PROTOTYPES
FOR **HUMANITY**

SHORT PAPERS PLATFORM 2026

INFRASTRUCTURES & CITIES

Dr. Ahmed Ibrahim Osman Ahmed Canterbury Christ Church University	From Waste to Heat-Resilient Buildings: Biochar Brick Prototypes and an AI-Ready Pathway for Low-Carbon Infrastructure
Mr. Muhammad Nuzulul Furqan Bakrie University	BURST-PLATE (Blast-Resistant Structural Plate for Public Facilities)
Professor Ajay Gupta Desh Bhagat University, Punjab	Hardened Rescue Occupancy Architecture (HROA): A Resilient Sub-GHz Dual-Layer Telemetry Infrastructure for Structural Collapse Search and Rescue
Dr. Ravindra Jayaratne University of East London	Nature-Integrated Coastal Defences for Resilient Communities
Dr. Lee Leon The University of the West Indies	Conversion of Waste Material into Valuable and Cost-Effective Road Pavement Repair Mix
Professor Moncef Nehdi University of Guelph	CreteXtract: From Literature to Auditable Chloride-Diffusion Evidence for Low-Carbon Concrete
Dr. Alex Manuel Sanchez University of Engineering and Technology (UTEC)	Automated Urban Road Inspection and Maintenance Planning: A Deep Learning and RPAS Approach for Optimized Budget Allocation
Professor Budi Indra Setiawan IPB University (Bogor Agricultural University)	FONi: A Fertigation Technology for Enhancing Urban Family and Community Food Garden Productivity

ENVIRONMENT, SUSTAINABILITY & ENERGY

Professor Shabib Alrashdi National University of Science and Technology	AI-Driven Circular Process Safety Transformation: Converting Industrial Wastewater into Ultra-Pure Green Hydrogen with Integrated Carbon Capture
Professor Fernando Espinoza Duoc UC	Ecobricks: A Sustainable Construction Breakthrough – Turning Plastic Waste into High-Strength Building Solutions
Dr. Abdelaziz Gouda University of Waterloo	Light, Not Flame: A Single-Step Photolysis Prototype Turning Waste Methane into Battery-Grade Carbon Nanotubes and Clean Hydrogen
Mr. Brathikan Vijayamohan Mankayarkarasi Kumaraguru College of Technology	Parametric CFD Investigation of a Differential Heave Wave Energy Converter for Distributed Coastal Energy Access
Professor Alex Ossa Universidad EAFIT	Bioinspired Silicon Electrodes for Platinum-Free Green Hydrogen Production: Translating Mitochondrial Nanoarchitecture into Scalable Water Electrolysis
Dr. Narayana Prasad Brigham and Women's Hospital	Community-Led Environmental Health Surveillance Using Upcycled Materials and Mobile Technology in Climate-Vulnerable Bangladesh
Dr. Ala'a Wahbeh National Agricultural Research Center (NARC)	Activated Bubble Technology for Managing Soil Salinity in Intensive Irrigated Agriculture: From Pot to Farm-Scale Validation in the Jordan Valley

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Dr. Santiago Zapata University of Manchester	Transforming Industrial Emissions into Assets: A Modular Chemical Looping Unit for Inherent Carbon Capture

MOBILITY & LOGISTICS

Dr. Ashok Chopra Amity University Dubai	A Regulatory Framework for Low-Emission Urban Freight: Incentivising Fleet Electrification and Digital Integration in Dense Urban Environments
Professor Amjad Gawanmeh University of Dubai	Framework for Unified Mobility-as-a-Service Platform Design Integrating Robotaxi and eVTOL Air Taxi with Public Transit in Dubai
Dr. Yijing Li King's College London	AI/ML-Enhanced Satellite Tracing of Supply Chain Disruptions during Extreme Flooding
Professor Tarak Nandy Universiti Malaya	Neuro-Symbolic Swarm Traffic Intelligence (NSSTI): A Self-Evolving Multi-Agent AI System for Predicting and Preventing Urban Traffic Congestion
Dr. Irina Neaga University of Wales Trinity Saint David, Swansea	Human-Centred AI and Blockchain Systems for Sustainable Supply Chains
Dr. Neeraj Pandey University College London (UCL)	From Communication Signals to Radar Images: 5G/6G ISAC for Safer Connected Mobility
Dr. Tripti Paul International University of Rabat (UIR)	Algorithmic Airspace Governance and the Coordination Paradox: Control, Coupling and Resilience in Digital Aviation Systems
Professor Yilmaz Uygun Constructor University	Vertaxis: Satellite-Enabled Predictive Maintenance for Vertical-Axis Wind Turbines

AUTONOMOUS SYSTEMS & ADVANCED MANUFACTURING

Dr. Radon Dhelika Universitas Indonesia	Development of a Dual-Camera Machine Vision System for Real-Time Capacitor Detection on Waste PCBs
Dr. Julio Fajardo Universidad Galileo	Adaptive Robotic Framework for Teleoperated Inspection of Hydroelectric Penstocks
Mr. Rishivarathan Ilangovan Singapore University of Technology and Design	Dragonfly: An Autonomous Robotic System for Chemical-Free Aedes Mosquito Control in Urban Environments
Professor Oliver Niebuhr University of Southern Denmark	Voice as Social Capital: StagePod and the Prototyping of Equitable Communication Training
Professor Hamid Norouzi City University of New York	High-Resolution Air Temperature Mapping for Heat-Resilient Cities: A Machine Learning Approach
Dr. Erick Ramírez-Cedillo Tecnológico de Monterrey	ORION: Teaching Itself to Teach, a Cognitively Adaptive Physical AI Framework for Industrial Skill Training
Dr. Raffi Tchakerian Dubai Institute of Design and Innovation	An Integrated Material-Process Workflow for Error Mapping and Archival in Robotic Additive Manufacturing of Experimental Materials
Dr. Anastasia Olnancy Tzirides University of Illinois Urbana-Champaign	CyberScholar: AI Trust Infrastructure for Education

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SOCIO-ECONOMIC, DIGITAL ECONOMIES & FUTURE MARKETS

Dr. Ransford Kwaku Afeadie University of Professional Studies, Accra	An AI-Enabled Integrated Culturally Competent Behaviour Change Framework to Enhance Sexual and Reproductive Health Service Utilisation among Migrant Adolescents in Urban Poor Settings in Ghana
Mr. Nithul Bagathi Singapore University of Technology and Design	Smorphi Imaginary Pro: Robotics Education for Every Learner at USD 1 a Month
Professor David Camacho United Arab Emirates University	Towards Explainable Multimodal Misinformation Detection: Benchmarking Transformer-Based Architectures for Digital Trust
Professor Viju GK Ahmedabad Institute of Business Management	HealthBridge AI: A Lightweight, Offline-First Diagnostic Support System for Community Health Workers in Resource-Constrained Settings
Professor Yasemin Güllüoğlu Social Sciences University of Ankara	AI-Shield: A Legal-Tech Toolkit and Gamified Framework for Algorithmic Equity in Family Law
Dr. Hammed Oluwaseyi Musibau Adelaide University	Education Quality and Economic Growth: A New International Measure of Quality of Education
Dr. Vishnu Nair University of Dubai	From Licensing to Lifecycle Compliance: A Legal Readiness Scorecard for Tokenised Digital Asset Markets in Dubai
Professor Efstathios Polyzos Zayed University	Federated Graph Learning for Anti-Money Laundering Detection in the UAE: A Privacy-Preserving Framework for Digital Financial Compliance

WELLBEING & HUMAN PERFORMANCE

Dr. Ikram Brahim Dubai Health Center for Innovation & Technology	EDA-based Pain Classification Using Machine Learning: The PainDetect Multisite Study
Dr. Sixto Enrique Campaña Bastidas National Open and Distance University	VitalSense MIA: An Integrated AI and IoT Early Warning System to Prevent Obstetric Near Miss and Maternal Mortality in Remote Communities
Professor Consuelo Cano Pontifical Catholic University of Peru	Minivent: A Portable Neonatal Ventilation Device with Real-Time Pressure and Volume Monitoring
Professor Harshit Desai MIT Art, Design and Technology University	Predicting High-Risk Pregnancy Using Explainable Machine Learning: A Human-Centred Design Approach from India
Professor Urmila Diwekar University of Illinois Chicago	Opt-IVF: A Personalized Optimization Platform for IVF Using Hybrid Engineering Models and Clinical Validation Across Multicenter Trials
Professor Alan Fine Dalhousie University	Diagnostics for All: An Ultra-Portable Low-Cost System for Multiple Test Types in Minutes on a Single Droplet
Professor Walter Lam The University of Hong Kong	Development and External Validation of GumAI: An AI-Powered mHealth Tool for Gum Disease Screening and Remote Oral Care
Dr. Munib Mesinovic University of Oxford	An Open Benchmark for Trustworthy Clinical AI in Intensive Care

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OPEN & SPECULATIVE

Professor Marzieh Azarderakhsh New York City College of Technology	Satellite-Detected Lake Ice as a Climate Sentinel: A Validated Multi-Year Method for Data-Sparse Lake Regions
Dr. Ivana Beveridge Sorbonne University Abu Dhabi	Sovereign Aesthetics: The Abaya as Living Heritage in the Age of Artificial Intelligence
Mr. Tushar Kanade The Frontier State, Harvard University	Cyborg Citizenship: Augmented Cognition, Public Space, and the Next Civic Contract
Mr. Tushar Kanade The Frontier State, Harvard University	The Library of Babel Has a Power Bill: A Speculative Reckoning with the Energy Cost of Possible Worlds
Professor Patricia Torres-Sánchez Tecnológico de Monterrey	Translating Water Innovation in Public Space: Visible and Invisible Prototypes