

EE/CprE/SE 491 WEEKLY REPORT 7

Mar 20 - Mar 26

Group number: 20

Project title: GridGPT

Client &/Advisor: Gelli Ravikumar

Team Members/Role:

- **Tin Ngo -> AI Integration Specialist**
- **Jackson Phillips -> AI Integration Specialist**
- **Emma Heithoff -> Power Systems Specialist**
- **Eddy Andrade -> Frontend Lead**
- **Nick Doty -> Backend Lead**

○ **Weekly Summary**

○ **Past week accomplishments**

- Tin Ngo: I looked into the pros and cons of Hugging Face vs OpenAI. We have to look at the limitations of both technologies and the requirements for our project. There are limitations to both technologies when it comes to how many tokens can be interpreted, so I did some research on techniques to get around the token limits. I also did research on how the tokenizer encodes and decodes words into tokens and tokens in words.
- Jackson Phillips: This week, I looked into dataset generation for Hugging Face and OpenAI. I spent some time updating my issue board on GitLab and making sure all my tasks were tracked properly.
- Emma Heithoff: This week I worked independently on reviewing where the team was after I was out at our meeting. I will be working primarily with Jackson on training the model using a DSS dataset with the dss-python package. I focused primarily on what I would provide to that aspect in my work, though it was not as thorough as other weeks.
- Eddy Andrade: This past week, I spoke with our client to get more insight about my ideas for UI implementation of our AI model. They liked what I had, but also suggested that I take a look at examples online. With that in mind, I took a look at Google's Colab and GitHub's Copilot AI implementation from a UI perspective. From it, I can see they have a small window popup within the main window where the code is. I also cloned the repository of our project into my local machine.
- Nick Doty: This week I have talked to our Backend lead on where to go next with my research so I can be most productive and push GridGPT forward. He recommended looking into HTTP/s and HTTP verbs as well as Flask and Docker a bit more. Therefore, I started this week by beginning my research on RESTful API and learning how I can incorporate it into GridGPT.

○ **Pending issues**

- Tin Ngo: There have been a lot of errors with the current infrastructure, and it takes time for changes to be made after a request.
- Jackson Phillips: We need to decide whether we are going with OpenAI or Hugging Face.
- Emma Heithoff: N/A. Time needed to fully catch up.
- Eddy Andrade: No pending issues.
- Nick Doty: N/A

○ **Individual contributions**

<u>NAME</u>	<u>Individual Contributions</u> <i>(Quick list of contributions. This should be short.)</i>	<u>Hours this week</u>	<u>HOURS cumulative</u>
Tin Ngo	Hugging Face vs OpenAI analysis	9	48
Jackson Phillips	Dataset research.	6	42
Emma Heithoff	Catching up on what I missed last period	6	40
Eddy Andrade	AI implementation analysis and design	6	42
Nick Doty	RESTful API research	6	42

○ **Plans for the upcoming week**

- Tin Ngo: Start working on creating actionable items, research on current infrastructure, and create a plan on how to create a modular class that can be attached to the current infrastructure.
- Jackson Phillips: When we get VM and HPC access, I will start getting hands-on with training and dataset generation.
- Emma Heithoff: There is a lot of catch up work in communicating my DSS knowledge from a few weeks ago with my team this next period after being out. I will be reviewing the meeting last week with the team, creating an action plan for myself based and looking at the previous senior design project. I want to generate a dataset like I had hoped for the last two weeks. Also, I will create a document showing my work done in DSS/dataset training as I haven't been able to present.
- Eddy Andrade: Hopefully, we'll have VM access this coming week. Once we do, I plan to start looking at the repository and seeing the tsx files and how they're organized. This way, I have a better understanding of what the code looks like now.
- Nick Doty: This upcoming week, I would like to look into HTTP/s and HTTP verbs as well as a bit more research into Flask.

○ **Summary of weekly advisor meeting**

Discussion Highlights:

- Presentations Review: Emphasized the importance of clear, visually engaging presentations to convey our project's scope and progress.

- Summer Work Opportunity: A chance to continue working on this project or a similar one over the summer, based on demonstrated interest and commitment.
- Visibility and Documentation: Stressed the need for visible progress through regular updates to the Kanban board, detailed presentations, and comprehensive documentation of VM work.

Actionable Steps:

- Detailed Action Plan: Create a structured plan with weekly goals for the next semester, including a Gantt chart for visual project timelines and an overall block diagram for system architecture.
- High-Performance Computing (HPC) Access: Clarified access to VMs for project development, advising against using the master VM for individual tasks.
- Project Documentation: Recommended reviewing the "sdmay 23" project documentation for insights and guidance.

Project-Specific Notes:

- Technical Approach: Utilize Hugging Face models for fine-tuning AI capabilities tailored to smart grid applications, focusing on interpreting .dss files and automating tasks like capacitor bank additions for power factor improvement.
- Learning and Outcomes: The project offers hands-on experience in AI, full-stack development, and real-world smart grid challenges, aiming to produce AI models, a prototype application, and comprehensive documentation as key deliverables.

Next Steps:

- Initiate the process for the OpenAI key and website updates.
- Begin outlining the project's detailed action plan, incorporating a Gantt chart and block diagram.
- Set up individual VMs for project development, avoiding work on the master VM.
- Review previous project documentation to leverage past insights.

Please ensure all tasks are promptly initiated, and maintain regular updates through the Kanban board and team meetings to ensure cohesive progress.