Autonomy in the Apple Orchard

During our recent field trip to the Yarra Valley, we demonstrated autonomous row following for the trellis structured apple configuration. The system worked reliably, and we used it to gather data for yield prediction for approximately 30 rows of apples.

This video shows Shrimp driving fully autonomously in an apple orchard in the Yarra Valley, Australia. It uses a 360 degree lidar to guide it along the row (no need for GPS).

Unlike Mantis, the 2D lidars on Shrimp are looking sideways to scan the trees, so the 360 degree Velodyne sensor was used instead. To emulate a lower cost 2D lidar, only one of the 64 Velodyne lasers was processed. We used the autonomous system to obtain fruit yield data from approximately 30 rows of the farm without error.

This is a demonstration on our research platform, but the technology could easily be applied to any existing or new farm equipment, enabling smart farm vehicles to act as assistants to farmers.