



The 31st International Conference on AUTOMATION and COMPUTING

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Keynote Speech 1



Prof. Tianyou Chai, Fellow of IEEE, IFAC, Member of Chinese Academy of Engineering

Northeastern University, China

Title: Intelligent Integrated System for Optimal Decision-making and Control Based on End-edge-cloud Collaboration

Abstract: To address the challenges that online optimization of operational decision-making and control in complex industrial systems cannot be realized, this talk proposes a unified structure and algorithm for integrated operational optimal decision-making and control, by combining control, optimization, and prediction with AI technology. It also proposed a parameter self-learning and self-optimizing algorithm for operational optimal decision-making and control integrating systems, by combining mechanism analysis with deep learning, and digital twin with reinforcement learning. An intelligent integrated system for optimal decision-making and control based on end-edge-cloud collaboration is developed, by combining the proposed method and the end-edge-cloud collaboration technology of Industrial Internet. The system includes the end-optimal decision-making and control system under actual operation, as well as the cloud-edge collaborative parameter self-learning and self-optimizing system for decision-making and control system. The parameter self-learning and self-optimizing system in digital space collaborates with the optimal decision-making and control system under actual operation. Thus, the end-operational optimal decision-making and control system realizes self-learning and self-optimization. The system has been successfully applied in the energy intensive equipment—fused magnesium furnace and achieved remarkable results in the reduction of carbon emission.

Biography: Tianyou Chai received the Ph.D. degree in control theory and engineering in 1985 from Northeastern University, Shenyang, China, where he became a professor in 1988. He is the founder and Director of the Centre of Automation, which became a National Engineering and Technology Research Centre and a State Key Laboratory. He is a member of Chinese Academy of Engineering, IFAC Fellow and IEEE Fellow. He has served as director of Department of Information Science of National Natural Science Foundation of China from 2010 to 2018. His current research interests include modelling, control, optimization and integrated automation of complex industrial processes. He has published more than 400 peer reviewed international journal papers. His paper titled Hybrid intelligent control for optimal operation of shaft furnace roasting process was selected as one of three best papers for the Control Engineering Practice Paper Prize for 2011-2013. He has developed control technologies with applications to various

industrial processes. For his contributions, he has won 5 prestigious awards of National Natural Science, National Science and Technology Progress and National Technological Innovation, the 2007 Industry Award for Excellence in Transitional Control Research from IEEE Multiple conference on Systems and Control, and the 2017 Wook Hyun Kwon Education Award from Asian Control Association.

Keynote Speech 2



Prof. Muyiwa Oyinlola, Director of IESD, De Montfort University, UK.

Title: Industrial AI for Circular Energy Systems in Africa: From Intelligent Infrastructure to Inclusive and Scalable Development

Abstract: Africa's clean energy transition is accelerating, but the challenge extends beyond deploying more renewable energy technologies. As decentralised renewables, microgrids, electric mobility, batteries, inverters and power electronics expand across the continent, there is a growing need to ensure that these systems remain reliable, affordable and productive throughout their lifecycle, while creating pathways for maintenance, repair, reuse, repurposing and responsible recovery.

This keynote explores how Industrial AI can provide the intelligence needed to support more circular energy systems in Africa. Using circular microgrids as the central framing, it considers four interconnected capabilities: sensing system and asset condition; predicting faults, degradation and remaining useful life; optimising generation, storage and demand; and supporting lifecycle decisions that retain the value of energy technologies for longer. Applications including condition monitoring, predictive maintenance, intelligent energy management and data-informed assessment of batteries and power electronics illustrate how AI can connect operational performance with circularity.

Drawing on emerging research and implementation learning from the Circular Economy Powered Renewable Energy Centre (CEPREC), the keynote moves beyond a purely technological interpretation of Industrial AI. Intelligent infrastructure operates within wider socio-technical systems shaped by skills, standards, business models, finance, policy, institutions and community needs. Realising its potential in African energy systems therefore requires addressing constraints including data availability and quality, digital infrastructure, technical capability, interoperability, governance, affordability and trust.

The keynote proposes a shift from intelligent assets to intelligent circular energy ecosystems, where digital technologies support decisions across the lifecycle of renewable energy infrastructure. In this framing, Industrial AI is not simply an instrument for automation and efficiency. It can become an enabler of lifecycle intelligence, helping energy systems to sense, predict, optimise, adapt and retain value, while supporting an African energy transition that is more resilient, inclusive and scalable.

Biography: Professor Muiyiwa Oyinlola is an internationally recognised academic and engineer whose work sits at the intersection of sustainable development, energy access, and innovation. He currently serves as the Director of the Circular Economy Powered Renewable Energy Centre (CEPREC), a Pan-African Centre of Excellence focused on accelerating Africa's just energy transition through circular economy principles and clean energy innovation. A Professor of Innovation for Sustainable Development at De Montfort University, UK, Professor Oyinlola brings over a decade of experience leading multi-institutional, transdisciplinary research collaborations. He is a Senior Fellow of the Higher Education Academy and holds degrees in Mechanical Engineering (BEng), Renewable Energy Engineering (MSc), Sustainable Energy Engineering (PhD), and Education Practice (MA). He is also pursuing an MBA through the Senior Leader Apprenticeship at the University of Exeter.

Professor Oyinlola's research addresses urgent global challenges including clean energy access, sustainable housing, waste management, digital transformation, and entrepreneurship. He has successfully led and contributed to over ten major research projects, securing more than £8 million in competitive funding from leading institutions such as UK Research and Innovation (UKRI), the Foreign, Commonwealth and Development Office (FCDO), the British Council, and the Royal Academy of Engineering. These projects often involve multi-stakeholder and multi-sectoral partnerships and focus on ensuring that solutions are contextually grounded, technically sound, and socially acceptable. Through CEPREC, Prof Oyinlola leads pioneering work on circular economy approaches to energy innovation, exploring how locally sourced materials, renewable energy, and digital tools can be leveraged to develop resilient infrastructure and create green jobs in Africa. His leadership in this area has catalysed new models for co-developing technologies that are sustainable, inclusive, and scalable.

He is also the Chair of the DITCh Plastic Network, a Pan-African initiative of over 200 members committed to using digital innovations to transition Africa to a circular plastic economy. Under his guidance, the network has launched projects and platforms that empower universities, entrepreneurs, and informal sector actors to co-create value from plastic waste. Previously, Prof Oyinlola served as Director of the Institute of Energy and Sustainable Development (IESD) at De Montfort University, where he led the development of a five-year strategic research agenda and oversaw a team of academics and doctoral researchers focused on sustainability. His earlier research contributed to areas such as solar thermal systems, thermal comfort, and affordable low-carbon housing—most notably the award-winning Bottle House project that upcycles plastic bottles into thermally efficient homes. Prof Oyinlola's work is widely published and has informed policy through collaborations with organisations such as Chatham House, UNEP, and the African Circular Economy Alliance. He is a sought-after speaker at international conferences and serves as a peer reviewer and guest editor for several academic journals. Professor Oyinlola is deeply committed to bridging the gap between

research and practice. His vision is anchored in the belief that sustainable development must be locally grounded, culturally relevant, and systemically inclusive—an ethos that continues to drive his research, leadership, and engagement across continents.

Keynote Speech 3



Prof. Caroline Ling Li, IEEE Computer Society UK and Ireland Section Chair

City St George's, University of London, UK

Title: Physiological AI: From Wearable Sensing to Intelligent and Inclusive Healthcare

Abstract: Advances in wearable sensing and artificial intelligence are creating new opportunities to understand human health continuously and in real-world environments. This keynote will explore the emerging field of Physiological, where multimodal signals such as PPG, ECG, EEG and movement data are combined with machine learning to identify, track and predict physiological and cognitive states. Drawing on recent research in cardiovascular monitoring, mental health, pain and personalised sensing, I will discuss how we can move from signal acquisition towards clinically meaningful and trustworthy AI. The talk will also highlight key challenges in individual variability, multimodal data integration, generalisation and translation, and consider how next-generation physiological AI can enable more personalised, accessible and inclusive healthcare.

Biography: Professor Caroline Ling Li is Professor of Biomedical Engineering and Artificial Intelligence at City St George's, University of London. Her research spans wearable sensing, biomedical signal processing, and artificial intelligence, with a focus on understanding human physiological and cognitive states and developing data-driven approaches for health monitoring and clinical applications.

She has contributed to interdisciplinary research programmes in pervasive sensing and digital health and works closely with industry to translate research into real-world impact. She currently serves as Chair of the IEEE Computer Society UK and Ireland Section. Her work on creative applications of brain-computer interfaces has also been recognised through the British Council's Showcase Your Innovation programme.

Keynote Speech 4



Prof. Haoyong Yu, National University of Singapore, Singapore

Title: Towards wearable robotics with better portability, safety, and comfort

Abstract: With the rapid population aging in many developed countries, wearable robotics, commonly known as exoskeleton robots, are believed to have wide applications in both industry and Healthcare. However, the current market size of wearable robotics is still quite small compared with other robotics sectors due to the limitations in portability, safety, and user comfort. At NUS

Bio-robotics Lab, we are developing a series of wearable robotics for rehabilitation and worker assistance. We adopt a modular approach based on a set of core technologies and components developed in the lab, which includes compliant actuation, cable drive mechanism, wearable sensors and learning based movement detection algorithms. We achieved better portability with novel differential mechanism design and cable driven transmission, safer human robot interaction with compliant actuation, and better human robot movement synchronization with novel sensing strategies. In this talk, I will give a brief introduction to some of our wearable robots in real world applications.

Biography: Haoyong Yu is an Associate Professor of the Department of Biomedical Engineering at the National University of Singapore (NUS). He received his bachelor's degree and master's Degree from Shanghai Jiao Tong University and his PhD degree from Massachusetts institute of Technology (MIT). He directs the Bio-robotics Lab at NUS. His current research interests include biomedical robotics and devices, rehabilitation engineering and assistive technology, service robots, human robot interaction, intelligent control, and machine learning. He has published more than 250 journal papers in robotics and control areas and have applied for more than 20 international patents. His team has developed series of wearable robotics for medical and industrial applications. Prof. Yu is currently the Senior Editor of IEEE Robotics and Automation Letters.

ECR Keynote Speech 1



Prof. Xiaoyu Guo, City University of Hong Kong

Title: Towards ‘Embodied Energy’: Coordinated Flight and Energy Management of Hydrogen-Powered Aircraft

Abstract: With the global initiative towards low-altitude economy and carbon neutrality, the hydrogen-battery hybrid energy system has emerged as a promising solution for long-endurance flight with characteristics including high energy density, strong dynamic response, and zero

carbon emissions. This report focuses on enabling safe and autonomous flight of hydrogen-powered UAVs in complex environments via integrated management of the flight and energy subsystems, and application of hydrogen-powered UAVs in low-altitude applications such as aerial logistics and aerial monitoring. Finally, perspectives on bio-inspired ‘embodied energy’ robotic systems, such as the ‘Polar-hydrogen 1’, the first reported hydrogen-powered aircraft to fly in Antarctica, is introduced.

Biography: Xiaoyu Guo is currently an Assistant Professor in the Department of Mechanical Engineering at City University of Hong Kong. He received his B.Eng. degree from Beihang University, his M.Phil. (with Distinction) from the University of Cambridge, and his Ph.D. from the University of Manchester. He is a recipient of the RGC Postdoctoral Fellowship Scheme (Hong Kong), Gold Award at the International Exhibition of Inventions Geneva, and the Grand Award at the Asia Exhibition of Innovations and Inventions. He has published over 40 papers in international journals including Nature Communications, IEEE Transactions on Automatic Control, and IEEE/ASME Transactions on Mechatronics, and has been granted over 30 invention patents. He currently serves as associate editor for IEEE Transactions on Industrial Informatics, IEEE Transactions on Systems, Man, and Cybernetics: Systems, and Unmanned Systems. His research interests include sustainable robotic systems and bio-inspired sensing and control.

ECR Keynote Speech 2

Dr. Weibo Liu, Brunel University of London



Title: AI-Based Industrial Data Analytics for Metal Additive Manufacturing

Abstract: Metal Additive manufacturing (MAM) is a popular manufacturing technique which is broadly exploited in rapid prototyping and fabricating components with complex geometries. To ensure the stability of the MAM process, it is of critical importance to carry out data analytics on MAM process by monitoring the sensor data collected and detecting potential defects/outliers. This goal of data analytics leads to the development of a knowledge-based system which is to readapt Product engineering stages: 1) Building an AI model to detect future deviations caused by complex geometries to propose alternative geometry changes; and 2) Modifying the manufacturing strategy based on trained AI algorithms to avoid deposition paths that cause final distortions or heat accumulation. In this talk, we focus on the defect detection of thermal image data and outlier detection of welding sensor data based on artificial intelligence techniques. In the first part, a novel image processing method, an image-enhancement generative adversarial network, with aim to improve the contrast ratio of the thermal images for image segmentation will be discussed. In the second part, a novel outlier detection method for anomaly detection will be introduced. The proposed methods are exploited in analysing the real-world industrial data collected from a wire arc MAM pilot line in Sweden.

Biography: Weibo Liu received the B.Eng. degree in Electrical Engineering from the Department of Electrical Engineering & Electronics, University of Liverpool, Liverpool, U.K, in 2015, and the Ph.D. degree in Artificial Intelligence in 2020 from the Department of Computer Science, Brunel University of London, Uxbridge, U.K. He is a Member of the Institute of Electrical and Electronic Engineers (IEEE) and a Fellow of the Higher Education Academy (FHEA). He is currently a Lecturer in the Department of Computer Science, Brunel University of London, Uxbridge, U.K. His research interests include Intelligent Data Analysis, Evolutionary Computation, Transfer Learning, Machine Learning and Deep Learning with applications to Healthcare Data Analytics and Industrial Big Data. Dr. Liu serves as an Associate Editor for IEEE Transactions on Instrumentation and Measurement, the Journal of Ambient Intelligence and Humanized Computing, the Journal of Cognitive Computation, and an Editorial Board Member for the Journal of Scientific Reports. He also serves for the Guest Editor for IET Control Theory & Applications. He has been listed as World's Top 2% Scientists by researchers from

Stanford University. He is a very active reviewer for many international journals and conferences, and a member of program committee for many international conferences.

ECR Keynote Speech 3



Dr. Yuyang Zhou, Edinburgh Napier University

Title: Fully Probabilistic Control Design for Complex Stochastic Systems

Abstract: Complex dynamical systems have garnered significant interest in the realms of control and engineering, as they offer a cohesive and natural framework for the mathematical modelling of diverse real-world systems, such as communication networks, power grids, and chemical processes. The inherent characteristics of these systems, such as high dimensionality, intricate structures, complex models with multiple modes of switching, and substantial uncertainties, pose notable challenges for system analysis, estimation, and particularly for control. This talk will introduce a novel decentralised probabilistic control framework designed for complex stochastic systems. It will offer a fresh research outlook dedicated to refining the control of such systems. In this talk, we will delineate the core principles and applications of the framework, showcasing its contribution to the development of innovative control strategies for complex stochastic systems.

Biography: Yuyang Zhou received her B.Sc. degrees in Electrical and Electronic Engineering from The University of Manchester, United Kingdom, and Beijing Jiaotong University, China, in 2014. She subsequently received her Ph.D. degree in Control Theory from the School of Electrical and Electronic Engineering at The University of Manchester in 2018. From 2018 to 2021, she worked as a Research Associate in the Faculty of Engineering and Applied Science at Aston University, Birmingham, United Kingdom. She is currently a Lecturer in the School of Computing, Engineering and the Built Environment at Edinburgh Napier University, Scotland, United Kingdom. Her current research interests include probabilistic and stochastic control, minimum entropy control, probability density function (PDF) control, and decentralised control.

The 31 st International Conference on Automation and Computing (ICAC2026)		
Time (BST)	Programme Outline	Venue
Wednesday, 26 August 2026		
13:00 – 16:00	Registration	Gateway Reception
13:30 – 15:45	Invited ECR Forum	
13:30 – 14:10	ECR Keynote Speech 1: Prof Xiaoyu Guo , City University of Hong Kong	GLT
14:15 – 14:55	ECR Keynote Speech 2: Dr Weibo Liu , Brunel, University of London	GLT
15:00 – 15:40	ECR Keynote Speech 3: Dr Yuyang Zhou , Edinburgh Napier University	GLT
16:00 – 18:00	CACSUK Committee Meeting / Conference Organisation Meeting (Invited Only)	GLT
Thursday, 27 August 2026		
08:45 – 11:00	Arrival and Registration	Gateway Reception
09:00 – 09:20	The Opening Remark	GLT
09:20 – 10:00	Keynote Speech 1: Prof Tianyou Chai , Northeastern University China	GLT
10:10 – 10:50	Keynote Speech 2: Prof Muyiwa Oyinlola , De Montfort University, UK	GLT
11:00 – 11:10	Conference Photo Session	Atrium
11:10 – 11:30	Tea Break	Atrium
11:30 – 12:45	Parallel Session 1, 5 papers per session	
12:55 – 14:00	Lunch	Atrium
14:00 – 14:40	Keynote Speech 3: Prof Caroline Ling Li , City St George's, University of London, UK	GLT
14:55 – 16:10	Parallel Session 2, 5 papers per session	
16:10 – 16:30	Tea Break	Atrium
16:35 – 18:05	Parallel Session 3, 6 papers per session	
18:10 – 21:00	Banquet (18:10-18:30 Arrival; 18:30 Guests to be seated)	Atrium Winter Garden
Friday, 28 August 2026		
09:15 – 10:45	Parallel Session 4, 6 papers per session	
10:50 – 11:10	Tea Break	Atrium
11:10 – 11:50	Keynote Speech 4: Prof Haoyong Yu , National University of Singapore	GLT
12:00 – 12:20	Award Ceremony and The Closing	GLT
12:30 – 13:00	Lunch	Atrium

* Reception: Gateway Building Reception, Buckinghamshire New University

* GLT: Gateway Lecture Theatre, Buckinghamshire New University

Thursday, 27 August 2026		
11:30-12:45	Parallel Session 1: AI / Best Paper Candidates	GLT
Session Chairs: Yunda Yan		
Time (BST)	Presentation Title	Paper ID
11:30 – 11:45	Perception Delay-Aware Predictive Visual Servoing for Quadruiped Robot Person Following Junwei Ge; Xinlong Miao; Jinya Su*; Yunda Yan	9
11:45 – 12:00	Event-Based Physics Parameter Inference from GPU-Accelerated Synthetic Simulations Using Convolutional Neural Networks Esila Keskin*; Xintong Yang; Minglun Wei; Ze Ji	19
12:00 – 12:15	Contraction-Guided Learning-Based Observer for UAV State Estimation Subject to Disturbances Jialiang Fan; Chengyan Zhao; Yu Zhou; Wenjie Mei*	50
12:15 – 12:30	A Compact 3D-Printed Soft Finger with Cyclic Hydraulic Actuation Zefang Mao; Yunjia Li; Victoria Bamgboye; Sara Ben Haj Hammouda; Aika Ono; Wen Fan; Chao Wu; Dandan Zhang*	69
12:30 – 12:45	Visual Retrieval-Augmented Reasoning for Manufacturing Process Description from 2D Rendered Images of 3D CAD Models Hanyu Wang*; Jonathan Corney; Shuang Li; Zhengjian Wang; Xichun Luo	79
11:30-12:45	Parallel Session 1: Robotic Systems	N2.10
Session Chairs: Ziwei Wang		
Time (BST)	Presentation Title	Paper ID
11:30 – 11:45	Privacy-Preserving Industrial Ergonomics: mmWave-Based Automated REBA Scoring and Pose Estimation Xuhan Zhang*; Zhuangzhuang Dai; Luis Manso; Victor Chang	77
11:45 – 12:00	A Sensorised Lattice Footplate for a Semi-Active Prosthetic Foot Jinze Ge; Jingcheng Sun; Chengxu Zhou*	109
12:00 – 12:15	GAFNet-Lite: Knowledge Distillation-Based Lightweight Gated Attention Fusion for Edge Wearable Human Activity Recognition Yadong Zou; Yan Wang*; Peng Yuan; Hui Wang; Aihui Wang; Hongnian Yu	113
12:15 – 12:30	Trustworthy Stress Detection from Wearable Physiological Signals under Missing and Noisy Conditions Ahmad Sa'ahiry; Nhut-Thanh Tran; Chan Hwang See; Hongnian Yu*	144
12:30 – 12:45	Multi-Node Wearable Monitoring and Feedback-Guided Gamified Training System for Frozen Shoulder Rehabilitation Jie Sun*	146
11:30-12:45	Parallel Session 1: Control Engineering	N2.13
Session Chairs: Xuewu Dai		
Time (BST)	Presentation Title	Paper ID
11:30 – 11:45	Uncertainty-Aware Deep Kinematics and ESKF Fusion for Robust Vehicle Dead Reckoning Yongbo Si*; Xin Zhou; Guangwu Chen	6
11:45 – 12:00	A Dual-Window Distributed Proportional-Integral Control for Large-Scale Discrete-Time Systems Shaoyu Hu*; Zhiwei Gao; Yuping Zhang; Haimeng Wu; Xuewu Dai	15
12:00 – 12:15	PRIMEX-Based Distributed State Estimation with Redundancy-Free Information Fusion Yingxuan Li; Yanyan Hu*; Zhiwei Tan	89

12:15 – 12:30	Safety-Constrained Tracking Control of AUVs under Composite Disturbances via Adaptive Neural Disturbance Learning Zhang Liyao*; Teng Hao; Hu Pengwei; Wang Chenliang; Qiao Jianzhong	111
12:30 – 12:45	Multi-objective Optimization of a Burner Based on CFOA-RFR Jiancheng Sha; Qichun Zhang; Lingfang Sun; Guoliang Feng*	134
11:30-12:45	Parallel Session 1: Intelligent Systems	N2.14
Session Chairs: Qichun Zhang		
Time (BST)	Presentation Title	Paper ID
11:30 – 11:45	Research on personalized customization of interior design driven by artificial intelligence Rong Zhao*; Siyu Yan	29
11:45 – 12:00	Passive Localization of Maritime Vessels and Error Analysis Integrating an Improved YOLOv8s Model with Monocular Vision Haoxuan Chen; Chang Gong; Zhile Zeng; Guangdong Lu; Tao Lin; Jingjie Zhang; Miguel Martínez-García; Jiyu Li*	42
12:00 – 12:15	Contiguous Land Transfer and Mental Health of Middle-aged and Elderly Farmers: Evidence From Jiangsu Province, China Ziyu Wang*; Xinyi Fu; Yueqing Ji	71
12:15 – 12:30	Characteristics of Gaming Behavior Among China's Middle-aged and Older Population Enze Zhu; Yihong Wang*; Nan Xiang; Xubin Lu; Yangbin Chen; Zhijie Xu	145
12:30 – 12:45	Human Machine Interaction in Automated Flight Operations through Accident-based Evidence on Post Disruption Recovery Naveed Kapadia*; Qichun Zhang	183
11:30-12:45	Parallel Session 1: Manufacturing Systems	N2.05
Session Chairs: Sheng-feng Qin		
Time (BST)	Presentation Title	Paper ID
11:30 – 11:45	PyEye: A Real-Time Edge-Based Data Capture System for Error Reduction in Industrial Logistics Shahin Sharafaldin Shirazi*	76
11:45 – 12:00	Multi-Index Water Quality Prediction Based on Dual-Branch Temporal Convolutional and Gated Recurrent Units Weishuai Kong; Dong Li; Xin Wang; Jun Zhang*	116
12:00 – 12:15	Co-Excitation for Simultaneous Health Monitoring of the Hydrogen Fuel Cell/Battery in Hybrid UAVs Dan Zeng; Xiaoyu Guo*; Chenliang Wang; Zhen Dong; Xiang Yu	130
12:15 – 12:30	A Digital Metrology Framework for Laser Processing with Physics-Informed Neural Networks Kexin Yin*; Shan Lou; Yuchu Qin; Paul Scott; Xiangqian Jiang	143
12:30 – 12:45	Theoretical Modeling and Simulation Analysis of Electromagnetic Wave Intervention for Scale Inhibition and Removal in Petroleum Pipelines Tianqi Shi*	189

Thursday, 27 August 2026		
14:55-16:10	Parallel Session 2: AI / Best Paper Candidates	GLT
Session Chairs: Lili Yang		
Time (BST)	Presentation Title	Paper ID
14:55 – 15:10	Residual Depthwise-Separable Temporal Convolutional Network for Robot Localization Khaled Alshehri; Jiawei Li*	92
15:10 – 15:25	Carer Helper: A Chatbot-Integrated Personal Digital Twin System for Supporting Unpaid Carers Xiaoming Dong*; Shengfeng Qin	102
15:25 – 15:40	Sensorized Pneumatic Control and Experimental Validation of a Soft Robotic Transfer System for Simulated Postoperative Handling Jin Luo*	133
15:40 – 15:55	Few-Shot Fault Diagnosis of Harmonic Reducers in Industrial Collaborative Robots Using Prototypical and Siamese Networks Samuel Ayankoso*; Huanqing Han; Hamidreza Fahham; Gareth Tucker; Helen Miao; Fengshou Gu	148
15:55 – 16:10	Arbiter-RAG: A Neuro-Symbolic Framework for Conflict Resolution and Temporal Consistency in Autonomous Knowledge Graphs Hassan Raza Bukhari*; Yongqiang Cheng; Qingde Li	185
14:55-16:10	Parallel Session 2: Robotics & Autonomy	N2.10
Session Chairs: Yong Yue		
Time (BST)	Presentation Title	Paper ID
14:55 – 15:10	A Metacognitive Tri-Layer Creative Generation Model From Peer Supervision to High-Level Review within a Hierarchical Regulatory Architecture Yun Zhang*; Hongji Yang; Yanju Yao; Zhongxi Lu; Yumo Guo	10
15:10 – 15:25	Energy-Aware Mobile Robot Path Planning Using Dynamic Window Approach Ali Mustafa*; Brahim Brahmi	35
15:25 – 15:40	Optimized TVLQ Trajectory Tracking and Robustness Evaluation for a 4ISW4IAW Mobile Robot Sajjad Mahmoud*; Asem Abdalhadi; Abdulwahid Saif	47
15:40 – 15:55	Real-Time 3-DoF Robotic Grasp Detection via Keypoint Regression Xiaoyu Xia; Chengcheng Hu; Leyi Liu; Junyan He; Kaiyue Chen; Yuhao Jin; Yong Yue; Xiaohui Zhu*	91
15:55 – 16:10	SignVLA: Real-Time Sign Language-Guided Robotic Manipulation via Attention LSTM and Vision-Language-Action Models Ningwei Bai; Xinyu Tan; Harry Gardner; Zhengyang Zhong; Liuhaichen Yang*; Luoyu Zhang; Zhekai Duan; Monkgogi Galeitsiwe; Zezhi Tang	173
14:55-16:10	Parallel Session 2: Computer Vision	N2.13
Session Chairs: Weibo Liu		
Time (BST)	Presentation Title	Paper ID
14:55 – 15:10	Swin Transformer with Tail-Aware Mixup and Adaptive Logit Adjustment for Long-Tailed Pest Recognition Yidan Zhu*; Zidong Wang; Weibo Liu; Xiaohui Liu	68
15:10 – 15:25	Adapting Frozen Large Vision Models for Silhouette-Based Gait Recognition Enze Shen; Chaolong Zhang*; Yuanping Xu; Yushan Pan; Zhijie Xu; Weiye Wang; Jin Jin	80

15:25 – 15:40	PromptArbiter: Degradation-Aware Infrared-Visible Image Fusion via Text-Conditioned Modality Arbitration and Multi-Scale Cross-Modal Interaction Junjie Wang; Yanyan Hu*; Zhiwei Tan	82
15:40 – 15:55	Semantic-aware Lightweight Temporal Enhancement for Skeleton-based Action Recognition Jiayi Chu; Yuxiao Tang; Qizhong Gao; Junyan He; Xiaohui Zhu; Yong Yue*	90
15:55 – 16:10	Backbone-Preserving Association Refinement for Visible-Thermal Multiple Object Tracking Xiaoyu Huang; Minyu Lin; Rui Sang; Yong Yue; Ángel F. García-Fernández; Simon Maskell; Yifan Zhou; Jieming Ma; Xiaohui Zhu*; Eng Gee Lim	97
14:55-16:10	Parallel Session 2: Intelligent Systems	N2.14
Session Chairs: Erfu Yang		
Time (BST)	Presentation Title	Paper ID
14:55 – 15:10	Indoor space reuse strategy based on sustainable development principle Rong Zhao*; Xi Wang	30
15:10 – 15:25	Study on the influence of artificial intelligence on the evolution of interior design style Siyu Yan*; Rong Zhao	31
15:25 – 15:40	Intelligent Tidal Lane Setting Algorithm Based on LSTM-GASVR and Multi-objective Optimization Xin Cheng; Jingmei Zhou*; Jing Chen; Hui Chang; Erfu Yang	51
15:40 – 15:55	Depth Refinement with Sparse Geometry for Agricultural and Forest Scenes Zhipeng Zhong*; Shuoyuan Xu; Matthew Coombes; Cunjia Liu	132
15:55 – 16:10	A Physics-Informed Multi-Correlator System for GNSS Abnormal Detection Numaan Muhammad; Zhengjia Xu*	139
14:55-16:10	Parallel Session 2: Prognostics & Health Management	N2.05
Session Chairs: Jichun Li		
Time (BST)	Presentation Title	Paper ID
14:55 – 15:10	Mechanism of Scale Inhibition in Oil Pipelines by Agile Frequency Pulsed Electric Fields and the Associated Dynamic Monitoring System Lu Zhang*	129
15:10 – 15:25	A Coupled Mixed-Lubrication Model for Planetary Gear Journal Bearings in Wind Turbines Considering Helical Gear Mesh and Axial Crowning Lintao Li; Gengchen Gao; Zhifeng Hu; Haiyan Miao; Dong Liu; Guoxing Li*; Ahmed Hamood; Fengshou Gu	138
15:25 – 15:40	Inventory Optimisation with Deep Reinforcement Learning in Supply Chain Management Gangmin Li*; Kangni Li	153
15:40 – 15:55	Design of a Prognostics-Based Monitoring and Early Warning Platform for Highway Low-Temperature Icing Jie Yang*	184
15:55 – 16:10	A Calibrated Hybrid Edge Framework for Elevator Safety Warning with Statistical Anomaly Detection Zhe Zhang; Yuanbing Ouyang; Letian Wei; Xiaojiang He; Yushan Pan*; Chaolong Zhang; Hao Wang; Zhijie Xu	187

Thursday, 27 August 2026		
16:35-18:05	Parallel Session 3: AI / Best Paper Candidates	GLT
Session Chairs: Ze Ji		
Time (BST)	Presentation Title	Paper ID
16:35 – 16:50	Reliable Text-to-SQL in Resource-Constrained Settings with Small LLMs via Iterative Retry Workflows Bilel Benziane*; Xavier Schepler	21
16:50 – 17:05	Computational Decoding of Social Identity Effects on Memory Encoding: Continuous Brain-Behavior Prediction from EEG Connectivity Zhuoen Lu*; Dewei Yi; Jie Sui	56
17:05 – 17:20	Representation-guided volumetric diffusion for label-free and slice- consistent 3D brain MRI synthesis Savvas Agisilaou; Dahui Yu; Jiajie Luo; Wenxing Ji; Zhao Huang; Jiguang Li; Jichun Li*	95
17:20 – 17:35	Structured Residual Adaptation for Multi-Task World Models Yanlang Zheng*; Zhenfu Zhang; Jintao Li; Chen Lin; Peng Liu; Yun Li	115
17:35 – 17:50	Post-Training for Reasoning LLMs with Reinforcement Learning: A Stability–Efficiency Perspective Liuhaichen Yang*; Hanshang Zhu; Zhengyang Zhong; Ningwei Bai; Xinyu Tan; Qichen Yin; Zonghao Yan; Zezhi Tang	123
17:50 – 18:05	Counterfactual Multi-Agent Credit Assignment Optimization Fused with Spatial Causal Adjacency Matrix Ruixing Pang; Zhendong Li; Xuyang Tao; Shichao Zhu; Yefeng Liu*	175
16:35-18:05	Parallel Session 3: Robotics & Autonomous Systems	N2.10
Session Chairs: Xintong Yang		
Time (BST)	Presentation Title	Paper ID
16:35 – 16:50	Robust Adaptive Control for Robotic Manipulators with Kinematic and Dynamic Uncertainties Zhongshuo Liu; Liang Sun*; Jingjing Jiang	40
16:50 – 17:05	Robust Noisy-Label Learning: A Novel Class-Specific Autoencoder- Guided Sample Selection Framework Haobin Cao*; Zidong Wang; Weibo Liu; Jiale Hong; Xiaohui Liu	65
17:05 – 17:20	Hand Selection Support System for Industrial Two-Fingered Hand Yasumichi Aiyama*	73
17:20 – 17:35	AI-Driven Wearable Sensor Analytics for Dementia Monitoring: Machine Learning, Deep Learning, and Emerging Foundation-Model Opportunities Zitong Chai; Yuyang Zhou*; Hongnian Yu	121
17:35 – 17:50	A Lightweight LLM-Driven Multi-Agent Framework for Virtual Society Simulation with Memory Feedback Aoao Guo*; Xinyi Tao; Huakang Li; Xuewu Dai	108
17:50 – 18:05	Enhancing Visual-Inertial SLAM via Dynamic-Aware Soft Suppression in DBA-Fusion Zhendong Li; Ruixing Pang; Xuyang Tao; Shichao Zhu; Hao Feng; Yefeng Liu*	176
16:35-18:05	Parallel Session 3: Computer Vision	N2.13
Session Chairs: Lu Liu		
Time (BST)	Presentation Title	Paper ID
16:35 – 16:50	Direct Point-wise Non-Rigid Renal Registration via Simulation-Driven Learning of Biomechanical Material Behavior Yuzhe Zhao*	34

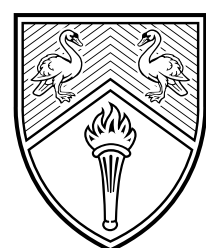
16:50 – 17:05	SFCMs-DETR: An Enhanced DETection TRansformer for Small-Scale Defect Detection in Fibre Composite Materials Juntao Han*; Zidong Wang; Weibo Liu; Zihan Jiang; Xiaohui Liu	53
17:05 – 17:20	Surface Roughness Measurement Based on Image Feature Extraction Xun Chen; Xun Chen*; Chen Jiang; Hui Ye	60
17:20 – 17:35	An Improved YOLOv11 Algorithm for Printed Circuit Board Defect Detection Yuchen Tong; Dong Li; Xin Wang; Jun Zhang*	117
17:35 – 17:50	Mamba-Guided Diffusion for Prediction-Based Industrial Video Anomaly Detection Jiayu Li; Yushan Pan*; Weihua Liu; Yihong Wang; Chaolong Zhang; Zhijie Xu	179
17:50 – 18:05	K-Distance-Guided Adaptive DBSCAN for 3D Weld Seam Extraction in Robotic Welding System Shunjie Gu; Li Tong; Haoran Ding; Haoran Wang; Yong Yue; Qilei Sun*	180
16:35-18:05	Parallel Session 3: Control Engineering	N2.14
Session Chairs: Yi Dong		
Time (BST)	Presentation Title	Paper ID
16:35 – 16:50	A Decomposition-Based Hedging Framework with Machine Learning for Cross-Maturity Hedging in Electricity Futures Markets Jingchuan Ma*; Yu-Wang Chen; Fanlin Meng	54
16:50 – 17:05	A Charge-Conserved SiC MOSFET Modeling Approach Based on Padé Approximation for High-Frequency Power Electronics Shixiao Li*; Rongchuan Chen; Shan Jia; Wenkai Yue; Shihan Wang	83
17:05 – 17:20	Risk-Aware Prediction-Optimization Integrated Day-Ahead Dispatch for Integrated Energy System Yan Shao*; Hong Yue; Xu Fang; Minghui Ji; Zaiguo Fu; Qunzhi Zhu	104
17:20 – 17:35	Optimal Charging for Solar-Wind Powered Electric Vehicle Car Parks Liam Clark; Xuewu Dai*; Yuchao Liu; Richard Knotter; Nauman Aslam; Jing Jiang	110
17:35 – 17:50	Bi-Directional Coupled Motion–Energy Co-Optimization for Hydrogen Hybrid UAVs With Efficiency Feedback Xiaolong He; Junyu Ye; Zezhi Tang; Yi Dong*; Zhen Dong	114
17:50 – 18:05	A Horizon-Aware Hybrid Time–Frequency Framework for Direct Multi-Step Hourly Electricity Demand Forecasting Liu Yunlong*	150
16:35-18:05	Parallel Session 3: Manufacturing Systems	N2.05
Session Chairs: Xiaojun Zhai		
Time (BST)	Presentation Title	Paper ID
16:35 – 16:50	QFIR-Net: Quality Formation Inference and Reasoning via Cross-Source Interaction for Robotic Machining Wei Wang*; Pengxiang Wang; Jihong Yan	57
16:50 – 17:05	Digital Twin with Embedded Energy Consumption Prediction for Collaborative Robotic Manipulators Jihong Yan; Bo Hu*; Boshuai Yu; Pengxiang Wang	63
17:05 – 17:20	Lightweight World-Model-Inspired Quality Prediction and Candidate Parameter Path Evaluation for Precision Machining Processes Xin Chen*; Kai Cheng	72

17:20 – 17:35	Evolution-Aware Gated Graph Attention Model for Dynamic Ontology Matching in Multi-Factory Collaborative Wafer Manufacturing Da Chen; Jie Zhang*; Lihui Wu; Peng Zhang; Youlong Lv	81
17:35 – 17:50	Extreme Total Ionizing Dose Survival of a COTS Artix-7 FPGA Under Prolonged Gamma Irradiation Tamim Al-Hasan*; Emil Jonasson; Klaus McDonald-Maier; Xiaojun Zhai	142
17:50 – 18:05	Solver-Aware Learning for Exact Optimization in Tightly Constrained Industrial Problems Yutong Qi*; Dong-Ling Xu; Manuel López-Ibáñez	174

Friday, 28 August 2026		
09:15-10:45	Parallel Session 4: Artificial Intelligence	GLT
Session Chairs: Shuanghua Yang		
Time (BST)	Presentation Title	Paper ID
09:15 – 09:30	Few-Shot Prompting and Knowledge Graph Integrated Approach for Assembly Instruction Parsing Xu Huan; Zhang Jie*; Zhang Peng; Lyu Youlong	61
09:30 – 09:45	Leakage-Controlled Evaluation of CatBoost and Logistic Regression for Cost-Sensitive Credit Risk Assessment Xinyi Fu*; Ziyu Wang	67
09:45 – 10:00	Three-Way Topic Management with Explicit Boundary Region Export for Scientific Literature Mapping Na Li*	94
10:00 – 10:15	Robust Multi-Objective Operating Room Scheduling under Stochastic Emergency Arrivals Chengyu Liang; Yizhou Pan; Lili Yang*	135
10:15 – 10:30	Optimised ADResNet Framework for Early Detection of Alzheimer’s Disease from 3D MRI Scans Jonathan Mensah Addo; Eric Kwabena Baidoo; Ephraim Tsike; Ibrahim Alqatawneh; Samuel Danso*	140
10:30 – 10:45	SGLite: A Compact Serving Framework for Large Language Model Inference Shihao Deng*; Xuqi Zhu; Klaus McDonald-Maire; Xiaojun Zhai	141
09:15-10:45	Parallel Session 4: Robotic Systems	N2.10
Session Chairs: Chao Liu		
Time (BST)	Presentation Title	Paper ID
09:15 – 09:30	Energy-Aware Task Planning for Industrial Robots via Large Language Models Shaoyi Niu*; Pengxiang Wang; Jihong Yan	38
09:30 – 09:45	Cost-Aware LLM-Based Task and Motion Planning with Learned Feasibility Checks Meiyuan Gong*	43
09:45 – 10:00	Talk-to-Fly: An Agentic LLM Runtime for Natural-Language UAV Task Control Jack Morgan; Zhuangkun Wei*; Hongjian Sun	66
10:00 – 10:15	Human-Robot Collaboration in Laboratory Automation: A Critical Review Tye Cameron*; Lynn Donlon; Oliver Willis; Erfu Yang	106
10:15 – 10:30	Risk-Aware Virtual-Reality Teleoperation with Gaze-Conditioned Control for High-Temperature Casting Yicheng Shi*	120
10:30 – 10:45	ROS-Free Augmented Reality Teleoperation of the Kinova Gen3 Robotic Arm Using Unity-Native Inverse Kinematics Angela Kimie Matsuo; Chao Liu*; Yu Jia; Yuchun Xu	131

09:15-10:45	Parallel Session 4: Computer Vision	N2.13
Session Chairs:		
Time (BST)	Presentation Title	Paper ID
09:15 – 09:30	A Semantic Segmentation Method for Weld Seam Detection and Localization in Robotic Welding Xiaopeng Fang; Chaolong Zhang*; Yuanping Xu; Yushan Pan; Zhijie Xu; Jin Jin; Weiye Wang	13
09:30 – 09:45	AttenMLP: An Attention-Enhanced Multilayer Perceptron for 3D Point Cloud Classification Rohit Mohanraj; Hazem Eissa*	49
09:45 – 10:00	Efficient Point Cloud Registration via Stratified Sampling and Bidirectional Correspondence Validation Yixin Ruan; Guoliang Liu*; Congnan Han; Guohui Tian	74
10:00 – 10:15	Fusion of the FAST Feature Detection and SIFT Descriptor for Structure and Motion Estimation Based on OpenCV Implementation Ali Alouache*	93
10:15 – 10:30	Lightweight Underwater Scene Reconstruction with Pose-Conditioned Neural Medium and 3D Gaussian Splatting Shubham Parab; Shaojun Bian; Mohamed Ihmeida; Qichun Zhang; Shaojun Bian*	125
10:30 – 10:45	D-Sight: A Topology-Aware Tactile Sensing Framework for 3D Texture Reconstruction under Single White Illumination Jiahao Lu*; Jinheng Wu; Xiang Fang; Haoyuan Zheng; Chengyue Liu; Yuanxi Chen; Weiyong Si; Haoran Li	128
09:15-10:45	Parallel Session 4: Intelligent Systems	N2.14
Session Chairs: Dewei Yi		
Time (BST)	Presentation Title	Paper ID
09:15 – 09:30	AI-Driven Robotic Inspection for Forest and Grassland Ecosystems: Progress, Framework and Challenges Jie Sun*; Jinwu Liu; Yurun Hao; Wei Huang; Qinglei Bu; Xue Wang; Fan Zhang	147
09:30 – 09:45	Weighted Difference Image Guided Siamese Mamba Network for SAR Change Detection Mohamed Ihmeida*	152
09:45 – 10:00	Research on Fault Diagnosis and Fault-Tolerant Control of Wind Turbine Yaw Systems Guoliang Feng*	177
10:00 – 10:15	A Survey of AI-Driven Automated Game Testing Frameworks and Approaches Vytautas Kravcenka; Qichun Zhang*; Shaojun Bian	182
10:15 – 10:30	Normal-only Pixel Recalibration for Score-Decoupled AD2 Anomaly Segmentation Canwei Liu; Yushan Pan*; Weihua Liu; Zuhe Li; Chaolong Zhang; Yihong Wang; Yuanping Xu; Zhijie Xu	186
10:30 – 10:45		

09:15-10:45	Parallel Session 4: Cyber Security	N2.08
Session Chairs: Yun Li		
Time (BST)	Presentation Title	Paper ID
09:15 – 09:30	A Deep Learning Framework for Analysing the Evolution of Cyber-to-Physical Attacks in Cyber-Physical Systems through Sensor-Level Analysis Pooya Sajjadi*; Fateme Dinmohammadi; Mahmood Shafiee	11
09:30 – 09:45	Jensen-Shannon Divergence for Byzantine Client Detection in Wafer Map Federated Learning Han Wu*; Zidong Wang; Weibo Liu; Xiaohui Liu	64
09:45 – 10:00	Privacy-Aware Task Offloading in Vehicular Edge Computing Based on Deep Reinforcement Learning Qiong Shi*; Yongqiang Cheng; Qingde Li	75
10:00 – 10:15	MULTI-EDGE INTRA-GROUP GRAPH CONSTRUCTION FOR CREDIT CARD FRAUD DETECTION Roya Amiri*; Sardar Jaf	100
10:15 – 10:30		
10:30 – 10:45		



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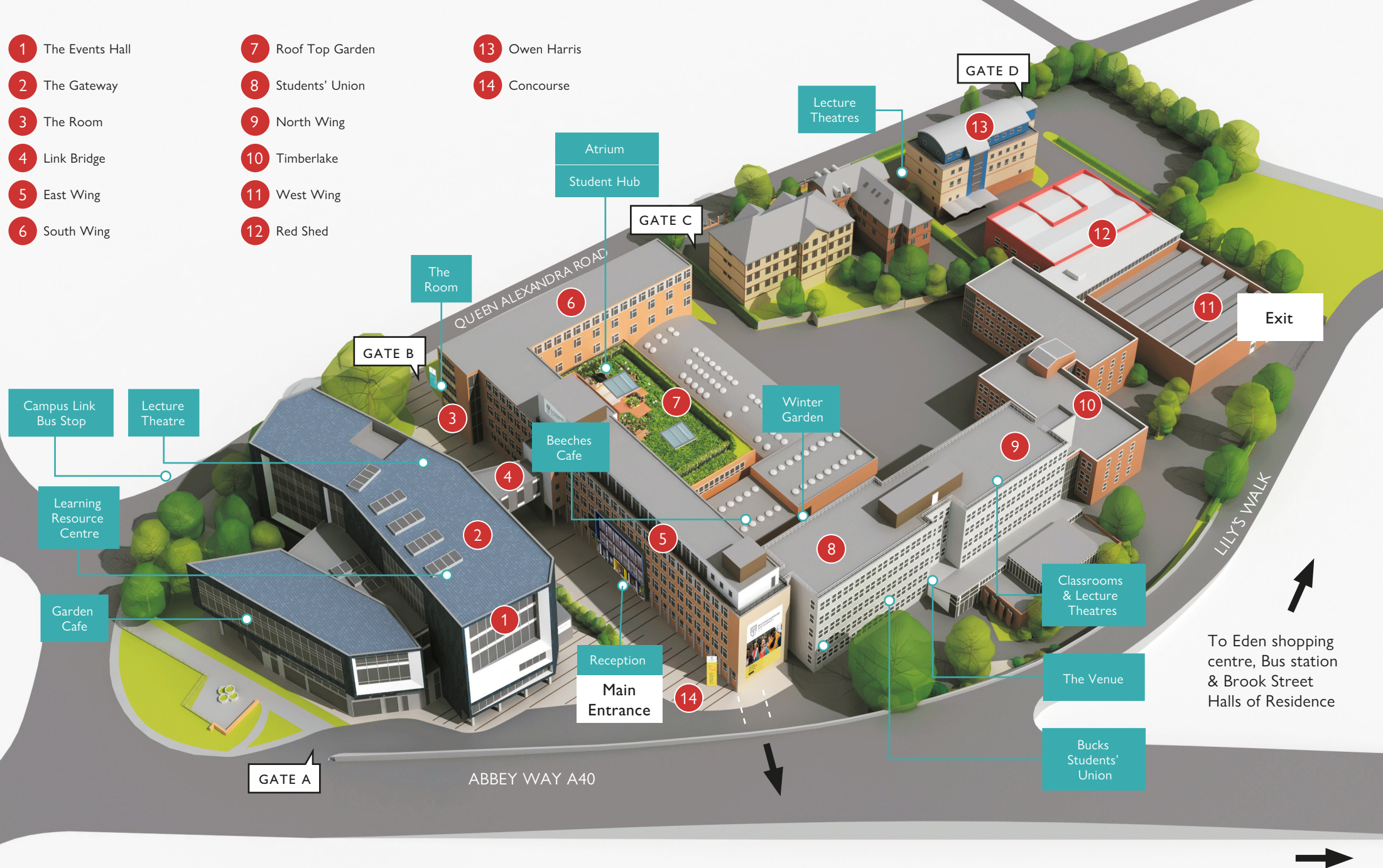
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- 3 The Room
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- 10 Timberlake
- 11 West Wing
- 12 Red Shed

- 13 Owen Harris
- 14 Concourse



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