The agriculture industry faces tremendous pressure to increase crop production and yields to meet future consumer demand for food. This problem is compounded by the population growth of the planet, severely limited natural resources (arable land and water), unpredictable weather patterns, the requirement of sustainability, and climate change, among other variables. In an effort to intensify production, growers are increasingly turning to environmental measurement and data analysis. Computing systems can automate this process to facilitate faster problem diagnosis, more accurate outcome prediction, and proactive decision making.

Toward this end, we present SmartFarm — a new, unifying, and open approach to agriculture analytics and precision farming that leverages and integrates Internet-of-Things (IoT) and cloud technologies to provide farmers with new sensing, decision support, and data-driven actuation and control technologies. SmartFarm is an integrated, distributed (cloud/edge/sensor) system that facilitates investigation, validation, and demonstration of new approaches for sensing, data analytics and machine learning, and actuation of farm operations, while ensuring that farm data and analyses remain under the control of growers.

“Dr. Krintz is adept at uncovering unsustainable practices and building ways for stakeholders to improve their efficiency. Anyone who is interested in using cloud and smartphone technologies to solve environmental problems will enjoy this talk.” — Juliette Verstaen, MESM 2019

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**BIO** Chandra Krintz is a Professor of Computer Science at UCSB and co-founder of AppScale Systems Inc. Chandra’s research focuses on techniques that increase software performance, reduce power consumption, and increase programmer productivity. Chandra has mentored over 60 students, has published her work in multiple top venues, and has led several educational and outreach programs that introduce young people to computing. For her contributions, Chandra has received the NSF CAREER award, CRA-W Anita Borg Early Career Award, and UCSB Distinguished Teaching Award. She was also named a Cloud Computing Pioneer by Information Week and an Internet-of-Things Pioneer by Connected World.