

Report Date: 06/24/2022

To: [ematson@purdue.edu](mailto:ematson@purdue.edu), [ahsmith@purdue.edu](mailto:ahsmith@purdue.edu), [lhiday@purdue.edu](mailto:lhiday@purdue.edu), [lee3450@purdue.edu](mailto:lee3450@purdue.edu)

From: IEEE

- Sungjin Park ([huitseize@chungbuk.ac.kr](mailto:huitseize@chungbuk.ac.kr))
- Gayoung Yeom ([gayoung@hufs.ac.kr](mailto:gayoung@hufs.ac.kr))
- Dayeon Won ([aakk9350@kw.ac.kr](mailto:aakk9350@kw.ac.kr))
- Haegyeong Im ([fine632@soongsil.ac.kr](mailto:fine632@soongsil.ac.kr))
- Minji Kim ([minzyk0729@jejunu.ac.kr](mailto:minzyk0729@jejunu.ac.kr))

## Summary

This week, every part of the service had been developed. A responsive web was developed. A search component was added. A map component using Google Map API was created. Graph library was found and it was applied. API for the sensors was developed. Weather sensors and ESP LoRa 32 board were tested. Kubernetes cluster on Google Cloud Platform(GCP) was fixed. Load balancers was researched to be used on Google Kubernetes Engine(GKE).

## What IEEE completed this week:

- Front-end team
  - Developing the responsive web
    - Overall main page layout was made.
  - Adding a search component
    - Search input and result modal were created using React hooks.
  - Creating a map component using Google Map API
    - Getting the current user location and using this when a user's the first access
    - Appearing each weather station on the Map as a mark
    - Making an information window UI for an activated mark
  - Finding graph library and Applying it
    - Apexchart was found for visualizing data.
- Back-end team
  - Developing backend server
    - API for the sensor was tested.
    - API for the graph of the sensor was developed.
- Network team
  - Testing weather sensors
    - Anemometer wind direction sensor and wind speed sensor were tested.
  - Testing ESP LoRa 32 board
    - To figure out how to operate ESP LoRa 32 board, Arduino was used.
  - Finding the place for the weather station in K-SW Square front yard
- Kubernetes team
  - Setting a Kubernetes cluster on GCP(Google Cloud Platform)
  - Researching load balancers to use on GKE(Google Kubernetes Engine)

## Things to do by next week

- Front-end team
  - Developing home page with back-end API
  - Customizing the graph design and connecting data from the database

- Changing search function to drop-down
- Back-end team
  - Developing backend server
    - The network between the back-end server and front-end will be connected.
    - API which retrieves stations by using zip codes will be developed.
    - Zip code will be added to the station data structure.
- Kubernetes team
  - Building real Kubernetes infrastructure
  - Researching tools to evaluate the performance of Kubernetes
- Network team
  - Getting real-time data from Weather Cloud to ESP LoRa 32
  - Accessing to LoRa gate with ESP LoRa 32
  - Testing UV sensor with Arduino
  - Testing the code after changing a board from an Arduino Uno board to ESP LoRa 32 board
- Docker team
  - Making a Dockerfile for Database, Back-end, and Front-end programs.
  - Building images and testing communication between programs.

### **Problems or challenges:**

- Changing search function
  - It was decided to apply the drop-down in the search component.
- Struggling with solving Arduino errors
  - An error about exec: "python": executable file not found in \$path occurred while executing the code, and the error is still being resolved.

### **References**

[1] "Google Maps Platform Documentation." Google Maps Platform.  
<https://developers.google.com/maps/documentation> (accessed June. 24, 2022).

[2] "Apexcharts." Apexcharts. <https://apexcharts.com/> (accessed June. 24, 2022).