

Civil and Environmental Engineering Seminar

The Sonny Astani Department of Civil & Environmental Engineering presents



Prof. Thomas Harmon
University of California Merced

Date: Thursday, October 27, 2022

Time: 2:00 – 3:00 PM

Place: KAP 209

“Labor and Automation in California Agriculture (LACA): Equity, Productivity, & Resilience”

Abstract: LACA is a University of California multicampus research project encompassing researchers from UC Merced, Berkeley, Davis, Riverside, and UC Agriculture and Natural Resources (UCANR). The project focuses on farms in California and similar arid/semiarid regions and their vulnerability to increasing population, climate and health disturbances, decreasing arable land, and a dwindling agricultural workforce. The large, multidisciplinary group of investigators studies potential pathways to food system resilience and the emergent role of human-centered agricultural technology (agtech). Our long-term goal is to achieve a resilient and regenerative system that empowers workers, ensures profitability, and improves the environment. Sensing, automation, and artificial intelligence (AI) integrated through digital platforms promise to help overcome food supply challenges but raise many questions. How will farmers and other actors adjust to the ongoing digital agtech revolution? What challenges and opportunities do the evolving tools and expanding data streams pose for the farmers and farm workers? As a leader in agriculture, technology, and the environment, California is well-positioned to define a path forward for human-centered agtech and to leverage it to support a model food system without compromising workforce needs or the environment. Our research includes developing the blueprint for the UC Merced Experimental Smart Farm, a regional center for convergence research on food, energy, water, and work (FEW2) in rural semiarid regions. This seminar will present our expanded vision, highlighting specific examples and progress to date, as well as a special preview of the emerging FEW2 Smart Farm.

Bio: Thomas (Tom) C. Harmon is a professor of civil and environmental engineering and Founding Faculty member at the University of California Merced, where he also serves as Director of the Sierra Nevada Research Institute (snri.ucmerced.edu), an organized research unit overseeing the work of 60 faculty and professional researchers. Prior to joining the faculty at UC Merced, he served on the faculty at the University of California, Los Angeles. His teaching and research interests focus mainly on developing technologies and approaches to monitor, model, and sustain environmental systems. He also works regularly on identifying pathways toward solving complex socio-environmental problems, most recently as a Director of the University of California multi-campus research program on Labor and Automation in California Agriculture: Equity, Productivity, and Resilience (laca.ucmerced.edu) and in the design of the UC Merced Experimental Smart Farm. Dr. Harmon has B.S. in civil engineering from Johns Hopkins University and an M.S. and Ph.D. in environmental engineering from Stanford University. Working with other leading environmental engineers and scientists, Dr. Harmon co-authored the National Academies 2019 report *Environmental Engineering for the 21st Century: Addressing the Grand Challenges*.