MAARATECH
NEWSLETTER

SUMMARY

Kia ora and welcome to our first issue of the MaaraTech Newsletter. In this newsletter, we share some of our recent activities since January and upcoming events. We would also like to share the impact of COVID-19 on the project.

SOCIAL SCIENCE

Dr Karly Burch and Dr Katharine Legun who are part of the social science team at the University of Otago are investigating how apple growers are anticipating new robotic technologies intended to automate aspects of the farm, paying particular attention to the ways that anticipation relates to the assembling and reassembling of landscapes, knowledge systems, and institutional structures.

This research will uncover challenges to democratic forms of engagement with a robotic future, as well as some of the ways that growers enhance their capacity to engage meaningfully with new technologies. The research paper detailing this work is currently being reviewed .

COVID-19 IMPACT ASSESSMENT

Post Level 4 lock down, the team underwent a 'impact assessment' exercise to assess the delays to the project due to COVID-19. Impact to the development of the modular system, access to orchards and technologies were taken into consideration. The project team is confident that the project deliverables can still be met within the timeframe set for this project (end in September 2023). We may potentially require a contract extension of 3-6 months to enable final real-world trials. The likelihood of this is uncertain at this stage but depends upon the access to field sites, which are limited to specific timeframes each year. The schedule of deliverables is currently being addressed and will potentially have to be moved around based on when the team are able to access orchards and vineyards for data collection. However, the intention is to minimise any delays by extending field dates in 2021 and undergo 'catch up' data collection activities.

TEAM MEMBER SPOTLIGHT

Professor Mike Duke is the Dr John Gallagher Chair in Engineering at the University of Waikato. He leads the Waikato Robotics Automation and Sensing (WaiRAS) research group, specializing in agricultural robotics. Mike's group works with growers and machine manufacturers to undertake applied research into automating agricultural processes and collecting and analyzing data. He believes we are at the tipping point for a revolution in digital agriculture and that New Zealand is ideally placed to be a global leader.

AGRITECH UPDATES

Kaupapa Karetao, the Robotics Centre of Research Excellence

The University of Auckland together with our partners University of Canterbury, Lincoln Agritech Ltd , University of Otago, Auckland University of Technology, Massey University, Victoria University of Wellington, University of Waikato, Callaghan Innovation, Scion, and Waikato-Tainui College for Research and Development are applying for funding from the Tertiary Education Commission (TEC) to establish a collaborative programme of research that produces fundamental new robotics, automation and sensing (RAS) knowledge. The Robotics CoRE "Kaupapa Karetao" aims to inspire, stimulate and advance frontier knowledge, capability and innovation in robotics, automation, and sensing research across New Zealand. Our ground-breaking RAS research will address the complex challenges facing society and industry, providing exceptional education and training opportunities, resulting in large-scale social and economic benefits for all New Zealanders. TEC will announce shortlisted CoREs in early May 2020.

Proposed Master of Engineering Robotics and Automation

The Maaratech project is an excellent example of the growing need to develop solutions for efficient and effective management in NZ's primary industries. The programme will target both recent graduates and engineers that are more experienced highly competent and confident graduates to take leading roles in industry, government and academia. This programme is currently being approved.

HARDWARE DEVELOPMENT

By the end of the Maaratech project, hardware, including robot arms, grippers and cutters, will be built and mounted on a custom autonomous orchard vehicle. Robotic, vine pruning, apple fruitlet thinning and blueberry harvesting will then be demonstrated. In 2020, a prototype autonomous vehicle will be built and field trialled. The machine features modular design, so it can be reconfigured for vines, 2D apple orchards and blueberries. It is powered by a high torque electric drive system and will operate over row. Initially, the machine will be controlled by an operator using radio control, but it is planned that during 2021, it will be made fully autonomous. The machine has been designed by Catherine Downes, a Master of Engineering student at Waikato University. The final design, virtual model shown above , was developed after much consultation with the project team and stakeholders.

PROJECT LOGO

We are very excited to share with you our new logo for the project. This was carefully crafted by the talented team at MWDESIGN and the work was led by Dr Marama Muru-Lanning (Māorie ngagement lead in the project and Research Director at the James Henare Māori Research Centre. The logo combines visual components of robotics, Māori culture and fruits focused on this project.

UPCOMING EVENTS & ANNOUNCEMENTS

EVENTS:

14th May : Industry Advisory Group Meeting

JUNE/JULY: Co-design workshops for Apples and Blueberries. Dates TBC

ANNOUNCEMENTS:

Congratulations to Jamie Bell, our Technical Project Manager, who recently received his PhD confirmation .