

EE/CprE/SE 491 – sdmay26-08

GridSAFE

Week 5 Report

Start date - End date: 10/21/25 – 10/28/25

Client: Nellie Leaverton

Advisor: Julie Rursch

Team Members:

Nellie Leaverton – Hardware & Architectural Design Lead

Jason Di Giovanni – Software and Security Lead

Brant Gicante – Software and Security Assistant

Evan Booze – Hardware & Architectural Design Assistant

Kyle Maloney – Testing Lead & Design Assistant

Anthony Nehring – Software and Security Assistant

Weekly Summary:

This week, the GridSAFE team completed and presented our lightning talk. The hardware team advanced 3D design modeling by creating new building features and preparing materials for upcoming prints. We have received the necessary materials for 3D printing and begun splicing models. The hardware group also completed the Canvas and SIC training required to access the 3D printing and woodworking labs. Meanwhile, the software team continued developing prototype logs based on the MITRE ATT&CK Framework and finalized plans to begin model training within the next few weeks. Overall, the team remains on track with our Gantt chart.

Past week accomplishments:

Nellie Leaverton: This week, the in-person training for the SIC was completed, resulting in certification to begin using the 3D printers in the SIC.

Anthony Nehring: Continued host logs development. Finalized an intermediate network diagram with development of a finalized / more in depth one in discussion. Discussed with fellow software group on the logs being ingested into the AI.

Kyle Maloney: This week, further prototyping with Proxmox and practiced capturing logs and exporting them somewhere retrievable from the isolated network I created. I also researched more about attacks in the MITRE framework and am preparing different training parameters to train the model along with the network and system log data.

Jason Di Giovanni: This week, the project data flow for a working prototype was finalized and visualized as a process overview diagram.

Brant Gicante: This week, I completed many models for testing as a prototype for lights, with a clearance hole and spliced and ready for print once I am allowed into SIC for in person training (hopefully done this next week). I started going backwards into some of my previous obsidian notes from CybE230/231 to investigate the setup of mail servers and other things we did back in my previous coursework. Started to investigate a little bit more into the previous senior design group and work done before by other organizations.

Evan Booze: Completed in-person SIC 3D modeling training. Continued to edit the pre-generated 3D models in Google Drive by adding base plates, hollowing out their interiors, and adding windows to each model. Acquired PLA filament for 3D printing. Began splicing the edited models in Bambu Studio to prepare them to be printed. Continued research and discussion with Nellie concerning what construction materials should be used for the city base board

Citations/Research:

No new citations and research to report. Current tasks are a continuation of last week's progress. Links for Baseboard examples:

https://www.scalemodels scenery.co.uk/blogs/scale-model-scenery-baseboard-guide?srsId=AfmBOooXPmT_pZXa0aTzyfdUhXH5OHnnhvx8PTQXAb_b4J9JfLOm-qxC

Pending issues:

- (Software) ETG has approved our use of a server for us with proxmox. However, they have not told us if we need to set that up with ISEAGE or if they are doing that for us. We plan on following up if nothing new is heard within the next few days.

Individual contributions:

<u>NAME</u>	<u>Individual Contributions</u>	<u>Hours this week</u>	<u>HOURS cumulative</u>
Nellie Leaverton	<ul style="list-style-type: none">• Creating meeting Notes.• Acquired PLA from ETG request order• Finished hands-on SIC training for 3D printing	4	32
Brant Gicante	<ul style="list-style-type: none">• Signed up for in person training• Adjusted few 3d models	5	23
Evan Booze	<ul style="list-style-type: none">• Completed in-person SIC 3D modeling training• Continued editing pre-generated 3D models• Began splicing models in Bambu Studio• Acquired PLA for 3D printing• Researched construction materials for city base board	4	15
Jason Di Giovanni	<ul style="list-style-type: none">• Work on design and overview diagrams/visuals• Finalize prototype data flow• High level design communication	5	23
Kyle Maloney	<ul style="list-style-type: none">• Continued prototyping Proxmox server• Researched MITRE attacks and XGBoost to prepare for training with our generated logs	5	20
Anthony Nehring	<ul style="list-style-type: none">• Worked on network diagrams• Worked on host logs• Discussion on AI integration	5	18

Plans for the upcoming week:

Prototype Checker Program – Jason:

- Build the Checker module that interprets ML output and converts it into LED control signals
 - Method for parsing ML output and pulling the log classification it chose (Normal/Anomalous/Malicious)
 - Method for pulling the labeled log from original file
 - Method to compare ML output with log label
 - Method to output a JSON file to tell the RPI if it should change lights in the physical model based on the compare method output.

- **Brant Gicante:**
 - Looking into the setup for the mail server, and discussing with ETG on further instructions on how to access it
 - Got SIC approved training for models ready to go for prototyping
 - Look into what communications between raspberry pi's may look like for software.
 - Familiarize myself with the AI we are training to gain knowledge and catch up with the software team.

- **Evan Booze:**
 - Finish editing 3D models to be ready for splicing.
 - Finish splicing the first structure in preparation for printing.
 - Print the first structure to begin testing LED lighting.
 - Finalize what materials should be used for the model city base board.

- **Nellie Leaverton:**
 - Start 3D printing all 3D models

- **Kyle Maloney:**
 - Meet with the software team to discuss MITRE attacks to analyze and create logs.
 - Continue prototyping Proxmox server, specifically install a Kali VM to try simulating attacks to generate more authentic logs.

- **Jason Di Giovanni:**
 - Build the Checker module that interprets ML output and converts it into LED control signals.
 - Work with Kyle to translate the logs into training data for the model.

- **Anthony Nehring:**
 - Work with software group on MITRE attack specifications for logs / specific details on what all is intended for logs to help finalize this part.
 - Helping Jason with the AI piece.