EE/CprE/SE 492 - sddec21-21
Microgrid App
Biweekly Report 5

October 25 - November 8
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 - Fullstack Engineer
William Bronson - Backend Engineer

Past Week Accomplishments:

- CSV export - Patrick and Will
    - Mobile app display
        - Select export graphic for each datasource on the crate
        - Month-year picker to select time to export
            - Only allowed to select dates where we have data collected
            - Local time translated to server
        - iOS / Android share functionality
            - Passes blob file to native share popup
            - Allow user to download to device or send csv to other available apps (email, messages, etc)
    - Api updates
        - Added column headers to data
        - Datasource parameter to allow selecting specific datasource
        - Month parameter to allow selecting specific month
- Websocket communication to facilitate site data for graph - Mickey
    - Data being stored in server database is now actively being sent over to frontend for graph display
    - Test bench has been created to debug and test websocket connections
- Frontend graphing with websocket data
    - Websocket connection between frontend and backend set up with real data from the site
    - Http requests can be made to get information for parsing data from the websocket
    - Websocket data can be parsed and put into a graph
    - Some UI updates to work towards finalizing the graph screen

Pending Issues

- Scraping data from all data sources
    - Outback Radian Inverter, Dranetz Power Quality Meter, SMA Sunny Boy Inverter
- Final details for putting data from the site into a graph on the frontend
    - The scaling of different data points still needs to be addressed
        - By default, all data sets on a graph are vertically the same, and this can become an issue when considering multiple data sets which have different units and different maximum values
        - We need to come up with a solution for scaling these different data sets so that one with a smaller maximum isn't barely visible on the graph
    - Some bugs with the frontend graph need to be dealt with
        - The data series do not always display when opening the graph page for the first time
        - The x-axis with timestamp values sometimes clips and does not always update correctly as new data comes in

Individual Contributions

Team Member	Contribution	Biweekly Hours	Total Hours
Gabriel Rueger	Establishing and using websocket connection with the frontend Parsing websocket data and further implementing graphs	8 4	39
Michael Doyle	Implementing websocket in project Worked with team to solve frontend/websocket communication	4 7	33
Micheal Thai	Worked with frontend team to fix graph display issues	4	18
Patrick Shirazi	CSV Export	9	53
William Bronson	CSV Export Websocket	6 2	29

Plans for Coming Period

- Archive data - Patrick
    - After certain time, data granularity is less important
    - "Archive" data by averaging values over a certain period of time
        - Could be better to just sample less
        - Certain values averages might make less sense, especially for data with opposing values where the center is less important

    - Reduce space requirements
    - Possibly configure cassandra db to handle tombstones / data compaction
    - Possibly make use of cassandra functionality to delete old records automatically after certain existence time
        - Data in “live” table would automatically delete after one (configurable) day
        - Data also added into “archive” table as the data is collected
- Websocket support for multiple sites - Mickey and Gabe
    - Each site should have its own dedicated websocket channel that relays data from that site on client subscription
        - This will be achieved using existing UUID stored in the database
- Data units - Patrick, Mickey, and Micheal
    - Attach units to datasource values for frontend display
    - Get information from api documentation or device documentation
    - Add info into datasources table for each datasource and measurement
- Start scraping data from other sources - Patrick
    - Dranetz datasource
        - Look into any possible apis to use
        - Likely have to scrape html
            - Look into python libraries
            - Setup python application
- Finalize initial implementation of graphs - Gabe
    - Fix some of the outstanding bugs mentioned earlier
    - Implement a system for scaling different data set so they can all be visible on a single graph
    - Merge graph changes with master and integrate the interface for selecting a site during this merge (since this merge will be a challenge anyways)

Summary of Advisor Meeting

- Updated progress regarding final timeline objectives
- Limited data storage to store less frequently
    - Removes mostly repetitive data being stored on database, also allows for graphing to be less resource intensive
    - Allows for less processing on database functions
    - Smaller sized database on VM means less concerns of running out of space
- Demonstrated Websocket connections
    - Data being collected at our site is now being sent to frontend application to display on graph page of mobile application
- Data export discussion
    - Valid to select single month
    - Larger time range would mean larger datasets to generate and export, can just split up and force the user to select multiple times