

UF/IFAS AI AND DATA SCIENCE SEMINAR SERIES

**WEDNESDAY, NOVEMBER 6, 2024
12:00P.M. - 01:00P.M.**

ZOOM:
<https://go.ufl.edu/5g8w7ep>

AI and Robotics for Specialty Crops

AI and Robotics has been and will continue to play a key role in reducing farming inputs such as labor, water and fertilizer, and increasing productivity and produce quality. Modular sensing, automation and robotics technologies developed in recent years (including mobile device-based Applications), decreasing cost and increasing capabilities of sensing, control and automation technologies such as UAVs, robust AI tools such as deep learning, and increasing emphasis by governments around the world in advancing AI-empowered smart and automated technologies have created a conducive environment to develop and adopt smart, robotic farming systems for the benefit of agricultural industries around the world with a wide range of farming scale and environment. In this presentation, the author will first discuss the importance of AI-empowered precision and automated/robotic systems for the future of farming (Smart Farming, Ag 4.0). He will then summarize past efforts and current status of agricultural automation and robotics in fruit crops. For example, his work on apple harvesting robots achieved a picking rate of ~80% of apples in modern orchards taking about ~5.0 sec per fruit. His effort on robotic pollination of apple flowers has achieved a pollination success rate of 84% with a cycle time of 4.2 s. The presentation will conclude with an introduction of the novel robotic systems being developed in his program, and discussion on major challenges and opportunities in AI and robotics in agriculture and related areas including future directions in research and development.



DR. MANOJ KARKEE

BIO

Dr. Manoj Karkee is a Professor and Director at the Center for Precision and Automated Agricultural Systems (CPAAS) and the Biological Systems Engineering Department at Washington State University (WSU). He received his PhD in Agricultural Engineering and Human Computer Interaction from Iowa State University. Dr. Karkee leads a strong research program in the area of sensing, machine vision and #AgRobotics at WSU CPAAS. He has published widely in such journals as 'Computers and Electronics in Agriculture', 'Computers in Industry', 'Journal of Field Robotics', and 'Journal of the American Society of Agricultural and Biological Engineers (ASABE)', and has been an invited speaker at numerous national and international conferences and universities. Dr. Karkee is currently serving as the Editor-in-Chief for 'Computers and Electronics in Agriculture', and associate editor of 'Journal of the ASABE' and has served as a guest editor for 'Journal of Field Robotics'. He is also an elected chair of CIGR (International Commission of Agricultural and Biosystems Engineering) Section III - Plant Production, and IFAC (International Federation of Automatic Control) Technical Committee 8.1 - Control in Agriculture.