

Team 36

Project Title: AI-VVO (Artificial Intelligence Volt-VAR Optimization)

Date: 10/10/2021

## Members:

Jaden Alamsya

Demetrius Christou

Evan Dinnon

William Dulaney

Rachel Owens

Megan Phinney

Derrick Vang

## What we've accomplished in the past week/what we've been researching

Jaden Alamsya – I completed a different ReactJS tutorial than the one suggested by the previous team. I reviewed more of the previous team's code and cloned it on my machine. I then ran it to see what we have to work with and to gain a better understanding of how the current app works.

Demetrius Christou - I have done some tutorials on basic use of python to get used to its syntax and how to use it along with some introductions to Django. I also spent some more time diving into the old backend code to try and understand it better.

Evan Dinnon - Continued my research on Pytorch and Deep Learning. Started a PyTorch tutorial to learn how to use it for this project. I also continued to read up on the previous projects work to get an idea of how to proceed.

William Dulaney - I updated the documentation for the project and further researched the deep convolutional network for Q function approximation. Q learning with deep convolutional neural networks is the most promising approach to solving the volt-VAR control problem due to the dramatically fewer number of parameters in convolutional neural networks as opposed to fully connected neural networks.

Rachel Owens - I completed a more in-depth tutorial of ReactJS to get a better understanding of the overall structure of how react components and properties work. I created a basic counter app through this tutorial that uses components and helped me understand how to raise up functionalities and make sure responsibilities are assigned appropriately. I reviewed the previous team's code and cloned the repository to my machine. I was not able to get the app working on my machine, there seems to be a missing directory of node\_modules that is preventing it from running. I reviewed the previous team's code and documentation to see which specific libraries we will be using for the webpage. We will need to research the D3-graph data visualization library and begin using Google Maps.

Megan Phinney - I started researching Django and reading the documentation. I also started some tutorials to get familiar with the backend technology. I also spent time reviewing python to get my comfort level back up.

Derrick Vang - I have done more research and another tutorial on React. I also tried to get a better understanding of the frontend code and tried messing around with some of the sign on screen features.

## What we're planning to do in the coming week

Jaden Alamsya – In the next week, I plan on seeing if I can get access to more of the pages that the previous team made for the app's UI. I also plan on looking into more information on the D3 Library for ReactJS.

Demetrius Christou - I would like to do some more in depth tutorials and experiments with Django to see if I can find any ways to improve the current backend. I will also continue to mess around with python in general to get used to it.

Evan Dinnon - This next week, I plan to do some hands-on experimentation with PyTorch. I would like to have at least the start of a program that I can work with to understand it better. I also would like to read more about power grids and gain a better understanding of what we are building the neural network for.

William Dulaney - In the next week, I plan on experimenting more with PyTorch and beginning to develop a simple convolutional neural network. I hope to find some better documentation regarding using convolutional neural networks in control systems applications with sequential, time-series data.

Rachel Owens - In the next week, I plan to get the current application running on my local machine so I can see the flow and user interface. I plan on watching some tutorials and getting more familiar with the D3-graph data visualization library for ReactJS.

Megan Phinney - My plan is to get a deep dive in Django and to go through some more in-depth tutorials to continue to increase my understanding and knowledge on Django. Along with that I will start going through the current backend code to take notes.

Derrick Vang - I plan to continue researching and finding more in depth tutorials on React and applying that knowledge to get a better understanding of the frontend code that I am more confused on.

## Issues we had in the previous week

Jaden Alamsya – I got the previous team's code running; however, I can only go as far as the login screen. Trying to decipher the frontend code from the previous team is still proving to be a challenge, so seeing how the entire frontend code runs would definitely be a major step towards understanding the code better.

Demetrius Christou - Trying to understand some of the previous teams code on the backend has been a challenge. That is why I will continue to do tutorials and mess with Django so that I can have a better understanding of what they were trying to do.

Evan Dinnon - Understanding the math behind machine learning is difficult. Given that I have never learned about machine learning before this has been a challenge for me. I also have not written in Python for a while, so I have been trying to get back up to speed on the Python language.

William Dulaney - Understanding how to segment the data was an issue. I will do further research to see if dividing the data into one month trials would be an effective solution.

Rachel Owens - I have had trouble getting the previous team's app running on my machine. There seem to be some missing node\_module directories. I will need to dive into this some more and figure out how to get everything working together. I have had some trouble understanding the previous group's code and the overall structure. I believe creating some high level software diagrams will be helpful for figuring out how to add in new features to the existing code base.

Megan Phinney - The overall struggle with this project is understanding the previous team's code due lack of documentation on their part. In order to work with this difficulty, I will need to take detailed notes on the current code and create my own version of documentation.

Derrick Vang - I was still struggling a bit with understanding some parts of the last team's frontend code. I will continue to work on my knowledge of React to help get a better understanding of it.