Comprehensive Automation for Specialty Crops

MLSP Project Fall 2011
Specialty crops
Autonomous Prime Mover

We designed, built, and deployed the first of a series of Autonomous Prime Movers that will deploy crop intelligence sensors, automate farm operations such as spraying and mowing, and augment operations such as pruning, thinning, and harvesting.

In 2009-2010 the APM logged over 300 km of autonomous driving in various research and commercial orchards.

APM
23 rows with k-turns
@10x speed
Sunrise Orchard, WA
The future of specialty crop automation
Current development
HRI challenges

- Operable by non-technical farm employees
- In daylight and in orchards, all-year round
- Considerations of usability (e.g., joystick, voice, e-ink)
- Considerations of safety (e.g., OSHA requirements)
Resources and Expectations

• We provide
  – Access to the robot
  – Access to project engineers
  – Access to orchards and growers
  – Small budget for materials and equipment
  – Hard work

• We expect
  – Actual deliverables (working software, hardware prototypes)
    • Perpetual license to freely use and modify software
    • Hardware prototypes purchased with project funds
  – Field tests
  – Hard work
Thank you.

http://www.cascrop.com
marcel@cmu.edu