

Christopher Cenci

Proposal

Project Description

The project I intend to build will incorporate programming from the web and the Arduino as a tool to collect data. My project currently incorporates a GPS location sensor, a temperature, photocell and a heartbeat sensor to collect user data to visualize in an artistic form on a web page. The current plan is to manipulate that data to create various colored lines. Each transformation and color will represent a different type of data inputted. Users can then view the lines while being able to click on them and view the raw data. All data will be transmitted over a Wi-Fi network.

My project will permeate, yet not actively affect the user's everyday life. My project will be a wearable which can be worn on the user's wrist, it will accompany them throughout their everyday life and will only function when Wi-Fi is enabled. The project is made for anyone who would like to wear the object, there is no intended user for this as the wearable collects anyone's data. The user's data will be used in a generative art visualization program; therefore, all users are seen as data.

The relationship I wish to create between the user and object is purely a user-data relationship. The object will interact with every user as a simple data inputting tool and not an actual sentient being, its sole purpose is to extract their data. The project will be important for others as it will demonstrate a visualization of their data, as well as others. Through the colored data, we can see certain aspects of one's life, why their heartrate went up at this moment, one

day it took them five minutes to walk a certain distance, today it took twenty, this data will be visualized onto the web page and certain patterns or outliers may be noted on certain days.

This object is not helping nor challenging its user, but the object is creating certain inferences with each user. By viewing the data submitted by the users, we can infer certain instances of their daily routines, by viewing such data, the viewers may be able to view certain sigils of distress in their data, has their heartrate gone up in a certain area? Or passing a group of people at night? We can view if they started walking faster than normal by seeing their average distance walked in a moment and compare it with another moment.

My project is attempting to project the idea of data being turned into art. The intent of this project is to demonstrate how data can be turned into variables, and these variables into art. Statistics are generally very monotone and provide a bland way of demonstrating data, this object attempts to add a creative concept to bland data.

Similar Projects

Art Made of Storms

“Artist Nathalie Miebach takes weather data from massive storms and turns it into complex sculptures that embody the forces of nature and time. These sculptures then become musical scores for a string quartet to play.”

The project “Art Made of Storms” by Natalie Miebach was created to record the interactions of barometric pressure, wind and temperature readings during the hurricane Noel in 2007. The art

piece was mainly visual and auditory as it was a physical sculpture, every aspect of the sculpture can be read as a music note. For that project, Natalie used information from the web, satellite images, weather data from weather station and offshore buoys to compile her data into numbers. From those numbers she translates them to vertical and horizontal elements which over time create form. She explains that in her artwork, every bead and string represent a weather element, and vertical elements also factor in a specific hour of the day. Natalie demonstrates that all the factors within her project are simply numbers, a time cycle, temperature range, water temperature, air temperature, all this data from a natural system has been translated into numbers, visualized into a sculpture then created into an auditory sculpture. The usage of music through her sculpture is done by musicians, where, Natalie assembles the music interpreted from her data to a musical score for musicians to play.

Flight Patterns by Aaron Koblin

Aaron Koblin called Flight Patterns is an artwork which visualizes airplane traffic over North America for a 24-hour period. Koblin describes the flight patterns as they start the day, to where they end, the visualization starts with a fade to black which represents the sleeping patterns. This is followed by a West coast planes moving across, then east coast, followed by European flights. The flights are visualized through a small light where each represents a plane and their trajectory. At the peak, 19000 airplanes were recorded in the sky at once over North America. Koblin then color codes the data by type, where it highlights the diverse aircrafts in the sky. Different colors may represent altitudes, plane models and other factors used in the data. Koblin also uses the airports in his data, where the user can see the different patterns and types of

traffic at various airports. Using that data, Koblin created various color-coded artworks which took the data from the planes to create different types of images. Depending on the variables he inputted, the colors of the image would change. In Koblin's data, the user can pull out the data that they want and create a visualization based on those parameters set.

Manhattan: A Tale of Two Population Extremes – Justin Fung

This map provides a data visualization of how Manhattan's population is distributed hour by hour. The project brings into question the importance of urban planning, public safety and geographic location. Through the interactive map, the user can view the points of population density based on every day, every hour of the city. Through this visualization, the user can see where the population density spikes, the day and the time. "The population estimates are the result of a combination of US Census data and a geographic dispersion of calculated net inflows and outflows from subway stations, normalized to match population daytime and nighttime estimates provided by a study from NYU Wagner." The statistics show that Manhattan has a population of 1.6 million, however during a typical work day, the amount of people being in Manhattan rises to four million during the day and two million at night, the surplus at night may represent workers and visitors. The visualization shows that, on average, around two pm on Wednesdays, Manhattan reaches its peak population density, with a density of four million. The districts south of 59th street alone contain around 2.7 million people at peak time. Finally, Midtown and the financial district's population density increase by 4X and 10X the regular population residency during the day. Through the data of population location a visualized map

can but into perspective how many people actually populate the streets of Manhattan at any time.

My Project

The three projects which were mentioned all contain elements that I would incorporate in my project. These projects all take data of either their surroundings or people, transform them into numbers and transmit them into a visual aesthetic. These projects, similar to my intentions, provide a creative way to view data other than statistics and graphs. On the other hand, the artworks mentioned all share one same characteristic that mine does not. The data which is inputted into the projects are static, there is no change or growth over time, the data is taken once and used to create a visual which does not change despite containing info from users or ever occurring instances. The scope of my project is to incorporate a way to always collect user data over Wi-Fi and transmit that to a web page to create a visualization that is ever changing. The visualized work will always be different depending on the number of users transmitting data at any given moment. Furthermore, two of these projects use weather and people, which I also intend to use, however, my usage of weather corresponds to the user. The sensors will pick up the temperature of the person and if they are in a light or dark area. On top of that, the user data used in the project above only accounted for the persons location at a set time within a set week and was accounted for by statistics. My project will constantly track the user at any given moment (on Wi-Fi) and utilize that data not just for location but for location and distance traveled.

Breakdown of Intention and Schedule

This part is made to visualize the components needed to create the hardware part and programming libraries or code.

Hardware

Arduino

Wearable (Bracelet or wristband)

Wi-Fi module (ESP8285)

Heartrate monitor (SEN0203)

Temperature sensor (SENS-74)

Light controlled photocell

GPS Module (ARD-GPS-01)

Software

Arduino webduino library – Web server library

CMD-Messenger Library – Transmit messages to and from the Arduino

D3.js – Data visualization tool

***This is a rough idea of what I need, more will be added or removed.**

Schedule

October 31st – Proposal

1st, 2nd -Research all libraries needed

Research all parts needed

3rd – Research how to combine the parts and library

4th- Research parts needed to assemble one sensor, then multiple. Research on how to assemble.

5th, 6th – Purchase parts, start assembly to get one sensor working

Main focus is to have everything ready for assembly within a week, so that way I will have the next week to work solely on the project without needing to purchase or find anything else last minute.

7th – 13th- Program and build.

14th – Have an object that can transmit at least one of the sensors data to the screen (not necessarily visual but numbers).