

ACRA 2018 conference programme

Tuesday 4 December

8.45am – 9.00am	Opening Intro: Ian Woodhead, Lincoln Agritech
9.00 am– 9.30am	Keynote 1: David Howard, CSIRO
9.30am – 10.30am	<p>Session 1; Four paper presentations</p> <ol style="list-style-type: none"> 1. <i>Constrained Gaussian Mixture Models Based Scan Matching Method</i> - Zhao, Huang, Zhao. 2. <i>Structured noise blocking strategies for receding horizon estimation and control of mobile robots with slip</i> - Wallace, Kong, Hill, Sukkarieh. 3. <i>Combining Learning from Demonstration and Search Algorithm for Dynamic Goal-Directed Assembly Task Planning</i> - Abbas, Maire, Dayoub, Rowlands. 4. <i>Towards Algorithmic Consideration in Robot Design: A Preliminary Study in Legged Robot</i> - Kent, Kurniawati.
10.30am – 11.00am	Morning tea
11.00am – 12.30pm	<p>Session 2; Six paper presentations</p> <ol style="list-style-type: none"> 1. <i>Evaluation of a Laser Range Finder (LRF) for Asparagus Identification</i> - Sebro, Peebles, Hin Lim. 2. <i>Very Low Complexity Convolutional Neural Network for Generating Quadtree Structures</i> - Caruana, Vidal-Calleja. 3. <i>Rapid Response Non-Destructive Inspection Robot for Condition Assessment of Critical Water Mains</i> - Hunt, Hussein, Stewart, Dissanayake, Valls Miro, Olson, Rossi. 4. <i>An insect-inspired detection algorithm for aerial drone detection</i> - James, Cazzolato, Grainger, O'Carroll, Wiederman. 5. <i>Lidar-based detection of airborne particles for robust robot perception</i> - Stanislas, Suenderhauf, Peynot. 6. <i>Static Force Dependency of Bone Conduction Transducer as Sensory Feedback for Stump-Socket based Prosthesis</i> - Mayer, Mohammadi, Alici, Choong, Oetomo.
12.30 pm – 1.30pm	Lunch
1.30pm – 2.00pm	Keynote 2: Bruce McDonald, University of Auckland
2.00pm – 3.15pm	<p>Session 3; Five paper presentations</p> <ol style="list-style-type: none"> 1. <i>Improved Multi-Vehicle Trajectory Optimisation On Road Networks</i> - Gun, Hill, Vujanic. 2. <i>Excessive Disturbance Rejection Control of Autonomous Underwater Vehicle using Reinforcement Learning</i> - Wang, Lu, Liu. 3. <i>Emotion Inspired Cognitive Architecture for Robotic Adaptive Path Planning</i> - Zhang, Browne, Carnegie. 4. <i>An Outdoor Multi-Vehicle Platform for Collaborative Localisation Research</i> - Sullivan, Pearce, Grainger, Cazzolato.

	5. <i>A distributed, any-time robot architecture for robust manipulation</i> - Snoswell, Dewanto, Hoerger, Song, Kurniawati, Singh.
3.15pm – 3.45pm	Afternoon tea
3.45pm – 5.00pm	Session 4; Five paper presentations 1. <i>Designing and Initial Testing of a Tyre Strain Sensing System to Estimate Slip in Robotic Platforms</i> - Lutfi, Low, Maxwell. 2. <i>Automatic Calibration of a Biologically Inspired Neural Network for Robot SLAM</i> - Dall'Osto, Hausler, Jacobson, Milford. 3. <i>I2-S2: Intra-Image-SeqSLAM for More Accurate Vision-based Localisation in Underground Mines</i> - Zeng, Jacobson, Smith, Boswell, Peynot, Milford. 4. <i>Multi-Hazard Visual Affordance Detection from Targeted Training and Minimal Data for Driving Environments</i> - McMahan, Milford. 5. <i>IoT-oriented Multi-sensor Mobile Robot Navigation for the Internet of Agricultural Things</i> – Kadmiry.
7.00pm	Evening meal

Wednesday 5 December

9.00 am– 9.30am	Keynote 3: Johan Potgeiter, Massey University
9.30am – 10.00am	Keynote 4: Alvin Reed, Dairy Farmer, South Canterbury
10.00am – 10.30am	Morning tea
10.30am – 12.30pm	Session 5; Eight paper presentations – Best paper awards session 1. <i>Active Perception for Plume Source Localisation with Underwater Gliders</i> - Lee, Lee, Yoo, Hollings, Fitch. 2. <i>Multi-frame Motion Segmentation for Dynamic Scene Modelling</i> - Zhang, Ila. 3. <i>Feature Map Filtering: Improving Visual Place Recognition with Convolutional Calibration</i> - Hausler, Jacobson, Milford. 4. <i>Connecting the Dots for Real-Time LiDAR-based Object Detection with YOLO</i> - Dai, Le Gentil, Vidal-Calleja. 5. <i>TrackerBots: Software in the Loop Study of Quad-Copter Robots for Locating Radio-tags in a 3D Space</i> - Nguyen, Rezatofighi, Taggart, Ostendorf, Ranasinghe. 6. <i>Enabling a Pepper Robot to provide Automated and Interactive Tours of a Robotics Laboratory</i> - Suddrey, Jacobson, Ward. 7. <i>Towards the Tiny Giant Robot - A Low-Cost Gyroscopically Stabilised Biped</i> - Deer, Pounds. 8. <i>Multi-modal Image Registration for Robotic Aerial Inspection using Mutual Information</i> - Salahat, Coventry, Thomson, Mahony.
12.30 pm – 1.30pm	Lunch

1.30pm – 2.30pm	<p>Marketplace 1; Short presentations from industry</p> <ol style="list-style-type: none"> 1. <i>Climbing robot used for assessment of non-ferrous surfaces</i> - James Robinson (Invert Robotics). 2. <i>Sward height robot</i> – Greig Shearer (C-Dax). 3. <i>Service Robots for Powerplants (commercial product for Transpower)</i> - Hayden Wilson (IOSYS). 4. <i>Automation in forest harvesting</i> - Douglas Thomson (Waratah). 5. <i>Robotics in human-run environments</i> - Lisa Wong (Crown). 6. <i>Planterbots</i> - Steve Willson (Director of Scion & CEO of Talbot Industries). 7. <i>Creating a whole new field within applied agronomy</i> - Geoff Bates (Pastoral Robotics). 8. <i>Robotic Weeding</i> – Armin Werner (Lincoln Agritech). 9. TBC – Alvin Reid (Riverdale Pastures). 10. TBC – TBC (DeLaval).
2.30pm – 3.30pm	Afternoon tea
3.30pm – 4.00pm	<p>Marketplace 2; Short presentations from researchers</p> <ol style="list-style-type: none"> 1. <i>Medical robotics</i> - Will Browne (Victoria University of Wellington). 2. <i>Forest robots</i> - Richard Parker (Scion). 3. <i>Autonomous control of drones and robots</i> - Richard Green (University of Canterbury). 4. <i>A light in dark places (camera imaging)</i> - Steve Mills (University of Otago). 5. <i>Simultaneous learning of environment and motor control</i> - Brendan McCane (University of Otago). 6. <i>Sensor based perceptions for adaptive safety behaviour in robots</i> - Fiona Stevens-McFadden (Victoria University of Wellington). 7. <i>Agricultural Robotics</i> - Henry Williams (University of Auckland). 8. <i>The use of deep learning to combine information from multiple diverse sensors to maximise accuracy and robustness and to alleviate the inherent limitations of individual sensors</i> – Jaco Fourie (Lincoln Agritech). 9. <i>Technologies for more control over the good and the bad plants</i> - Kioumars Ghamkhar (AgResearch). 10. TBC - Johan Potgieter (Massey University). 11. TBC – Hayden Wilson (Massey University). 12. TBC – Mitchell Hampton (Massey University).
4.00pm – 5.00pm	Marketplace discussions and networking
7.00pm	Banquet

Thursday 6 December

9.00 am – 9.30am	Keynote 5: Manoj Karkee, Washington State University
9.30am – 10.30am	Session 6; Four paper presentations

	<ol style="list-style-type: none"> 1. <i>Obstacle Avoidance using Event-based Visual Sensor and Time-To-Contact Processing</i> - Colonnier, Della Vedova, Teo, Orchard. 2. <i>Simultaneously Learning Environment and Motor-Control</i> – McCane. 3. <i>Design of a Multi-Modal End-Effector and Grasping System: How Integrated Design helped win the Amazon Robotics Challenge</i> - Kelly-Boxall, Morrison, Wade-McCue, Corke, Leitner. 4. <i>Rotational Disparity for Aiding Stereo Measurement in Challenging Imaging Environments</i> - Boutros, Windrim, Pizarro, Williams, Ramakrishnan.
10.30am – 11.00am	Morning tea
11.00am – 12.00pm	<p>Session 7; Four paper presentations</p> <ol style="list-style-type: none"> 1. <i>Generative Adversarial Networks for Unsupervised Anomaly Detection in Agricultural Robotics</i> - Mitchell, Sukkarieh. 2. <i>Tiled-façade Condition Assessment using Fourier and Wavelet Features of Impact-acoustic Signals and Support Vector Machine</i> - Sun, Göktoğan. 3. <i>Gaussian Processes Modelling of the Water Absorption Feature at ~970nm for Targeted Lettuce Irrigation using Hyperspectral Imagery</i> - Chlingaryan, Murphy, Sukkarieh. 4. <i>Crack Detection Using Enhanced Thresholding on UAV based Collected Images</i> - Zhu, Dinh, Hoang, Phung, Ha.
12.30 pm – 1.30pm	Lunch

Conclusion of Conference