

EE/CprE/SE 492 - sddec21-21

Microgrid App

Biweekly Report 2

September 13 - September 27

Client: EPRC Anne Kimber

Faculty Advisor: Mat Wymore

Team Members:

Gabriel Rueger - Frontend Engineer

Michael Doyle - Team Leader / Backend Engineer

Micheal Thai - Backend Engineer

Patrick Shirazi - Frontend Engineer

William Bronson - Backend Engineer

Past Week Accomplishments:

- Cassandra database setup - Patrick, Will
 - Cassandra docker container running on virtual machine
 - Basic keyspace, table setup on cassandra for testing with spring app
 - Spring Application configured to query database
 - Entity class created to match table setup
 - Repository class for querying
 - Controller can write and read using repository
 - Automatically connects on startup, disabled during running of tests
 - Documentation created
- Cassandra schema investigation - Patrick
 - Learning cassandra
 - Design principles
 - Keyspaces, query driven schema design
 - Rough plan for schema design
- Websocket connection between frontend and backend - Gabe, Mickey
 - Backend websocket is set up using Stomp and can establish connections to clients
 - Frontend websocket is set up using Stomp and can connect to the backend
 - Currently, clients can subscribe to an example channel using stomp, and that backend is sending out example data over that channel
- UI for displaying data from a crate (initial framework) - Gabe
 - Methods set up for parsing the JSON object containing data from the crate
 - Initial version of graphs
 - Can display multiple data sets
 - Updates in real time

- Event listeners for catching when the page becomes visible and is no longer visible
 - Allows for connecting the websocket when the page becomes visible and numerous other functions
- Looked at how to obtain useful data from the Radian Inverter and MATE3 - Micheal
 - Created documentation
- Looked if there were any updates in the Solar Crate Box - Micheal

Pending Issues

- Connection to crate still unavailable
 - Advisor Steve Nystrom is still working on getting us access to the cradle point device on the solar crate.
 - Need connection to begin scraping data from the different devices in the crate.
- Some UI elements aren't behaving properly
 - The graph in particular is difficult to configure, and some properties don't seem to have the effect they should when they're set
 - Need to do some further investigation to determine if the current graph library is fit for our needs or if we'll need to consider using another library
- Nick asked to look into if the Outback HUB Communication Manager was needed access the data through the internet
 - The given documents don't really give much information about the HUB. I will need to investigate this

Individual Contributions

| Team Member | Contribution | Biweekly Hours | Total Hours |
|-----------------|---|----------------|-------------|
| Gabriel Rueger | Setup frontend websocket to communicate with our VM Set up graphs to display data from our database. | 6 6 | 16 |
| Michael Doyle | Combine existing REST API with Websocket controller using new database Research spring websocket functions | 8 3 | 11 |
| Micheal Thai | Browse through Radian and MATE3 Tried accessing the token for the Tesla API | 2 4 | 7 |
| Patrick Shirazi | Cassandra setup Cassandra learning PIRM presentation | 9 3 1 | 16 |

| | | | |
|-----------------|-------------------------------|---|---|
| William Bronson | Research into Cassandra | 2 | 7 |
| | Cassandra setup | 3 | |
| | Research into Radian Inverter | 2 | |

Plans for Coming Period

- Gather rough estimates of data types and feasible ranges for all data sources - Will and Micheal
 - Compile information from crate device documentation
 - Write code to generate mock data for all sources
 - Allow for further development while we work on scraping data from crate (and waiting for crate access in the first place)
- Finalize (for now) cassandra schema for data - Patrick
 - Tables designed for efficient querying of time ranges
 - Design accounts for extensibility of data sources
 - Fill database with mock data for development testing
- Further implement the socket connection and channels - Gabe and Mickey
 - We will need to send out new data whenever it is received over a channel specific to each crate
 - We need to create a means for receiving what crates are available to the user and any information necessary to start receiving data from those crates
- Construct initial UI page for displaying data from a given crate - Gabe
 - This should display multiple data points from the crate, show data from our database, and allow for the user to select what data points they are using
 - Upon initialization of this page, past data up to a certain amount of hours should be loaded and displayed on the graph
 - The user should be able to select how far back they are viewing data on the graph
- Continue communicating with Steve + Nick about accessing the data - Micheal
- Continue working with the Tesla's API - Micheal

Summary of Advisor Meeting

- Setting up docker for the backend server is nice, but focus on more important features first.
- Still have not gotten access to the crate. Work in progress from our advisors.
- Customizable live display graph.
 - Allow users to select which data points they want to see.
 - App displays these based on data sent from the server. Do not hardcode into the mobile app to allow for easier extensibility.