



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 - 17:15	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 companies' 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, Oğuzhan 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 Baciú, 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-5: 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

SWC-6: SEGA (I)

Room: Macleod E3

Session Chair: TBD

1. Designing a Conversational Agent for Competence Development

José Pedro Schardosim Simão, Letícia Sophia Rocha Machado, Juarez Bento Silva, Patricia Behar

2. Evaluating a GPT-Driven Educational Platform for Training English Learners' Question-Asking Skills

Yujong Park, Junghyun Bum, Lim Dongjun

3. Automated Grading: Methods, Implementations, and Opportunities in Higher Education

Gabriel Dumoulin, M. Ali Akber Dewan, Dunwei Wen, Fuhua Lin

4. Adapting the AI Ecological Education Policy Framework to Canadian Context

Johanathan Woodworth, Emily Ballantyne

5. Smart and Ethical Education in the Age of GenAI

Grace Shi, Richard Dixon

6. 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

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. 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

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

4. 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. Ibrahim, 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-10: 5G-ML-IoT-UAV (I)

Room: Macleod E2

Session Chair: TBD

1. Real-Time FPGA-Based Object Detection with Bit-Width Adaptive Quantization

Bitu 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 - 17:15 - 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, Jiucui 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-11: 5G-ML-IoT-UAV (II)

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

SWC-4: 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. 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

3. 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

4. A Blockchain-Integrated Biometric Authentication Framework Using Fingerprint Recognition and Machine Learning

Syed Amma Sheik, Prataparaju Moola, and Shamganth

5. Employee Retention in Digital Age: The Role of Organizational Justice, Commitment, 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-12: Energy System and IoT

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

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; Bingham 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-7: SEGA (II)

Room: Macleod E2

Session Chair: TBD

1. Linguistic Analysis of Japanese Text Simplification and Implications for AI-Driven Educational Tools

Gaganpreet Jhajj, Fuhua Lin

2. AI Literacy Through a Project-Based Learning Course

Marco Ho, Carly Orr, Rebecca Jeon, Michael Pin-Chuan Lin, Jeeho Ryoo

3. Augmenting Japanese Language Acquisition via LLMs and ASR

Gaganpreet Jhajj, Fuhua Lin

4. 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

5. AI-Assisted PBL Integration Fostering Computer Programming Competence

Christian B. Omeh, Sr, Musa Adekunle Ayanwale, Faizan Ahmad, Nthama Matsie, Mapulane Mochekele, Allwell Sunny Njigwum

6. 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 Jhaggi, Fuhua Lin

SWC-8: SEGA (III)

Room: Macleod E3

Session Chair: TBD

1. A Hybrid Multi-Agent Prompting Approach for Simplifying Complex Sentences

Pratibha Zunjare, Michael Hsiao

2. Repurposing Generative AI for Learning a Topic Modeling Approach Beyond EdTech

Saeed Saffari, Michael Pin-Chuan Lin

3. Using an Immersive Virtual Reality Game Guided by Generative AI for Fifth-Grade Science Learning

Vivien Lin, Cheng-Ji Lai, Kim Koh

4. Can Question Validation Criteria Improve the Quality of LLM-Generated Multiple-Choice Questions?

Raymond Morland, Gaganpreet Jhaggi, Hongxin Yan, Fuhua Lin, Jacob Mellick, Roland Treu, Glen Farrelly, Archie Zariski, Farook Al-Shamali, Zengxiang Wang, M. Ali Akber Dewan

5. Generative AI in Education: Applications, Challenges, and Future Directions

Sirine Bouguettaya, Francesco Pupo, Giancarlo Fortino

6. Practical Visualization of Learning and Teaching Behaviour Patterns Using Moodle Blocks

Angela Smith, Sabine Graf

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

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

Room: Macleod A4

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

SWC-9: SEGA + FUSION + Next-Gen Networking

Room: Macleod E1

Session Chair: TBD

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

2. 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

3. Governance Supports for Smart Education with Generative AI

Stella George

4. Simulating a ZPD-Based Knowledge Tracing Model for Enhanced Adaptive Practicing

Hongxin Yan, Raymond Morland, Dr Kinshuk, Cindy A Ives, Fuhua Lin

5. Robust Normal-Gamma Distribution Based Kalman Filter for MEMS/UWB Indoor Localization in the NLOS Scenario

Xingshi Zhang and Guangle Jia

6. Towards Carbon-Aware Container Orchestration: Predicting Workload Energy Consumption with Federated Learning

Zainab Saad, Jialin Yang, Henry Leung, Steve Drew

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, Mouaad 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-13: 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 Nastenka,

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
Keki 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 Esemzie, Iqra Batool, Mostafa M Fouda, Mohamed I. Ibrahim, 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

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