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Assignment 8

Key Links - [Live Site] [GitHub Repo]

Website Purpose

Overview

This website features a visualization that uses data gathered from sensors connected to a Particle Photon outside my window. In some of my other courses, I have been learning about "calm computing," and I wanted to apply some of the concepts from those courses in my project. My focus in creating this visualization to give an ambient and calm way to visualize the affective feeling of the weather as the seasons pass.

Information and Interest

The temperature and light information from the sensors control the direction of the wave motion, starting location, and angle of the curve. I placed these variables at locations within the wave/particle simulation to add variance to the visualization. I hope that people find this interesting to consider how the information in the world can be translated into forms that provide space for reflection.

Audience

The target audience for this is probably other IoT beginners. Although I had to cut it from the scope to submit, I intend to add my process to this site to help other people make their own version. I think the IoT community is only growing and this could be a fun project for people first starting to put together their first sensor systems.

Interaction

Honestly, this website is more of an ambient or passive visualization of information. The key inputs all come from the sensors. I think the interaction goal of this site is to understand over the long term how ambient factors in our environment can manifest in unusual ways.

External Tools

React + Material

- **Why** — I used React because I have always wanted to learn how to use it. After the initial learning curve, I think it has a more semantic implementation than Vanilla JS. Additionally, as a designer, I think in component-based systems, so React works much better with how I think about organizing my code and app structure.
- **How** — I used to React to launch and create the website. React provides the structure for the Front-End implementation of the site.
- **What** — It adds a level of polish and easily accessible tools and libraries that allows me to integrate several different pieces to create the final site.

P5 JS + React-P5

- **Why** — I used P5 because there are a lot of tutorials on how to use P5, and I love Dan Shiffman's energy. Processing/P5 is relatively easy to pick up even with my limited coding experience. The class names are semantic in nature and easy to structure.
- **How** — I used P5 to create the visualization on the site. I pieced together several different examples from the P5 example library to create the final visualization structure. I then updated this structure's form based on the ambient data.
- **What** — It adds the main visualization of the site. I had to find a library to use P5 with React.

Particle API & IDE [View Particle Code]

- **Why** — I started taking an IoT Mini during the second half of the semester. I wanted to apply some of the key learnings about physical prototyping and sensors to my PUI project as well.
- **How** — I created a small breadboard with the sensors that I connected to the main microcontroller. I then "published" this data to an API and create a webhook to store that data in a database.
- **What** — It adds the information to the visualization that changes the variables. This is the key part of the visualization.

Firebase

- **Why** — I needed a place to store the data gathered from the sensors. Otherwise, if the sensor goes offline the visualization goes offline.
- **How** — I connected the database to the Particle API Webhooks. I then connected the database to my React code via the P5 library.
- **What** — It allows me to keep the sensor information as I gather it and provides the ability in future versions of this website to go back in time to view previous seasons.

Essentially, by storing the data I open the possibilities of what I can create from this project.

Iterations + Changes

Most of my changes are related to cutting scope on my project for what could be completed by this deadline. It was more challenging than I anticipated to bring this project to life. A key interaction on this site that is missing is the [Download] button which would have allowed visitors to download the visualization as a PNG. I still intend to implement this but not for this deadline. I also transitioned this project to be a single page application, since that works best with React.

Challenges

Honestly, it was very difficult for me to implement this project. I basically had to learn every piece from scratch. I have never used any of the tools I mentioned above. I spent 70% of this project learning how to use React, P5, Firebase, and webhooks. I had to watch a lot of tutorials and read a lot of documentation.