



Using Computer Vision for Precision Thinning Models in Apples

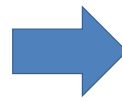
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Challenge:

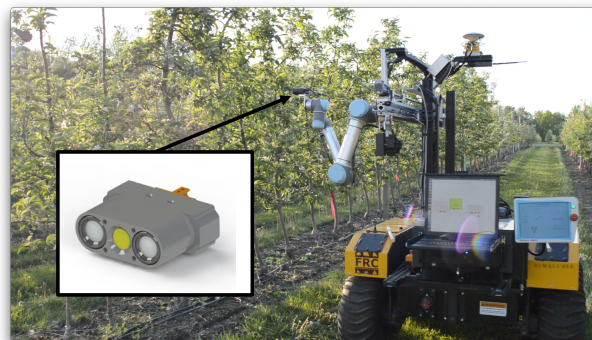
- Fruit thinning models rely on accurate fruit size measurements
- Require repeated measurements at scale in cluttered tree canopy



Automate size measurements with computer vision

Solution:

- Image fruitlets with robot-deployed cameras
- Deep learning to extract size measurements
- Innovations:* active 3D modeling and search in tree canopy



Robots scan trees and measure fruitlets at scale

Scientific Impact:

- Active perception algorithms model cluttered organic scenes
- Enable use of lower cost COTS sensors without losing measurement quality

Broader Impact:

- Increase industry adoption of modeling for fruit thinning
- Reduce use of thinning chemicals (carbaryl) associated with pollinator decline
- K-12 projects with CMU's Girls of Steel