Abstract:

I will illustrate my approach to research, the techniques I use for mathematical modeling, and the solution methodologies I employ by detailing three different projects related to agriculture in India. At the production level, I developed contract mechanisms for efficient distribution of water between head-reach and tail-end Farms. At the level of the market, I analyzed how to rein in onion prices by introducing a dehydrated substitute. At the global trade level, I evaluated the benefit of negotiating government-to-government (G2G) contracts for India’s pulses importing. I aim to demonstrate how management science methodologies such as contract theory, vertically differentiated product assortment, and Nash bargaining can be used to formulate, analyze, and solve problems in agriculture with the hope of identifying collaboration opportunities with the broader Digital Agriculture community.

Bio:

Nagesh Gavirneni is a professor of operations management in the Samuel Curtis Johnson Graduate School of Management at Cornell University. His research interests are in the areas of supply chain management, inventory control, production scheduling, simulation and optimization. He is now using these models and methodologies to solve problems in healthcare, agriculture and humanitarian logistics in developing countries. Previously, he was an assistant professor in the Kelley School of Business at Indiana University, the chief algorithm design engineer of SmartOps, a Software Architect at Maxager Technology, Inc. and a research scientist with Schlumberger. He has an undergraduate degree in Mechanical Engineering from
IIT-Madras, a Master’s degree from Iowa State University, and a Ph.D. from Carnegie Mellon University.

**Background on the Cornell Initiative for Digital Agriculture:**

An interdisciplinary group of Cornell University faculty began meeting in early 2017 to formulate an Initiative for Digital Agriculture, believing that Cornell is uniquely equipped to lead in this emerging arena that will benefit the public for generations. We define DA to mean the application of computational and information technologies coupled with nanotechnology, biology, systems engineering and economics to both the research and operational sides of agriculture and food production. With approximately 100 faculty from 5 Cornell colleges participating, we are collaborating with external stakeholders to shape and implement a research agenda for DA that will build a pipeline of discovery and innovations for the next 10+ years. Please contact Gabriela Cestero at gc423@cornell.edu with any questions.