



**Complex Rotorcraft & Ground Robot Missions:** This talk describes the collaboration between an aerial robot and a small ground robot to perform a surveillance mission. The system must search for a target building in a predefined area, find an entry point on the target building and finally enter the building to transmit images back to a remote ground station. Although the task is simple, constructing a solution with an existing set of robots and algorithms can induce a complex solution that requires careful coordination and synchronization between computer vision, control, safety state machines, mission execution logic and eventually the flight and ground vehicles hardware that host these algorithms. The goal of this short talk is to provoke thought into how complexity can be reduced and managed through preliminary design for robotic missions.



**Suresh Kannan** is Chief Scientist at NodeIn Robotics where he works on computer vision and control algorithms for small drones. His work has been in the areas of neural-network-based adaptive control theory, systems in cascade, saturation, and vision-based algorithms for guidance and control. Applications of his work have included the first transition from forward-flight to hover and back of a tilt-body autonomous aircraft, the first vision-based formation flight between two UAVs and the autonomous launch of one rotorcraft from another. His other interests include software/algorithmic systems with stability properties. In 2011, 2012 he established and led the Autonomous and Intelligent Robotics Laboratory (AIRLAB) at the United Technologies Research Center. Dr. Kannan earned a MEng in Aerospace Engineering from the University of Manchester, UK, in 1996, Masters and Ph.D. degrees in Aerospace Engineering from the Georgia Institute of Technology in 2002 and 2005 respectively.