IOT Sensor Blinding

By: Alex Winstead (awinstead2015@my.fit.edu),
Xuchao (Steven) Jiang (xjiang2017@my.fit.edu),
Cole Clements (cclements2016@my.fit.edu),
Jeremy Gluck (jgluck2016@my.fit.edu),
Todd St. Onge (tstonge2016@my.fit.edu)

Progress Summary

Task	Completion %	To Do
Setup/Build IoT Lab	100%	Done
Collect Data	80%	Only have Z-wave+ left.
Parse Data	20%	Go through and clean/filter out data for input into machine learning models
Create Machine learning models	0%	Parse and clean data to put into models

Technical Challenges

- As protocols become more sophisticated and secure it can become more difficult to parse and understand the data. This is present in Z-wave plus and any future protocols.
- Some devices may use proprietary communication protocols sent over the 433.92 mhz radio signal. We will need to crack their protocol or have some level of basic understanding.
- We will need to learn how to parse Pcap files to get usable data to train models from.

Milestone 4

Goals for Milestone 4

- Parse Data
  - From Pcap files
- Build Machine Learning Models
  - Random forest
  - Unsupervised Learning
- Extra Data Collection
  - This will be done on a need by need basis.
- Raspberry Pi Development
  - Will mostly be used for our demonstration
- Research Possible Conferences
  - This will be done with Dr.O'Connor

Task Matrix For Milestone 4

	Alex	Cole	Jeremy	Steven	Todd
Data Collection	0%	50%	0%	50%	0%
Parse Data	20%	30%	20%	30%	0%
Develop Machine learning	50%	0%	50%	0%	0%
Raspberry Pi Development	0%	0%	0%	0%	100%
Conference Paper related research	15%	15%	15%	15%	40%

Further Work

Milestone 5

- Task 1: Develop machine learning models
  - Using tensorflow
  - Try multiple model types
  - Fine tune model
- Task 2: Continue collecting data.
  - Look at places where more data would increase model accuracy.
- Task 3: Begin using case testing
  - Create simulated tests of different iot devices and let the model try to classify them.

Milestone 6

- Task 1: Finalize model and identifying lab devices
  - Perform any final tuning to the model.
- Task 2: Prepare for Showcase
  - Create and practice verbal presentation and/or demo
  - Create presentation board
  - Ready the technical portions of the demo.
- Task 3: Write Paper and prep for Conference
  - Ready materials.
- Task 4: Student Design Showcase (Apr 24-25)

Questions?