Improving the Quinnipiac Weather Website

Ryan Hanlon[1] and J. Eamon Duffy[1]

Clients: Kimberly DiGiovanni[1] and Stephen White[2]

Adviser: Stefan Christov[1]

[1]Quinnipiac University; [2]City of New Haven

Goals and Background

The goal of this project is to improve the existing Quinnipiac Weather website by

- Rewriting it in a modern web framework to enhance its maintainability
- Adding capability to display weather data obtained outside Quinnipiac
- Crowdsourcing the collected data

This project builds on work of previous Quinnipiac students and is a collaboration between the Software Engineering and Civil Engineering programs at Quinnipiac and the City of New Haven.

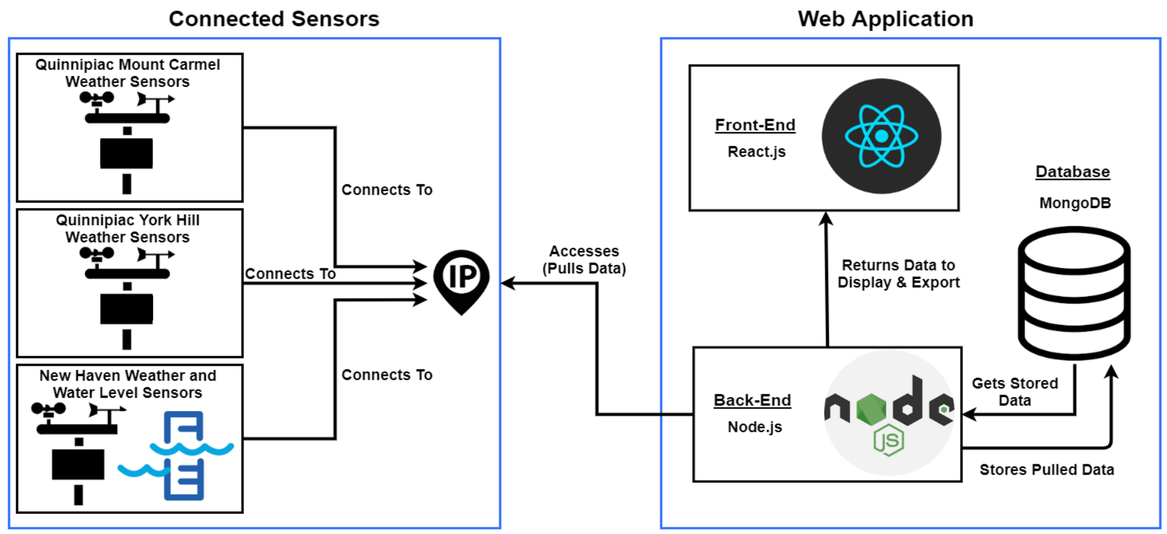
Methods

- Applied the Scrum methodology [1] to manage the software development process
- Web application front-end uses React.js [2]
- Web application back-end uses Node.js [3]
- The data is stored in MongoDB [4]
- Web application is hosted on a local Linux server
- Web application obtains data from weather sensors using HTTP requests

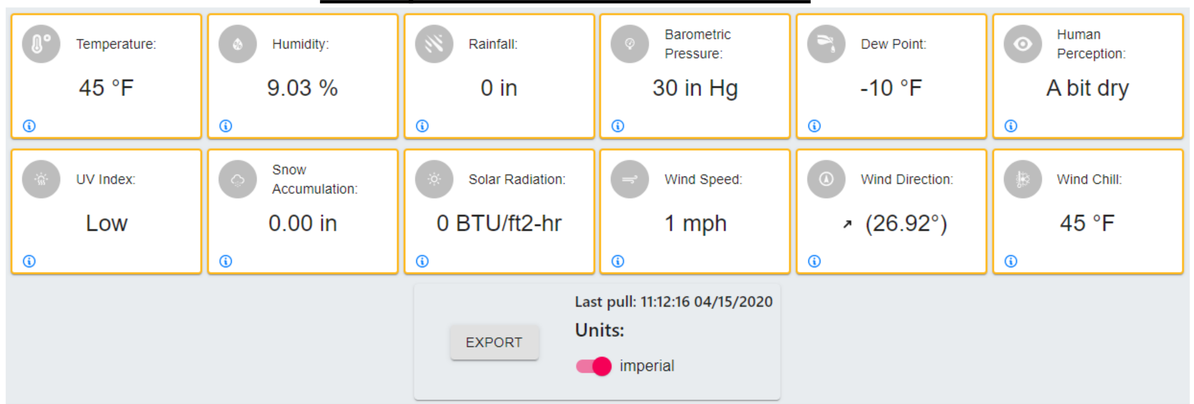
Evaluation

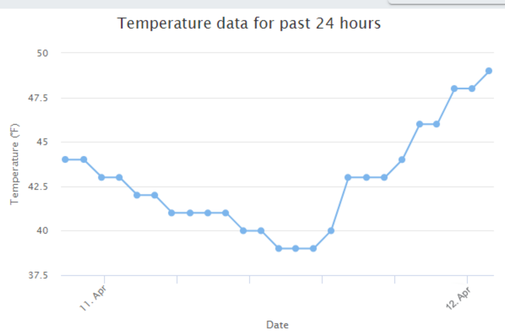
- The application was evaluated by periodically obtaining feedback from our clients, adviser, and peers throughout the development process
- Each feature of the web application underwent acceptance testing
- A survey is being administered to users to obtain feedback on the user interface

System Architecture



Excerpts from the User Interface





Results

- Built a fully functional website capable of collecting information from various weather sensors and displaying it
- The website provides local weather information that is sometimes more accurate than weather information from public weather services based on relatively distant weather sensors
- By storing the collected data, the website serves as an educational resource for students interested in studying weather patterns

Future Work

- Obtain real-time connection to New Haven Sensors. Currently, web application uses exported data files
- Deploy web application to an off-campus cloud service to allow access outside Quinnipiac
- Contribute our collected data to Weather Underground
- Further evaluate the user interface and scalability

References

1. Scrum Methodology: https://www.scrum.org
2. React.js: https://reactjs.org
3. Node.js: https://nodejs.org/en/
4. MongoDB: https://mongodb.com

Acknowledgements

- Prof. Jonathan Blake
- Quinnipiac Technology Support