NRI:INT:COLLAB:
Tree Fruit Harvesting with Arrays of Vision-Guided Linear Robot Arms

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Challenge

- Cost-efficient robotic harvesters are needed to address labor scarcity

- The harvesting speeds and fruit detection rates of existing robots are still inadequate, for commercial harvesting
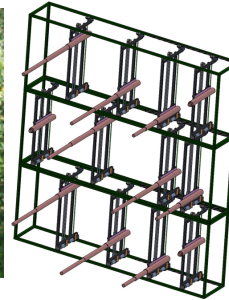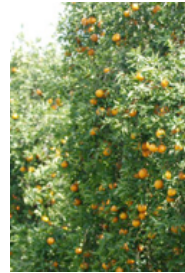
Solution

- Develop dynamic stochastic scheduling under perception uncertainty, and collision-free control, for robots with multiple linear arms

- Integrate air-induced foliage agitation, deep learning, multi-view and multi-frame imaging
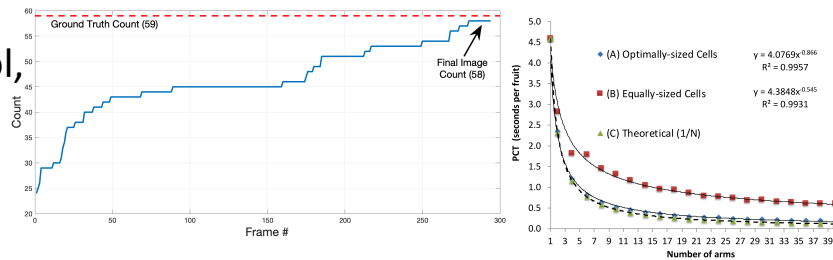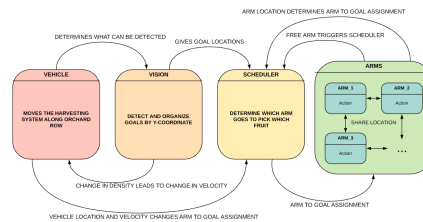
Scientific Impact

- Multi-camera 3D mapping and detection in dynamic scenes

- Multi-agent coordination under uncertainty.

Broader Impact

- Increased competitiveness for the fruit industry; plenty low-cost, high-quality fruits

- Integration with undergraduate and graduate courses; engagement of K-12 students (CA Central Valley & Girls of Steel Robotics Initiative)

- 10-fold harvest speed increase; more than 200 students/yr reached