Characteristics Using Synthetic Simulations and Machine Learning
Md Saiful Islam Rubel; Nahi Kandil; Nadir Hakem; Mozhan Shirani

Friday, Aug 22

08:30 – 09:30 - Keynote 6 – Dr. Giancarlo Fortino

Room: Macleod Ballrooms B & C

10:00 AM - 11:30 AM - Technical Session 6

UIC-8: Personalization and Social Aspects (II)

Room: Macleod A1

Session Chair: TBD

1. Embedded C Code Safety Analysis with Automated Fault Tree Synthesis for Automotive Virtualization Systems
Yikun Yang; Jie Xu; Yongping Huang; Junqun Xiong

2. High-Performance Peripheral Virtualization with Real-Time Resource Orchestration for Automotive Virtualization OS
Guanghui Cui; Jianguang Zhou; Wenji Han; Tianran Zhuang

3. High-Performance Network Virtualization with Safety for Automotive Virtualization OS
Jianguang Zhou; Wenji Han; Tianran Zhuang; Jun Kong

4. AROG: Robust Graph Learning Against Adversarial Attack via Diffusion-Based Out-of-Distribution Generalization
Chupeng Chen; Cangqi Zhou; Qianmu Li

5. Improving Significant Wave Height Prediction with Feature Engineering and Brother-Guiding Network
Chenhui Wang; Xiaoyong Li; Qiushi Wang

6. Efficient Detection of Concurrency Bugs Based on Equivalent Thread Interleaving Priorities
Bojun Chen; Xiaoling Li; Shangwen Wang; Jun Ma; Jing Wang; Jin Li; Jie Yu

UIC-14: Intelligent/Smart Systems & Services (VI)

Room: Macleod A2

Session Chair: TBD

1. Explainable AI for Digital Twins via Neuro-Symbolic Rule Extraction
Safayat Bin Hakim, Muhammad Adil, Alvaro Velasquez, Houbing H Song

2. CHSCE: a DAG-Driven Component-Based Hierarchical Simulation Computing Engine
Yang Wang, Weiwei Xing, Zheng Wang, Zhiyuan Zou, Weibin Liu, Genxiang Chen

3. Nutrition Labels for Aging Eyes: Redesigning for Better Health Decisions
Wenya Qin, Ruiqi Chen, Yihan Liu, Yu Liu

4. Global and Local Fusion Mamba for Skeleton-Based Temporal Action Segmentation
Shuaibiao Zhang, Tao Zhu, Liao ZhaoPing, LiMing Chen

5. A Task-Specific Fine-Tuning Strategy and Evaluation for LLM-Based Log Analysis
Bin Li, Siyang Lu, Ningning Han, Xiang Wei, Wei Lu

6. Continuous-Time Multi-Order Graph Learning for Passenger Travel Behavior Prediction
Mingxuan Xie, Tao Zou, Junchen Ye, Bowen Du, Runhe Huang

7. DWCMA: a Vision-Language Fusion Method with Dynamic Weight and Cross-Modal Attention Mechanism
Jiaqi Li, Hui Gao

UIC-15: Intelligent/Smart Systems & Services (VII)

Room: Macleod A3

Session Chair: TBD

1. AG-MPBS: a Mobility-Aware Prediction and Behavior-Based Scheduling Framework for Air-Ground Unmanned Systems
Tianhao Shao, Kaixing Zhao, Feng Liu, Lixin Yang, Bin Guo

2. Cross-Modal Mixup Enhance Foundation Model Adaptation for Few-Shot Learning
Jiuqian Dai, Zhenyan Ji, Zechang Xiong, Jiqiang Liu, Shen Yin, Huihui H Wang

3. Tri-Select: a Multi-Stage Visual Data Selection Framework for Mobile Visual Crowdsensing
Jiayu Zhang, Kaixing Zhao, Tianhao Shao, Bin Guo, Liang He

4. Fast ARAD: Autoregressive Prediction-Based Point Anomaly Detection Framework with Fast Identification and Precise Localization in Workload Sequences
Yi Lai, JingXiong Wang, Yuhang Sui, Li Duan

5. MDFL: a Machine Decision Method for Intelligent Manufacturing Based on Vertical Federated Learning
Xiaolong Jin, Bo Hou, Hongyi Zhu

6. Multi-PointNet++: a Multi-Scale Local Interaction Network for Plant Point Cloud Segmentation
Keqi Yan, Yaoyu Li, Qiang Wang, Yangcheng Lv, Wuping Zhang

7. Improving Emotion Recognition in Collaborative Learning a Self-Attention-Based Multimodal Fusion Model
Mingxin Yang, Yang Wu, Wei Li, Jingchao Xie, Rui Hou, Yahong Li

UIC-16: Intelligent/Smart Systems & Services (VIII)

Room: Macleod A4

Session Chair: TBD

1. MMVPS: a Multimodal Large Model-Based Visual Perception System
Zhengquan Li, Xiuhuai Xie, Wenting Zeng, Xianyi Yan, Guofeng Luo, Xiatong Hou, Cheng Wang, Liang Xu, Longbiao Chen

2. Seeking Routes Recommendation for Solar-EVs in RoD Service: A Reinforcement Learning Model with Dynamic Prices
Erkang Shen

3. A Cycle GAN Forecaster for Weather Radar Extrapolation with Edge-Cloud Collaboration
Yixuan Zhang, Qi Liu, Jianhao Ma, Zhilu Wang, Xiaodong Liu, Yonghong Zhang

4. Multi-Objective Route Optimization: Pareto-Optimized a-Star Algorithm for Enhancing Solar-EVs Efficiency in Ride-Hailing Passenger Delivery
Yuanyuan Guo, Shen erKang, Suiming Guo, Chao Chen

5. Wi-Flow: Multimodal Human Action Recognition Based on Dynamic Features in WiFi CSI and Optical Flow
Zheng Zhang, Junxing Zhang

6. Pandora: a Large Language Model-Driven Self-Evolving Agent for on-Campus Task Execution
Wenting Zeng, Xiuhuai Xie, Xianyi Yan, Zhengquan Li, Yufei Wang, Guofeng Luo, Cheng Wang, Longbiao Chen

7. Active Probe Based NTP Vulnerability Detection
Weiping Zhu, Yilun Liu, Xuanbing Li, Xianfeng Dai, Chao Ma, Chuanhe Huang

UIC-17: Intelligent/Smart Systems & Services (IX)

Room: Macleod E1

Session Chair: TBD

1. Heterogeneous Multi-Head Attention Fusion Network for Enhanced Q&A Reasoning
Jiaqi Sun, Lei Yu, Lan Ma

2. Opt-GPTQ: an Optimized GPTQ Combining Sparse Attention and Quantization Techniques
Kong Jie, Junxiang Zhang, Jiheng Xu, Yalong Li III, Shouhua Zhang, Zhou Jiehan, Yuhai Liu, Liang Peng, Quan Zhang, Zq, Hanjiang Luo

3. Phishing Detection in Ethereum via Transaction Graph Embedding
Jianyu Qu, Li Ruan, Limin Xiao, Qingchan Liu, Lingyan Hu

4. IntelliTherm: an Intelligent Cross-Layer Thermal Monitoring Service for 3D ONoC-Based Manycore Systems
Haoyang Liu, Zhihao Liang, Mingkun Han, Shu Li, Haidong Wu, Zhaoyuan Zhang, Mengquan Li, Kenli Li

5. YOLOv7-AFDH: an Anchor-Free and Decoupled-Head Based Object Detection Model
Hui Liu, Xiangze Jiang, Zhenyan Ji, Xiaoqiang Zhu, Jiqiang Liu, Huihui H Wang, Shen Yin

6. Transaction Fraud Detection Algorithm Based on Graph Neural Network and User Behavior
Yu Zhang, Li Ruan, Limin Xiao, Jianyu Qu, Cong Lin

7. The Application and Optimization Research of YOLOv11 Network in Target Detection for Traffic Scenarios
Dai Zhenzhao, Ronghua Wu

ATC-4: Motion Control & AI for Vehicles

Room: Macleod E2

Session Chair: TBD

1. PointACT: Automatic Robot Manipulation with Cross-Modal Action Chunking Transformer on Image-Point Cloud
Quan Li, Ji Gan, Hao Zhu, Xinbo Gao

2. Methodology for an Analysis of Influencing Factors on 3D Object Detection Performance
Anton Kuznietsov, Dirk Schweickard, Steven Peters

3. Foundation Models Meet Spatial Representations: Advancing Zero-Shot Navigation for Embodied AI
Zhou Zhou, Chen Wenlong, Xia Hua, Zhen Tian

4. Efficient Hyperspectral Image Compression with a PCA-Guided Proxy Network
Hao He, Xia Hua, Mengyao Li

5. Partial Generated Convolution: Generating More Feature Outputs Through Partial Feature Input
Miao He, Yi Liu, Fangchao Hu

ScalCom-2: Scalable Computing and Communications (II)

Room: Macleod E3

Session Chair: TBD

1. A Scalable Framework to Analyze Social Media Posts for Early Detection of Mental Health Issues
Carson K. Leung

2. Securing Encrypted 6G Traffic: an Edge-Optimized AI Framework for Attack Detection
Daniel Esemezie, Iqra Batool, Mostafa M Fouda, Mohamed I. Ibrahem, Zubair Md Fadlullah

3. Time Travel: LLM-Assisted Semantic Behavior Localization with Git Bisect
Yujing Wang, Weize Hong

4. Hyperspectral Image Denoising Using Unfolding Graph Regularization and Hybrid Total Variation
Runding Yu; Fei Chen; Fan Jiang; Hang Cheng; Meiqing Wang; Congwu An

UIC-18: Intelligent/Smart Systems & Services (X)

Room: Macleod Ballroom B&C

Session Chair: TBD

1. FlexFed: Mitigating Catastrophic Forgetting in Heterogeneous Federated Learning in Pervasive Computing Environments
Sara Alosaime, Arshad Jhumka

2. Improving Cloze Distractor Generation Through Retrieval-Based Example Selection
Junjie Dong, Jun Bai, Jianfei Zhang, Chen Li, Xinghan Lin, Wenge Rong

3. LLTN: LowerLimb-TransformerNet for Center of Pressure and Base of Support Prediction from Pose
Liao ZhaoPing, Tao Zhu, Shuaibiao Zhang

4. Dynamic 3D Object Detection for Autonomous Driving via Radar-Camera Fusion with Deformable Gate-Attention
Jianshan Peng, Runhe Huang, Chunyu Tu, Hiroshi Hosobe, Zhiyong Yu

5. A Vehicle-Centric Pseudonym Change and Management Scheme for Location Privacy Preserving in VANETs
Cong Zhao, Yikang Yang, Xinyang Deng, Xuan Ge, He Li

6. TriFusion: a Triple-View Fusion Framework for Document-Level Relation Extraction
Peng Wang, Jianfei Zhang, Xinghan Lin, Yuanxin Ouyang, Wenge Rong

11:30 – 12:30 – Panel Discussion 3

Panel presentations – Future of AI technologies

Room: Macleod Ballrooms B & C