Agricultural and Viticultural Image Processing

Algorithms to improve efficiency in agtech using high-detail image processing systems to estimate yield, detect stress levels in plants and manage land using commercial, off-the-shelf hardware and consumer devices. These tools give large-scale visibility that improve productivity while saving time and money.

Competitive advantage

- Simple to use image processing systems that give large-scale visibility with much greater detail than aerial imaging
- Uses highly affordable and available image capture systems
- Robust algorithms backed by ground-truth data

Impact

- The development of more robust algorithms for processing images from tree-size to microscopic level will reduce labour requirements in vineyards and orchards, improve the reliability of image data management and provide greater insight into yield estimation processes.

Successful applications

- There have been nine finished deployments and evaluations of the technology, with three in process.
- Refined the data collection practices of Pernod Ricard in the Marlborough region of New Zealand.
- Apple flower and canopy density mapped by SwarmFarm using algorithms
- QR code based image processing tools simplifying data collection to identify leaf and trunk disease by Plant and Food Research New Zealand
- Algorithms applied by Tasmanian Institute of Agriculture for flower counting and early-stage yield estimation
- Algorthms being used by researchers in the Netherlands for stomata detection
- Komatsu Japan is implementing patented earth-moving algorithms

Capabilities and facilities

- Local and remote computing servers configured for large-scale image processing.
- Field sites for evaluating mobile sensing systems.

Our partners

- SwarmFarm
- Bosch
- Adama
- Horticulture Innovation Australia Limited
- Plant and Food Research New Zealand

More Information

Dr Mark Whitty

School of Mechanical and Manufacturing Engineering

T: +61 2 9385 4230
E: m.whitty@unsw.edu.au

- Lincoln Agritech
- Pernod Ricard Winemakers Australia Pty Ltd
- Treasury Wine Estates
- Australian Wine Research Institute
- Wine Australia
- Makinex