



<b>TOPIC</b>	<b>Autonomous Near Earth Sensing with Aerial, Ground, and Marine Robots</b>
<b>ORGANIZERS</b>	Student Leadership Council and Faculty of ACIT Institute and TECHLAV Center
<b>AREA</b>	Robotics and Unmanned Aerial Vehicles
<b>SPEAKER</b>	Prof. Pratap Tokekar
<b>DATE</b>	Friday April 06, 2018
<b>TIME</b>	3:00 – 4:00 P.M. (EST)
<b>VENUE</b>	Fort IRC 410, North Carolina A&T State University, UTSA and SIPI will be joining through video-conferencing
<b>FEES</b>	No Charge

## SYNOPSIS

A connected network of robots, sensors, and smart devices have the potential to solve grand challenges in domains such as agronomy, oceanography, and emergency response. Robots will form the "physical" layer of this Internet-of-Things and collect data from hard to reach places at unprecedented spatio-temporal scales. Heterogeneity in sensing and mobility in these robot teams is critical in order for us to effectively collect data from diverse, unstructured, natural environments. In this talk, I will present our recent work on devising efficient algorithms for data collection with heterogeneous robot teams.

We will focus on the routing and coordination of aerial and ground robots. I will present approximation algorithms for multi-robot teams to map known and unknown environments in the least amount of time. I will then present a heterogeneous formulation for the classical Traveling Salesman Problem and show how to apply it to plan for aerial and ground robots. Finally, I will describe our new work on informative path planning for coordinated sampling in marine environments with aerial robots and robotic boats.

## ABOUT THE SPEAKER



Pratap Tokekar is an Assistant Professor in the Department of Electrical and Computer Engineering at Virginia Tech. Previously, he was a Postdoctoral Researcher at the GRASP lab of University of Pennsylvania. He obtained his Ph.D. in Computer Science from the University of Minnesota in 2014 and a Bachelor of Technology degree in Electronics and Telecommunication from the College of Engineering Pune, India in 2008. He is a recipient of the NSF CISE Research Initiation Initiative award. His research interests include algorithmic and field robotics, and cyber physical systems, and their applications to precision agriculture and environmental monitoring.

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