

# **CS5760: HCI & Usability Test**

## **Evaluation Assignment 2**

### ***Heuristic Evaluation***

#### **STAFF GAUGE (PROGRAMMING STAFF)**

**(Project Team # 4)**

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## **1. Undergrad design description:**

The Staff Gauge application is a mobile web app in which citizens or scientists through their voluntary participation will upload hydrology data (water gauge readings, location, and timestamp) through a text form or by uploading picture of the predefined gauge. The app will also present the user with the data they submitted that is overlaid with historical data for that same location. The location of the gauge is predefined and can be searched through the app. The user of this app can be any citizen, for an example a middle school Science teacher currently doing a unit on water levels with her students or a Hydrologist/Scientist who will be using the database in his lab to use data created by the other users.

## **2. Identification of the UI domain:**

Mobile web application – website to upload hydrology data.

## **3. List of heuristic usability principles for the design's UI domain:**

Heuristic principles for the Programming Staff application design is described based on some of Jakob Nielsen's usability heuristics:

**Sufficient relevant information design:** The display should be designed in a way to provide sufficient amount of relevant information so that user can understand how to start with the application quickly and without any confusion. At the same time it should not overwhelm the user with too many information that makes the system less useful and more error prone.

**Help document and learnability:** Novice user with less hydrological knowledge should be able to read and understand the system through a help document provided in the system. If this document is not provided, the interfaces should be so designed that user can naturally learn with the flow of the design.

**Match between system and real world:** The contents and wordings of the system should be comprehensible to the user. The language should be either common to all the users, irrespective of their location or should have options to choose a language. Easy synonyms for the Hydrological terms should be used so that all target users can understand.

**Efficiency of use:** The design should not have any complex or redundant step/field that will make the system slower than it should be.

**Aesthetic and minimalistic design:** The display should be pleasing when viewed in presence of sunlight for example. Also, as per the scientist's requirement it should be designed with the least amount of steps, removing any unnecessary and irrelevant step/fields/information.

**Visibility of state:** An ambient display should make the states of the system noticeable. E.g. the transition from homepage to the location search page should be easily distinguishable. The fonts and button sizes should be visible enough in the small mobile screen.

**Visibility of system status:** The most important system status is when the user completes submission and gets statistical feedback. *The system should always keep users informed about what is going on, through appropriate feedback within the appropriate time.* A steps completion status bar can be added.

**Error prevention through message display:** For any wrong input by the user, the system should display an error message before proceeding to the next stage to prevent error travelling all the till the end. The message should be in plain English identifying the error and may be suggesting to correct it.

**User control and freedom:** User mistakes should be redeemable. There should be a back/cancel button in every step to go back to the previous step so that the user has the control of correcting the mistake. There should also be an option for emergency exit from the whole system too.

**Recognition rather than recall:** Instruction/label for every step/input field should be displayed to recognize input type. The predefined locations should be loaded in the system so that user does not need to memorize the exact location and hence provide accurate information that are recognizable by the system.

**Consistency and standards:** The app should be consistent about using the words in different stages while doing the same task. A standard should be maintained throughout the system, otherwise, users would be wondering with the meanings and get confused on simple issues.

#### **4. List of usability problems generated from the heuristic evaluation**

- I. No help document or guiding information/introduction for using the app in the beginning-this violates the **sufficient information** design principle.
- II. The statistical display does not highlight user's contribution-this violates the **visibility** principle
- III. Confirmation of input in every single step is time consuming-this violates the **efficiency** principle.
- IV. Though there are next buttons but there is no back button to go to the previous page-this violates the **control** principle.
- V. Does not identify error made by user input; the user can only think of errors he/she did. No automatic error prevention action like message display for the user to identify the error-this violates the **error prevention** principle.

- VI. Next, Submit and Save buttons do the same thing in the design. But they are used in different names in various stages while all of which is doing more or less the same thing; can be narrowed down to at most two variations-this violates the **consistency** principle.

## **5. Identification of critical usability concerns illustrated with a short story**

Sara is a middle school student who came to a water gauge measuring station for her school project. She opens her Tab's web browser to get the staff gauge app. This is the first time she is using this web application. Opening the browser, she searches for the location of the station.

Hits the search (It says 'Label' in the presentation slide of the team) button and is directed to another page which does not have a title or any short description of what to do next. There are only two buttons of 'Take photo' and 'Enter Data manually'. Assuming that she might be entering some manual data, she hits on Enter data manually.

The next page has a text field which says 'Measurement in Meters'. She unattentively inputs the measurement in feet and inches with characters (like she measures her own height at home!) and hits the Next button. The app does not identify the wrong input data type (feet'inches'' character).

A confirmation message pops out, which she hits OK. A new page with statistical report is displayed. There are conventions of the report and other readings of the same location in a graphical view, while reading which she realizes that she had entered the gauge measurement in inches instead of meters. She cannot see how she can go back to edit her reading. Hovering around the display for a while she is starting to get annoyed thinking that there is no other way than starting the whole process from the beginning to undo the simple mistake. She wishes there was a back button or there should have been a warning message identifying her mistake in the first place.

Doing the whole process again she is now again at the statistical report page. She cannot see where her reading lies in the graph. She is kind of disappointed that her efforts were recognized.

There is another submit button here. She does not know if she is submitting the right thing or should she even be submitting other's reading! Still hits submit just to finish the assignment but there is still another confirmation page just like before, which she without reading hits OK assuming it's the same message just like before. Sara is glad that at least she is over with the assignment!