ACRA 2025 Program

Day 1: Monday 1st December 2025

8:00 – 8:45	***Registration & Morning Tea / Coffee***
8:45 – 9:00	***Welcome Message***
9:00 – 10:00	***Keynote 1: Effective Human Robot Teaming (Prof. Dana Kulic)***

Oral Session 1 (Chair: Dr Syed Shams ul Islam) **Machine Vision** 10:00-11:00
103 - Multi-Modal Camera-Based Detection of Vulnerable Road Users
115 - Robots Watching Robots - Pose Estimation Applied to Humanoid Robots
118 - LAPX: Lightweight Hourglass Network with Global Context
121 - Automated Bud Counting in Ornamental Woody Plants Using Multi-View Photogrammetry and Deep Learning

11:00 – 11:30	***Morning Tea***

Oral Session 2 (Chair: Dr Jumana Abu-Khalaf) **Industrial Robotics and Automation** 11:30-12:30
116 - Design and Evaluation of Assistive Modes in a Lower Back Exoskeleton for Sheep Shearing: a Case Study
138 - Big Robots, Small Tasks -Task Scale Reduction Using a Simple Pantograph Mechanism
157 - Wear-Aware Reinforcement Learning for Supervisory Control of SABC Grinding Circuits
173 - A Service Robot's Guide to Interacting with "Busy" Customers

12:30 – 13:30	***Lunch Break***

Oral Session 3 (Chair: Dr Leimin Tian) **Human Machine Interfaces** 13:30-14:30
101 - Collaborative Object Handover in a Robot Crafting Assistant
113 - Influence of Operator Expertise on Robot Supervision and Intervention
130 - Towards Senior-Robot Interaction: Reactive Robot Dog Gestures
136 - Continual Learning for User Specific sEMG Complex Gesture Recognition Using CNN and Elastic Weight Consolidation

14:30 – 15:30	***Robotics Experts Panel Discussion – Session Chair: Prof. Will Brown***
15:30 – 16:00	***Afternoon Tea***

Oral Session 4 (Chair: Dr Akansel Cosgun)
Artificial Intelligence and Biomimetics 16:00-17:30
107 - Evolutionary Spiking Neural Controllers for UAV Flight
119 - Leveraging Human Motion Intention Prediction for Grasping Moving Objects in Human-Robot Collaboration
134 - Training Humanoid Robots to Walk in Lunar Gravity Using Reinforcement learning
152 - DXAI: Large-Scale Diffusion-based Dataset for Evaluating Explainable AI Techniques
137 - Addressing Sim-To-Real Gap for Autonomous Racing of F1Tenth Cars
175 - PanoStereo: Unleashing Video Diffusion Models for Stereoscopic Image Generation

18:15 – 20:30	***Welcome Reception (Birra Bar)***

Day 2: Tuesday 2nd December 2025

8:00 – 8:30	***Registration & Morning Tea / Coffee***

Oral Session 5 (Chair: Dr Henry Williams) **Navigation** 8:30-9:30
105 - SWIFT-Nav: Stability-Aware Waypoint-Level TD3 with Fuzzy Arbitration for UAV Navigation in Cluttered Environments
148 - Generation of Navigational Expert Policies to Improve Sample Efficiency in Deep Reinforcement Learning
151 - Conservative Bias in Multi-Teacher Learning: Why Agents Prefer Low-Reward Advisors
162 - PIPE-i Mini - Navigation and Exploration for a Multi-Sensor Robotic Platform Used in Surveying Environments

9:30 – 10:30	***Keynote 2: Safe, collaboration-friendly, user-acceptable perception and localization for autonomous systems (Prof. Michael Milford)***
10:30 – 11:00	***Morning Tea and Robot Demonstration***

Oral Session 6 (Chair: Dr Md Moniruzzaman) **Autonomous Vehicles** 11:00-12:00
114 - Whole-Body Dynamic Throwing with Legged Manipulators
120 - An Ontology-driven Dynamic Knowledge Base for Uninhabited Ground Vehicles
163 - Virtual Traffic Lights for Multi-Robot Navigation: Decentralized Planning with Centralized Conflict Resolution
168 - VLM-Guided Visual Place Recognition for Planet-Scale Geo-Localization

12:00 – 13:00	***Women in Engineering & Automation Workshop – Session Chair: Jumana Abu-Khalaf – Senior Panellist: Prof Dana Kulic.***
13:00 – 14:00	***Lunch Break***

Oral Session 7 (Chair: Dr Naeha Sharif) **Machine Vision** 14:00-15:00

104 - Australian Supermarket Object Set (ASOS): A Benchmark Dataset of Physical Objects and 3D Models for Robotics and Computer Vision
124 - Enhancing Self-Supervised Depth and Ego-Motion Estimation in Minimally Invasive Surgery
139 - Automated Marine Biofouling Assessment: Benchmarking Computer Vision and Multimodal LLMs on the Level of Fouling Scale
142 - A Speech Emotion Recognition Component for Mental-Health Robot

15:00 – 15:30	***Afternoon Tea***

Oral Session 8 (Chair: Dr Ben McGuinness)
Manipulators 15:30-16:30
110 - Fixed-time Sliding Mode Control of Underwater Vehicle Manipulator System in Drilling Tasks
145 - Continual Invariant Image Mapping from Randomized Simulations for Sim2real Transfer in Robotic Manipulation
149 - Fast Functionally Redundant Inverse Kinematics for Robotic Toolpath Optimisation in Manufacturing Tasks
155 - Exploring Dexterous Manipulation through Tactile Feedback and Reinforcement Learning

Oral Session 9 (Chair: Dr Syed Shams ul Islam)
Industrial Robotics and Automation 16:30-18:00
109 - The E-bin: A Human-Assisted Kiwifruit Harvesting Platform
112 - Evaluation of Deceleration Curtains for Reducing Failed Ejections in a High-Speed Blueberry Sorting Machine
153 - Compliant Mechanism-Based Passive Knee Exoskeleton for Agricultural Assistive Robotics
169 - Real-Time Humanoid State Estimation with IMU, Kinematic Odometry, and Visual SLAM
172 - Emergent Herding Behaviour Through Decentralised Reinforcement Learning
176 - A Framework for Empathy Enhancement in Social Service Robotics

18:30 – 22:00	***Dinner & Awards, AGM (Joondalup Resort)***

Day 3: Wednesday 3rd December 2025

8:00 – 8:30	***Registration & Morning Tea / Coffee***

Oral Session 10 (Chair: Dr Luke Kelly) **Manipulators** 8:00-9:00
129 - A biologically inspired compliant gripper for kiwifruit harvesting
131 - Iterative Design Process of a Robotic Compliant Gripper for Kiwifruit Harvesting Using Topology Optimization
133 - Design and Evaluation of Compliant Finger Pairs in Parallel Jaw Grippers for Robotic Manipulation and Autonomous Object Removal in 3D Printing
167 - Sampling-based Predictive Control for Non-prehensile Manipulation

9:00 – 10:00	***Keynote 3: Robotic exploration of Deep Space (Prof Paulo de Souza)***
10:00 – 10:30	***Morning Tea***

Oral Session 11 (Chair: Dr Eduardo Sandoval) **Autonomous Vehicles / Manipulators** 10:30-11:30
125 - Autonomous Shuttle Bus Navigation on Public and Private Roads
126 - Evaluation of 3D SLAM on a Shuttle Bus Equipped with Limited Sensors Using Sensor Fusion and Calibration Techniques
154 - Optimizing Robotic Placement via Grasp-Dependent Feasibility Prediction
161 - Towards Closing the Domain Gap with Event Cameras

11:30 – 12:30	***Rio Tinto Tutorial: Considerations when transitioning from manual to autonomous operations – Iron Ore Train Operations Use Case***
12:30 – 13:30	***Lunch Break***

Oral Session 12 (Chair: Prof. Will Browne) **Sensors, Actuators, Networks and Systems** 13:30-14:30
106 - Exploring Prompt Engineering for Grapevine Pruning Decision Making with Limited Data

143 - Data Augmentation Strategies for Robust Lane Marking Detection
170 - Design of a Novel Mechatronic Fatigue Testing System to Test the Functional Lifespan of a Compliant Mechanism Kiwifruit Gripper-End Effector Device
171 - User Preference for Handle Force Transformation for Quadruped Guide Robot

Oral Session 13 (Chair: Dr Henry Williams)
Artificial Intelligence and Biomimetics 14:30-15:30
122 - GCMA6D: Graph Convolution and Cross-Modality Attention Fusion for 6D Pose Estimation
123 - SFRF6D: Selective Fewer-Reference Fusion for 6D Pose
140 - Harnessing Bounded-Support Evolution Strategies for Policy Refinement
164 - Solomonoff-Inspired Hypothesis Ranking with LLMs for Prediction Under Uncertainty

15:30 – 16:00	***Afternoon Tea***

Oral Session 14 (Chair: Dr Md Moniruzzaman) **Autonomous Vehicles** 16:00-17:00
128 - Evaluating Deep Learning Assisted Automated Coral Reef Monitoring Using ROV
141 - Enhancing Mobility of Planetary Rovers: Multi-Objective Optimisation of the Rocker-Bogie Suspension System
146 - Enhancing Model Predictive Control-Based Motion Cueing Algorithms Through Weight Tuning with Ant Lion Optimisation
160 - A Vine-inspired Solution for Enhancing Safety and Efficiency in Broadband Cable Installation