

Day 4 – Tuesday, December 14

Morning

Lecture: "*Routing in Sensor Networks*"

- Collection-oriented routing
- Unfeasibility of naïve approaches (flooding)
- Taxonomy of routing protocols
- Cost-based model
- Performance metrics and link metrics
- The Mintroute architecture
- Importance and limitations of using Channel State Information
- State-of-the-art: Four-Bit Link Estimation and Collection Tree protocol
- Congestion control
- Collection in challenged environments: Arbutus
- Impact of network topology and Link dynamics

Lecture: "*Mobile Phone Sensing*"

- The mobile phone as a gateway
- The smartphone as a sensing node
- Special features of Mobile Phone Sensing (MPS)
- Mote-based WSNs vs. MPS: energy and scale
- Applications
- Cloud computing and opportunistic computing

Afternoon

Hands-on session

Student-driven activity: "*Understanding Duty-Cycled Low Power Wireless Links*"

Today we put together what we learned in the two activities carried out during Day 3's hands-on session. We have seen that low-power wireless links are highly exposed to the vagaries of RF, and we have also seen that low-power wireless links need to be duty-cycled to save energy. In this open-ended activity, we will begin to explore the interplay between the weakness of low-power links and the impact of duty-cycling. As this is an open research area, you get to ask your own questions and set up experiments that should direct you toward the answers.