

# Robotics for Agriculture: Moving from Perception to Action

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Much as been said about the potential for AI and robotics technologies to help advance agricultural production and breeding systems. This talk will focus on what it takes to enable robots to perform delicate dextrous manipulation tasks that have so far resisted automation. It will review perception work to date, which can be used to provide robots with detailed geometric and semantic understandings of their surroundings, though some challenges remain in the agricultural space. It will then propose methods of using that understanding to drive intelligent interactions with plants that will enable tasks such as harvesting or pruning in dense tree canopies.



George Kantor is a research professor at Carnegie Mellon University's Robotics Institute. He has over 20 years of experience in developing and deploying robotic technologies for real-world applications in military, agriculture, mining, and scientific exploration. His technical interests lie in position estimation and mapping for mobile robots, control of robotic systems with nontrivial dynamics, off-road autonomous driving, and deep learning for image analysis and sensor fusion "on the edge". In the agriculture domain, his group has developed mobile robots for in-field phenotyping, perception pipelines for creating dense 3D plant models, and reinforcement learning approaches for robotic manipulation in tree canopies.

FRIDAY  
**Apr 28**  
10-11AM

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