EE/CprE/SE 491 WEEKLY REPORT 01

Start date - End date: 8/25/25 – 9/18/25

Group-number: sdmay26-08

Project title: GridSAFE

Client: Nellie Leaverton

Advisor: Julie Rursch

Team Members/Role:

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

o **Weekly Summary:**
This week, the GridSAFE team focused on developing the hardware protype and advancing cybersecurity research components. The hardware group finalized the 3D city design and prepared materials for LED integration. The software group generated simulated host logs using the MITRE ARR&CK framework. The team also submitted resource requests, started the process to organize workflows through Trello and Discord, and prepared materials for upcoming advisor discussions.

o **Past week accomplishments:**

<u>Nellie Leaverton</u>
• Finished 3D prototype.
• Sent in ETG Resource Request
• Finalized what buildings will be in our 3D City (Capital, Church, School, Hospital, Skyscrapers, City Buildings).
• Acquired a Raspberry Pi.

<u>All</u>
• Worked on Design Document Requirements.
• Discussed problems/questions to bring to advisor meeting this coming week.

<u>Anthony Nehring</u>
• Lightning talk template created.
• Created and worked on simulated host logs.
• Created and worked on a list of topics and questions for advisor.

<u>Kyle Maloney</u>

- Researched XGBoost and started writing scripts to read, train, and predict on given data.
- Continued creating network logs.
- Started creating basic api to integrate everything.

<u>Jason Di Giovanni</u>

- Research MITRE ATT&K framework for log generation
- Discussed integrating Host Logs with Network Logs
- Met with Anthony to co-complete the most current software milestones and tasks list.

<u>Brant Gicante</u>

- Replanned the structure for the base of the models.
- Found previous 3D models to reprint and give space for lights to be inserted.
- Spliced models and researched the printing requirements of them.

<u>Evan Booze</u>

- Finalized design for buildings to be used in 3D City.
- Finished 3D prototype.
- Started SIC Electronics, Textiles, & 3D Printing course.

o **Citations/Research:**

No new citations and research to report

o **Pending issues:**

• We may not be able to buy strong enough LEDs for the city to see in the light in a bright room.

• We may not be able to use VMs to build a true network simulation due to government restrictions on IP addresses.

Individual contributions:

NAME	**Individual Contributions**	**Hours this week**	**HOURS cumulative**
Nellie Leaverton	• Sent Resource request for PLA and LEDs to ETG • Finalized building type for City • Started SIC training for 3D printing • Met with Evan and Brant to finalize building blocks for 3D city. • Make weekly meeting notes. • Started research Trello integration with Discord.	4	26
Brant Gicante	• Met with Nellie and Evan to get ideas for building blocks for 3D city	5	14

	• Replanned the structure for the base of models • Discussed we need to shoot for high powered LED to make 3D printing show light • Found previous 3D models to reprint and give space for lights to be inserted • Spliced the models and searched into the printing requirements of them. • Online Iowa State 3D Printer training		
Evan Booze	• Met with Nellie and Brant to finalize building blocks for 3D city. • Finalized building types for 3D city. • Finalized filament type to use for 3D buildings. • Downloaded Autodesk Fusion to begin designing models for individual buildings. • Began ISU SIC Electronics, Textiles & 3D Printing course.	4	9
Jason Di Giovanni	• Research MITRE ATT&K framework for log generation • Discuss integrating Host Logs with Network Logs • Continued creating network logs • Met with Anthony to co-complete the most current software milestones and tasks list.	4	15
Kyle Maloney	• Researched XGBoost and started writing scripts to read, train, and predict on given data • Researched creating and hosting a new network to integrate with our project • Worked on adapting led code for this project • Started creating basic api to integrate everything	3	12
Anthony Nehring	• Discuss integrating Host Logs with Network Logs • Researching host-based logs • Started creating simulated host-based logs • Met with Jason to co-complete the most current software milestones and tasks list. • Discussed with Jason and Nellie on the future and problems we might face using a network for log generation.	4	10

		• Created the lightning talk prestation template to help guide the creation of the presentation • Started discussion topics and questions to lead conversation with our advisor meeting this week.		

- **Comments and extended discussion:**

- **Plans for the upcoming week:**

  - **Brant Gicante:** Finish the in-person training for 3D printing lab at Iowa State, In specific with their Bambo H2D and LabX1C machines. Print the model and bring it back for use as prototyping is "done" for the first iteration. Get to work with the software team once "logs" are established.
  - **Evan Booze:** Download UltiMaker Cura and finish Electronics, Textiles & 3D Printing course to gain access to the ISU 3D printer lab. Work in Autodesk Fusion to begin editing the 3D CAD files. Work with Nellie to begin wiring the prototype building to test LED light diffusion. Research other potential high-power LEDs to test inside of the prototype building.
  - **Nellie Leaverton:** Sent a resource request to ETG for PLA filament and LEDs. We found a 3D chess set with skyscrapers that we wanted to use. Start editing 3D CAD files from imported chess sets of skyline cities. Start 3D printing of the skyscrapers once the purchase request from ETG is fulfilled. Once the 3D model is built and supplies are sent, we will start wiring the prototype and coding the LEDs using the raspberry pi.
  - **Kyle Maloney:** This week I will focus on writing more basic code that we will edit in the future to complete our tasks. I hope to have a basic template of feeding an XGBoost model data to train it, then using that to create predictions on whether it is malicious. I will accompany this with a UI that can interact with the model through a custom api and display results.
  - **Jason Di Giovanni:** I'm planning on finishing up our log examples which will keep us in line with our new gantt chart. I'm also making use of the MITRE framework to ensure the most variety in logs/attack options. Finally, I'm working with Anthony to make sure including a true IT/OT network is going to work for us.
  - **Anthony Nehring:** My major focus is to finalize the host-based logs for our simulated milestone. My other focuses are the other tasks needed in said milestone. Another major concern of mine is the creation of the topics and questions for our advisory meeting specifically making sure our IT and OT network is feasible.

- **Summary of weekly advisor meeting:**
  N/A. The next meeting with our advisor is October 16th.

Grading criteria

Each weekly report is worth 10 points. Scores will be awarded as follows:

- **8 – 10**: Progress for your project seems to be suitable. Documentation and hours reported by team members are adequate.
- **6 – 8**: There is scope of improvement both in your report and your project progress. Can consult with instructor/TA after class for further inputs.
- **< 6**: Please talk to instructors/TA after class hours about any difficulties that you/your team is facing.

Each weekly report should be unique in that they have a unique set of supporting details for your contributions. So please do not just copy your reports from the previous week. In addition, please avoid any personal pronouns (he, she, I, you). Try to keep your reports as neat as possible.