IOT Sensor Blinding

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Progress Summary

Task	Completion %	To Do
Setup/Build IoT Lab	100%	Done
Collect Data	90%	Only have Z-wave+ left.
Parse Data	80%	Go through and clean/filter out data for input into machine learning models
Create Machine learning models	40%	Parse and clean data to put into models

Technical Challenges

- 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.

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

Parse Data

- Parsing has been completed but not been scaled.
- Need to fine tune the process to clean the data as well.

Build Machine Learning Models

- Have sampled an unsupervised learning model with Dr.O'Connor
- Need to continue to explore our data and dial into which models will work the best.

Extra Data Collection

- Data collection has been somewhat automated and streamlined
- Consists of long data captures of specific action to device
- An example for our locks
  - Capture lock locking 10 times separated into one minute intervals
  - Capture lock unlocking 10 times separated into one minute intervals
  - Capture lock locking then unlocking 10 times separated into one minute intervals

Raspberry Pi Development

- Began working on Raspberry Pi to be used in the showcase
    - Installed Scapy, Tensorflow, Pandas, Wireshark, and Python3 into the Raspberry Pi
    - Raspberry Pi being tested and prepped for incoming data

Research Possible Conferences

- We have identified CSET 2020 (Cyber Security Experimentation and Test)
- Paper due by May 19th 2020
- Conference is in Boston MA on August 10th.

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.

Questions?