***EE/CprE/SE 491 WEEKLY REPORT 2***

***September 20th, 2024 - September 26th, 2024***

***Group number: sdmay25-43***

***Project title: GridAI***

***Client &/Advisor: Dr. Gelli***

***Team Members/Role:***

- ***Skyler Kutsch_____Record Keeper***
- ***Franck Biyoghe Bi Ndoutoume_____Test Lead***
- ***Hang Kim Thang_____Cyber Security Lead***
- ***Jesus Soto_____Team Organizer***
- ***Justin Soberano_____Component Design Lead***
- ***Rangsimun Bargmann_____Role Manager***

**Weekly Summary**

We were all assigned our first action items. We researched the topics and came to the weekly advisor meeting with questions about the action item. We were assigned our VMs and logged into them. We renamed each of the 6 VMs after ourselves to claim which one we would use. We are excited to learn more about API calls through the VMs next week. This week in the advisor meeting, we got a summary of the front end from Peeyush, and next week, we will get a summary of the back end from Rolf.

**Past Week's Accomplishments**

- ***Skyler Kutsch –*** **Researched SVG lines, set up my VM, learned about displaying map data**
- ***Franck Biyoghe Bi Ndoutoume-*** Setting up VM, research and learned about implement code editor Monaco Editor
- ***Hang Kim Thang -*** *Setup gitlab, research on the display of the layout and structure of an electrical grid; power plants, transformers, substations and load centers; how they are connected and grid components such as spacing and complex grid.*
- ***Jesus Soto -*** Research thingsboard.io documentation to get a better understanding of widgets and their user customization. I got a better understanding of the requirements for the creation of certain components.
- ***Justin Soberano –*** **Looked through the current design files in Figma to get an idea of what is expected of the UI/UX**
- ***Rangsimun Bargmann*** **- cloned the thingsboard.io repository onto my local machine**

**and successfully built and ran the web application.**

**Next Week's Plan**

- ***Skyler Kutsch –***
- ***Franck Biyoghe Bi Ndoutoume-*** Will be doing more research on React Mosaic and others.
- ***Hang Kim Thang -*** *Will be doing more research and will be working with Grid visualization and single line diagrams using svz or different.*
- ***Jesus Soto -*** **work with Ronnie to decide the structure, layout, and code implementation that will be used to design our first implementations of widgets and other needed components.**
- ***Justin Soberano – Gain access to the front end repo and look through GridAI's current website and see what components can be improved.***
- ***Rangsimun Bargmann*** **- this week I will be combing through the thingsboard code base to develop an understanding of how the code is structured in order to gain inspiration for how we will structure our front end code. Specifically, I will be focusing on how thingsboard is able to dynamically display large amounts of data in a responsive and robust manner.**

**Pending issues**

- **Waiting for the front end to be uploaded to GitLab**

| **NAME** | **Individual Contributions** *(Quick list of contributions. This should be short.)* | **Hours this week** | **HOURS cumulative** |
|---|---|---|---|
| Skyler | Researched SVG vector line drawings | 4 | 12 |
| Justin | Looked through the figma design files | 4 | 12 |
| Rangsimun | Cloned, built, and ran the thingsboard web application and started looking through the code base to gain understanding. | 3 | 11 |
| Franck | Research and looked through code editor enhancement with Monaco React and React Mosaic. | 3 | 9 |
| Jesus | Gained a better understanding of | 3 | 11 |

| | | | |
|---|---|---|---|
| | thingsboard customization and widgets. | | |
| Hang | Setup git, research more about the layout and structure of an electrical grid.<br>Looked at the grid component. | 4 | 9 |

**Summary of weekly advisor meeting**

**Weekly Meeting Notes**

**9/25 (group meet)**

**- discussed our work on our action items**

**- svz line graph CORRECTED to SVG Vector Drawing**

**- Got into VM for the first time, renamed our VMs to our names, downloaded/ensured visual studio was working on all VMs**

**Advisor notes:**

**Q: Area of focus for thingsboard?**

**- Building off widgets and dashboard for now**

**- Have backend data, want to build frontend after that**

**- Thingsboard has 4 major functions: Widget, data control between devices assets and entities, Customers/users dont need perms, dashboards can be shared, look into how backend and frontend are connected, can define a sequence of rules/API calls with a widget, 4- Thingsboard has analytics, links available in slides shared with all of us from advisor, good for displaying lots of data**

**Q: How much flexibility with design?**

**- Design can be anything, but documentation is available and some things are designed for a purpose**

**- Some widgets are very important and some dashboards are shared**

**Q: Is there existing guidelines/style/theme?**

**- Free to choose**

**Q: Code editor fully integrated for users to use?**

**- Yes**

**FRONTEND PRESENTATION:**

**- Note: presenter logged into VM to present info**

**- Homepage: user sees all their projects**

**- Map rendered with DeckGL, can fetch nodes and lines**

**- front end code: select nodes and send the selected nodes to backend for**

**node's info**

- map, 2 nav bars, bottom bar, want to change the nodes in some way
- make/model widgets in thingsboard
- babel/standalone - used to compile react in "realtime"

**Enhancements:**

- 20-30 different icons wanted for different data points
- more map functionalities to make it more useful
- optimize map to not be laggy when we have >8000 nodes, (running from VM creates some lag)
- track power by street instead/as well as cluster
- visualize using single line diagrams
- improve time start ticker
- want real time data between ends using websockets
- nodes are currently static, we want dynamic based on the data we have, some application for analysis (spikes, etc)

**Code editor section:**

- currently shows files from building the map
- expected to be like VS code with lots of functions like live data change, file select/save
- Make live editor more robust and improve the look
- does not support DSS file reader, make your own file/language reader
- API is FileZilla (?)
- changes are auto saved
- add ability to give users different access for each file
- currently shows only one tab at a time, enhance to view multiple tabs at once
- add ability to comment on code/ aside from code (chatbox)
- React Mosaic (UI library to improve the look, emphasized improving look a lot)

**WIDGETS:**

- make thingsboard widgets to test the widget
- create dynamic forms in react so you can reuse components
- using mantine library because it provides a lot of styles and components
- build components with this or CSS
- use mantine CSS variables list, colors the website is currently using are here
- Possible to create your own mantine theme button you have to redesign ever component like div, headers, all that
- Pretine has all components from mantine and pretine is already in the project (pretine on figma), use parameters from figma components to actually code the components

ui.mantine.dev

Next week:
- Share insights after seeing source code
- backend presentation
- how to use VMs for API calls (after getting code)

## Project Work/Research