Localization Using SDR in ORBIT - Week 2

Rahul Hingorani, Vineet Shenoy, Karan Rajput

Introductions

Why Indoor Localization?

- GPS localization is well defined outdoors
  - No accurate, cost-efficient solution to indoor localization

- Level of Accuracy matters
  - Outside - Meter level accuracy is ok
  - Inside - Need for centimeter level accuracy

- Navigation, location sharing, shopping list routing, retail shopping/advertising, games, defense missions, etc.

Localization Process Overview

- Infrastructure-free localization
  - Wifi triangulation
  - Wifi fingerprinting
- Infrastructure-based localization
  - Dedicated beacons
  - Bluetooth sensing
- Specific successful example - ArrayTrack
  - Angle of Arrival (AoA) spectrum generation
  - Multipath suppression

Current Week's Accomplishments

- Attended Linux and Orbit tutorials

- Initial research on project scope and previous research teams' approaches

Next Steps

- Conduct more research on previous approaches to the indoor localization problem

- Learn more about ORBIT testbed interface and OMF (ORBIT Management Framework)

- Attend Digital Signal Processing tutorial on Tuesday