



Project title: Safe Human Robot Interaction

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Key staff:

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Industry Representative: Richard Harnden, Berry Garden Growers

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AUTHENTICATION

We declare that this work was done under our supervision according to the procedures described herein and that the report represents a true and accurate record of the results obtained.

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GROWER SUMMARY

Headline

Save 20% labour costs and reduce the time between picking and processing by letting your fruit pickers concentrate on picking fruit while your robots transport the produce.

Background

Fruit production is labour intensive and relies heavily on migrant workers. Socio-economic changes (e.g., Brexit) pose challenges for this field and make the case to reduce this reliance on manual work. Automation can help, but automation solutions aren't yet commercially available. The agricultural environment poses several challenges to both Robotics as well as Human-Robot-Interaction that must be overcome before this technology can be considered mature enough to be applied in a productively in agricultural settings. This work contributes to this effort by developing solutions that enable comfortable, safe and efficient Human-Robot-Interaction.

Summary

This thesis is part of the RASBerry research project. The project aims to develop an autonomous fleet of robots for in-field transportation. Specifically, the robots are expected to aid human fruit pickers by transporting crates from the picker's point of work to locations outside the field or poly-tunnel. Introduction of robots into this workspace will significantly reduce the costs of producing berries and is the first step towards fully autonomous agricultural systems.

Within the RASBerry research project, this thesis is concerned with the safe interaction of humans and robots, specifically the recognition and estimation of human behaviour and its interpretation as commands given to the robot. The results of this thesis will let the robot better prioritize its navigation goals and allow for a comfortable interaction between human and robot co-workers.

Financial Benefits

A robotic fruit transport system could save 20% labour costs and 10% land use [From2018].

Action Points

- Support research and development by allowing researchers access to small parts of fruit fields and personnel.
- Rent/Buy a robotic fruit transport system once commercially available

