

- IoT Sensor Blinding
- Names and email addresses of team members (CSE members first--this is a plan for the CSE contribution) 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), Matthew Craven mcraven2015@my.fit.edu
- Faculty sponsor: Dr. O'Connor (toconnor@fit.edu)
- Client: Dr. O'Connor (toconnor@fit.edu)
- Meeting(s) with the Client for developing this Plan: Thursday at 12:30 every week
- Goal and motivation: To further on Dr. O'Connor's research in sensor blinding by creating machine learning code to help select which packets to block and which to let through in addition to this we hope to expand on the Blinding techniques developed by Dr. O'Connor, as well as exploit new attack vectors. This will help expose vulnerabilities in IoT devices in use today. In doing so we will inform manufacturers of security flaws in products.
- Approach (key features of the system):

Create penetration test data for a range of Internet of Things devices

- Further Dr.O'Connor's research by building a lab to perform testing and research on IoT devices.
- Use machine learning in conjunction with data collected from Groove API we will build a model to detect, and predict packets from the IOT, specifically targeting packets that contain on-demand traffic. These packets are more variable. This task will be broken down into the below sub parts.
 - Use Groove API create a test site that allows us to receive and send packets within devices while tracking the data sent and received.
 - Use Groove API we will collect data and package it into a usable form. This point will require mathematical analysis to determine the best models to use whilst training our machine learning model in the next step.
 - The last part will be training and testing our Machine learning model.
- Use a wireless network connection to Jam a device.
- Complete a paper on our findings with Dr.O'Connor.
- Novel features/functionalities:
 - Ability to block on-demand traffic without affecting always responsive traffic.
 - Ability to Jam a target device wirelessly.
 - Ability to determine packet types based on features gathered from encrypted 802.11 frames and other wireless signals (to be determined).
- Technical Challenges:
 - The teams understanding of x86 assembly is limited and this will be needed to understand embedded code on IoT devices.

- When we jam the on-demand traffic we need to make sure we do not jam the always responsive packets.
- The groups Networking knowledge is not as advanced as it should be to be able to look at a wide scope of possible uses for sensor blinding. By increasing this knowledge it will allow us to find better exploits and opportunities for expansion of the project features. We will study various wireless communication protocols for the purpose of identification
- Milestone 1 (Sep 30): itemized tasks:
 - Build laboratory
 - Familiarize ourselves with what has been done so far
 - Recreate previous research results in lab setting
 - Create Requirement Document
 - Create Design Document
 - Create Test Plan
- Milestone 2 (Oct 28): itemized tasks:
 - Capturing wireless traffic of IoT devices in lab (i.e. building knowledge base for detection models)
- Milestone 3 (Nov 25): itemized tasks:
 - Label database
 - Identify model features
- Work Matrix for CSE students

	Alex	Cole	Jeremy	Steven	Todd
select technical tools	collaborate	collaborate	collaborate	collaborate	collaborate
build laboratory	research	research	research	research	research
resolve technical challenges	build database model	look at old pcaps	learn aircrack-ng	learn 802.11	analyze Z-wave protocol
capture network traffic in lab	monitor	monitor	monitor	monitor	monitor
design plan	write 20%	write 20%	write 20%	write 20%	write 20%
requirement document	write 20%	write 20%	write 20%	write 20%	write 20%
test plan	write 20%	write 20%	write 20%	write 20%	write 20%

- Approval from Faculty Sponsor
 - "I have discussed with the team and approve this project plan. I will evaluate the progress and assign a grade for each of the three milestones."

TJ O'Connor PhD.

Signature: _____

Date: 9/8/2019