

# DONUTS WITH DI



## DR. KEVIN BRINK

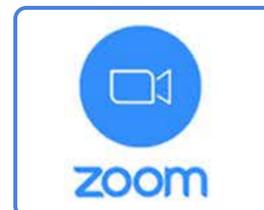
SENIOR RESEARCH ENGINEER AT THE AIR FORCE RESEARCH LAB

### **Multi-agent Navigation in GPS-Denied Environments**

This talk will discuss recent AFRL and university collaborations enabling cooperative navigation in GPS-denied environments for teams of fixed-wing unmanned air vehicles. The method developed uses a tiered estimation structure. The first tier runs a high-rate front-end filter on each vehicle producing odometry-like estimates utilizing only a monocular camera and an inertial measurement unit. The second tier is a global back end, also run on each vehicle, which represents the global state of the cooperating vehicles as a pose graph using the odometry estimates from the multiple front-end filters and range measurements taken between the collaborating vehicles as inputs. The outcome is a real-time cooperative navigation capability that improves performance over the individual vehicle capabilities while requiring minimal bandwidth and providing robustness to communication dropouts. Simulation and hardware flight-test results will be shared.

## **SAVE THE DATE...**

**Thursday, November 12, 2020 @ 10:00 AM CST**



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