



# MAARATECH NEWSLETTER

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Issue 2 | December 2020

## SUMMARY

This year has been a challenging one globally and not surprisingly also for our Maaratech team, with Covid19 driven lockdowns restricting access to our labs, to our ability to get together, our ability to bring in new PhD students from overseas, our access to field sites for data gathering and testing, as well as limitations to co-design work with our industry partners. Despite the challenges our team has continued to push Maaratech ahead well and it is great to see the commitment and the achievement that has resulted. Researchers took equipment home, worked remotely and communicated with each other electronically. We have started new PhD students remotely and they join our technical meetings on Zoom and work together in between. Team members have recently been able to get together test systems, and to do field work in Nelson and Hawkes Bay, including showing work to partners and discussing their feedback.

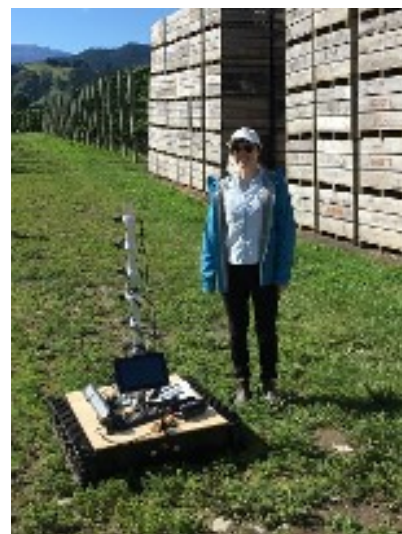
We really appreciate the continued help and feedback from our industry partners and the co-design input, which is critical to keep our work aligned with industry needs, and to ensure we will create benefits. The focus on VR training is for example something we are looking to push ahead with finding industry partners to take on this as a product and support it in the industry, along with some key industry early adopters.

Also we have seen some changes in our staff, including a change in our Auckland research centre manager from Soriya to Kyla Archer, and a change from Maheshi to Shobha Herle as our embedded research project coordinator. We were fortunate to have such great people join our team.

We are looking forward to catching up on field work in the next year, and continuing to develop our project components and integrated systems that bring it all together, showing these to partners, discussing feedback, and continuing to update and improve these technologies.

## SOCIAL SCIENCE

The social science team based out of Otago has been busy with transcribing and coding the interviews we have completed with farm managers, team members and industry partners. Thank you to everyone who has participated thus far! As social scientists, we look for patterns in people's experience and use social theory to help untangle and understand the role of new agricultural technologies in industries and everyday lives of our study participants. We have begun putting together some paper and book chapter ideas and are looking forward to sharing what emerges.



We have also enjoyed spending time with farmers, industry partners, team members, robots and apple trees during the field trials in Nelson the first week of December 2020.

These on-the-ground experiences greatly enrich our social scientific understanding of the technologies being developed, and allow us to participate in co-design-in-action. Finally we are looking forward to continuing our interviews with farmers and also beginning interviews with farm workers in 2021. We are wishing everyone a happy holiday season and look forward to being in touch in the new year.

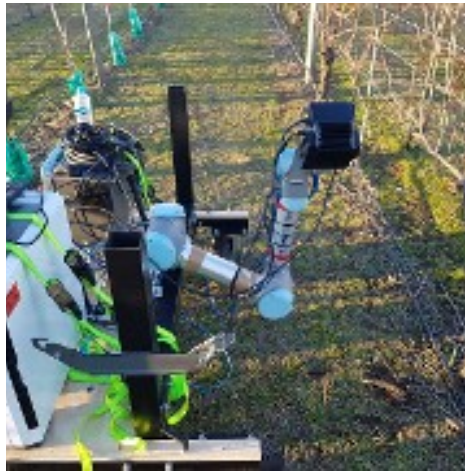
## TEAM MEMBER



Arran Davies (Ngati Hine, Te Uriiroro) has been involved in building and maintaining data annotation tools to aid the development of Computer Vision models. He has also delivered computer vision models and manages a team of data annotators who use the tool. With a masters specialisation to mechatronics, his research looks into rehabilitation robotics and wearables. He has been selected by Microsoft for a graduate internship based in Seattle, Washington State. We wish him all the best in his future endeavors.

## UPDATE ON TECHNOLOGY

The Hastings vineyard field trials were conducted in August 2020. Below are the photos capturing scans of the vines with depth and stereo cameras and resulting 3D model of the vines.



Development of the Virtual Reality (VR) Vine Pruning training tool.

Mitchell and Eric our Part IV students have developed a Virtual Reality (VR) Vine pruning training simulator. The aim of this project is to develop a cheaper and time efficient training tool. A short 3 minute video demonstration can be viewed at [VR Pruning](#) showing the current state of the tool.



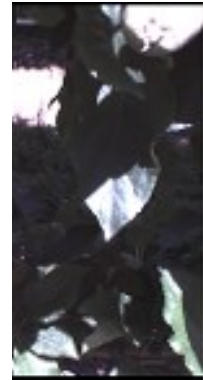
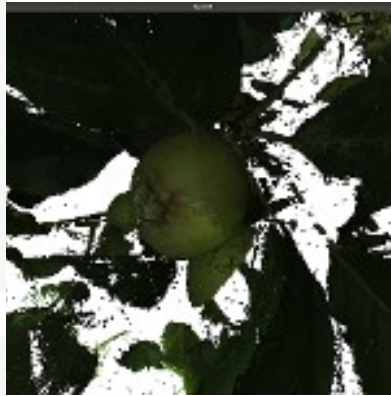


## FIELD TRIP

Hoddy's Fruit company hosted a team of growers and project team at their orchard in Richmond/Nelson for a show and tell day during the field trip. The project team had set up stations and demonstrated the work done till date. The growers were excited to have a go at the VR/AR headsets and the other sensing equipment or robot actuators at work. This was a great success with a lot of positive feedback from the growers.

Nelson Field Trials December 2020.

Capturing scans of the branches with depth and stereo cameras and resulting 3D model of the trees. Preliminary fruitlet detection algorithms are showing promise for finding the fruitlets, with early counting systems in progress.



## UPCOMING EVENTS AND ANNOUNCEMENTS

February 2021: Industry Advisory Group Meeting;  
Date to be confirmed

February 2021: Planning Day: Dates to be confirmed

June/July: Co-design workshops for Apples and Blueberries. Dates TBC

Announcements: Jamie Bell our Technical Project Manager has accepted a part time role at Boxfish and hence had to reduce his commitment to this project.