EE/CprE/SE 491 – sdmay26-08

GridSAFE

Week 4 Report

Start date - End date: 10/9/25 – 10/16/25
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 hardware team continued working on 3D design modeling, focusing on creating new features and buildings while preparing materials for upcoming 3D printing. Since materials are still in transit, we have not yet begun the physical printing of the models. The hardware group has completed the Canvas and SIC training required to access the 3D printing and woodworking labs. The GridSAFE software team continued working on writing prototype logs, continuing to develop based on the MITRE ATT&CK Framework. We also discussed potential issues with building a virtual network to generate better logs for our final product, which we brought to our advisor meeting and resolved.

Past week accomplishments:

Nellie Leaverton: This week, I finished the online SIC 3D modeling training and signed up for the in-person session. Since Brant found pre-generated 3D models we can use, we decided to pivot from creating our own custom models to editing these to fit our needs. I started editing the 3D models in our shared Google Drive, adding a base so they can be glued to the platform, hollowing out the inside of the building, and adding windows. I also started researching materials and resources needed to build the base board for the overall model.

Anthony Nehring: This week, my main effort has been on continued work on creating the prototype logs specifically on the host logs. I then also created and led a list of questions / concerns for our advisor mainly under the umbrella of how creating a network will look like and be implemented. I also took notes on lecture 10/21 such that they can be referenced and implemented into our lightning talk next week 10/28.

Kyle Maloney: This week, I did research on proxmox and how to set everything up which will be the software we use to host multiple VMs and generate network traffic that our AI will read. I practiced creating VMs on my own machine and setting up communication between them with a central machine listening to the network to process the logs. I also did further research into XGBoost to prepare for training our model.

Jason Di Giovanni: This week, I focused on improving our prototype logs to better reflect real world attack behavior using the MITRE ATT&CK Framework as a guide. I also collaborated with the team to troubleshoot potential obstacles in setting up a virtual network environment for producing more accurate and diverse data for our anomaly detection system. After discussing these concerns in our advisor meeting, we established a clearer plan for how to move forward.

Brant Gicante: This week, I completed a single model for use of testing as a prototype for lights, with a clearance whole and spliced and ready for print once I am allowed into SIC for in person training. I found 3d models that were used in the past that were already generated and looked far more realistic to save effort to make great models. 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.

Evan Booze: This week, I finished the online SIC 3D modeling training and signed up for the in-person training session. I've also begun working to edit the pre-generated 3D models in our Google Drive by adding a base plate to each of the models, hollowing the interiors of each model, and adding windows to each model. I have also begun discussing with Nellie what materials will be used for the model city's baseboard and how it should be constructed.

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.scalemodelscenery.co.uk/blogs/scale-model-scenery-baseboard-guide?srsltid=AfmBOooXPmT_pZXa0aTzyfdUhXH5OHnnhvx8PTQXAb_b4J9JfLOm-qxC

Pending issues:

- (Hardware) The ETG purchase request has not been processed yet, and I have not received any updates from them since the initial email. I plan to follow up to check on the status of the request. I am concerned that delays in receiving materials and resources may significantly impact our timeline for building and testing the prototype.
- (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:

NAME	Individual Contributions	Hours this week	HOURS cumulative
Nellie Leaverton	• Creating meeting Notes. • Reached out to Julie Rursch for an advisor meeting. • Finished SIC training + sign up for in person training.	2	28
Brant Gicante	• Signed up for in person training • Adjusted few 3d models	4	18
Evan Booze	• Completed online SIC 3D modeling training • Begun editing pre-generated 3D models • Researched construction materials for city model base board	2	11
Jason Di Giovanni	• Continued prototype logs with MITRE ATT&CK Framework • Discussed challenges and next steps during the advisor meeting, establishing a clearer plan for moving forward	3	18
Kyle Maloney	• Started researching and learning more about Proxmox to set up our central network • Experimented with XGBoost to prepare for training with our generated logs	3	15
Anthony Nehring	• Prototype host log development. • Leading group in questions / concerns for our advisor. • Took notes / continued work on lighting talk. • Website development.	3	13

Plans for the upcoming week:

- **Brant Gicante:**
  - Jump onto helping setup for the software server. (maybe setup the mail server on a vulnerable state for ease of attack)
  - Finnish up a couple more 3D models, reminder that 12mm clearance for holes in the base of models is attained for lights.
- **Evan Booze:**
  - Finish in-person training for SIC 3D modeling training.
  - Finish making edits for pre-generated 3D models on Google Drive.
  - Decide on what materials should be used for the model city base board.
- **Nellie Leaverton:**
  - Help finish editing all 3D models.
  - Follow up on ETG materials purchase request.
  - Begin organizing files for 3D printing once materials arrive.
- **Kyle Maloney:**
  - Work more on setting up a proxmox environment with necessary VMs that generate traffic with something like Scapy(python library that generates human-like traffic).
  - Work with Jason to translate the logs into training data for the model.
- **Jason Di Giovanni:**
  - Finalize prototype logs so we can begin training next week
  - Work with Kyle to set up training for next week
- **Anthony Nehring:**
  - Finalize prototype host logs and overall logs so Jason, Brant and I can work on training the AI next week with these logs.
  - Resaerch / framilerize with the AI we are using so I can better help with the training of the AI as I do not currently have very much knowledge on the topic.

Summary of weekly advisor meeting:

During this week's advisor meeting, our team discussed overall project progress and upcoming tasks.

- **Hardware Team:**
  The hardware group provided an update on sourcing and editing 3D models. They are now ready to begin printing the prototype once the purchase request is fulfilled by ETG.
- **Cyber/Software Team:**
  We had an in-depth discussion about the cybersecurity portion of the project, specifically the design of the virtual IT/OT network. Our main focus was determining how to enable internet connectivity to collect live network logs and send them to our IDS system for real-time analysis.

Our advisor reached out to ETG for support, requesting the setup of a server with Proxmox. ETG responded promptly, confirming that Jake will set up the Proxmox server for us. It's still being determined whether we'll need to install ISEAGE ourselves or if ETG will handle that configuration.

We are currently coordinating with ETG to finalize the setup and ensure the environment is ready for software integration and testing.

- **Next Steps:**
  - Finalize server setup with ETG
  - Confirm ISEAGE installation responsibility
  - Begin connecting virtual network components and testing log generation

Our next meeting with our advisor is on November 13th.