Evaluation Assignment 5

Heuristic Evaluation

Yogi Koteru

Team 6

Feb-13-2023

Undergrad Design:

The goal of the undergrad student's application is to develop a web application that helps students and teachers from high school and middle school to display the results using micro bit which is connected via Bluetooth. The results are shown in the dynamic graph which will display the live data to the user. When looking at the graph a user will be able to zoom in, or out, to closely observe the data points. All the information collected by the micro: bits can be downloaded by the user.

When a user collects the data in his\her micro: bit after executing the experiment they can store the results in the micro: bit. The application undergrads developing helps the students to connect their micro: bit connect to web using Bluetooth, here the data is displayed in graph format

A sensor will be connected to micro: bit. The micro: bit then record the data and send it off to the web application via a Bluetooth connection. After receiving the data from the micro: bit, the web application will continuously plot points in the form of a line graph. Once the data points have been plotted users can zoom in on points or filter data sets to match their needs. Data collected during usage will also be stored within the application and can be downloaded once the user ends the data stream.

App data from the micro: bit will be streamed in as either floats or integers in the form of key value pairs.

User Interface Domain:

For this application, the domain will be an application for streaming the data. The application will be used as web application. The application uses a graphical user interface that contains a graph as well as buttons and toggles to perform the user's desired actions.

This application comes under data visualization domain.

Heuristic Usability Principles:

1. Visibility of data: When the micro: bit is connected the data being displayed is clearly visible and easily distinguishable.

2. Simple Design: The data that users are attempting to view are simple experiment results, so the design should be minimalistic in nature. All the functionalities should be there but nothing more.

3. Contextual information: Provide context for the data being displayed, such as units of measurement or time frame.

4. Colour Usage: Use colours effectively for graph line, when multiple micro: bits are connected display each micro: bit results in different colours to represent in the graph.

5. Data mapping: As the results that are displayed is live data ensuring that the graph accurately represents the data being displayed.

6. Gridlines: Using gridlines to provide a clear visual reference and improve readability.

7. Interactivity: The data that is being displayed will be coming from multiple micro: bits to providing zooming in and out on specific parts of the data is useful.

8. Legend: Providing legend will help users to understand the meaning of different data elements in the graph.

9. Data encoding: The graph that users view should be appropriate that means bar height, line thickness, or point size, to accurately represent the values being displayed.

Potential Usability Problems:

- Graphs can sometimes be too complex or different to interpret, especially when they contain multiple variables, non-standard axes, or use abstract representation
- When we connect to multiple micro: bits much data displayed in a single graph can be overwhelming and confusing to the user.
- Graphs that lack context or relevant information about the data being represented can be difficult for the user to understand or interpret.
- Certain types of data may not be well-suited for certain types of visualizations, which can lead to usability problems.
- Graphs that are inaccurate, misleading, or misrepresent data can be detrimental to the understanding and decision-making process.

Critical Usability Concerns:

- One of the major concerns I have is that when user wants to download the graph, as the graph displaying will be live data, can the user download using the time frames.
- Another concern is when we connect x micro: bits via Bluetooth which makes the application overload and can show effect on the live graphs.
- Data visualization must be accessible to all users, including those with disabilities. This includes ensuring that the visualizations are compatible with assistive technologies and can be viewed on various devices.
- The main purpose of using graphs in this application is to present complex information in a clear and simple manner. Graphs that are too complex or cluttered can be hinder the user's understanding of the data.