Advisor Meeting 20-02-04 8:30 a.m.

Project Feature Ideas:
- WiFi triangulation for location
  - Make sure this doesn't interfere with other networking (interfaces unavailable, etc.)
- Instructor station needs debug output
  - Possibly on the built-in laptop display
  - Audience display on external monitor
    - Two browsers, two windows, two URLS - figure out what makes the most sense for multiple displays
    - Two tabs may be the easiest thing (same app, different views)
- Visual cues (LED) and buttons on nodes to indicate node "names"
  - LED indicators to show connections (3 lines of Raspberry Pi python code)
- Registration system
  - Two sets of nodes should be usable at once (together/apart)
  - Should be simple from networking perspective

Technical Ideas:
- Protocols for an ad-hoc network
  - MAC – just ad-hoc WiFi, other components…
    - Run IP over this, stream TCP/UDP, etc.
- 320x240 resolution for video may be enough
  - What kind of compression is possible in real time?
- B.A.T.M.A.N – one possible idea, find alternatives and list pros/cons, decide which is best
- UDP preferred to TCP (don't want to force resends of lost packets)
- Track when we lose messages in the UI
- Physicial connections
  - Ethernet – maybe via USB, HDMI?

Guidance:
- Documenting requirements and use cases is not a waste of time
- Make functional diagrams to solidify functionality
- Use a collaborative document (i.e. Google Doc) to catalog all potentially relevant network ideas
- Prof. Daji Qiao may have relevant expertise in networking (sensor networking)
- Make sure the software packages you use are recently updated (active community), have relevant hardware support, ensure features in API do what you want
  - Bluetooth LE was a bad idea multiple times in the past
- Design system in two directions
  - Top down so you know what components are / how they interact (functional diagrams / use cases)
  - Bottom up because there are certain things you need to know before you make risky choices (need to find the right thing)

See Basic Network Diagram for more from this meeting