EE/CprE/SE 491 Bi-WEEKLY REPORT 2

1/27/2024 – 2/10/2024

Group number: SDMay24-39

Project title: Intrusion Detection System on Automotive CAN Bus

Client &/Advisor: Manimaran Govindarasu

Team Members/Role:

1. ***Cole Burkle - Lead Vulnerability Tester/Car Testbed Lead***
2. ***Trace Haage - Client Liaison/Pi Testbed Lead***
3. ***Tiffanie Fix - Vulnerability Research and Development Lead***
4. ***Alec Cose - Testbed Design/IDS Rule Development***

- **Weekly Summary**

  Began with our weekly meeting on Monday with our client in which all members were present. We iterated goals and expectations for this semester despite setbacks regarding delays in parts for the car testbed. To remain productive, we agreed that it would be ideal to have Tiffanie create some virtual machines: Snort, CAN Client, CAN Server to become familiar with the platform and strategize ways in which it could be implemented on the car testbed. Moreover Cole was to meet with ETG as well as our Client's graduate student to see if any part on-hand could substitute the parts we are missing. Trace and Alec worked towards integrating the ECUsim2000 in the can network on the Raspberry Pi. This process involved finding the correct terminal and devices to connect to the ECUsim2000 with the limited resources. The simulator was then added to the can network using documentation and the simulator would receive messages sent along the channel.

- **Past week accomplishments**

  - Team Member 1: Meet with ETG to obtain power cable, met with Sourdeep for teensy connectors
  - Team Member 2: Connecting Pi and ECUSim together using serial terminal. Began CAN traffic monitoring in Pi and ECUSim. Pi can send messages on CAN channel that can viewed by ECUSim. Also, ECUSim can set proper protocol and create a fully established ECU connected to a PID (RPM for now).
  - Team Member 3: Set up virtual machine for Snort
  - Team Member 4: Researched possible ways to set up ECUsim2000 on the can network. Read through documentation in order to attempt to send messages between different devices on the can channel.

- **Pending issues** *(If applicable: Were there any unexpected complications? Please elaborate.)*
    - Team Member 1: Awaiting missing parts
    - Team Member 2: Find alternative method to send messages from created ECU's on the ECUSim.
    - Team Member 3: Need to research platform for CAN Client and Server
    - Team Member 4: Need to find a method for obtaining signals about knob information on the ECUsim2000.

- **Individual contributions**

NAME	**Individual Contributions** *(Quick list of contributions. This should be short.)*	**Hours these 2 weeks**	**HOURS cumulative**
Member 1	Worked to power the network	3	22
Member 2	Pi network integration of ECUSim/ECUsim configuration	10	15
Member 3	Virtual machine set up for Snort and CAN	8	16
Member 4	ECUsim2000 research and troubleshooting	12	20

- **Plans for the upcoming week**
  - Team Member 1: Powering network, collecting traffic through OBD2
  - Team Member 2: Work with team member 4 and grad TA to figure out way for ECUSim to have the actual PID's be able to send frames on the CAN channel
  - Team Member 3: Continue setting up CAN config for virtual machines
  - Team Member 4: Complete ECUsim2000 integration with knob data. Research can attack vectors and introduce them to preexisting can network.

- **Summary of weekly advisor meeting**

  We talked about contributing to the project while still waiting for crucial parts. Part of our group will continue research in their area.