

# Heuristic Evaluation

CS5760

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Group 5: iPatts

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## **1. iPatts (UI domain)**

The undergraduate students are developing an application called iPatts to facilitate data collection for Dr. Zhang who is doing research on planning transportation infrastructure systems. The primary users of this application are students. The application will be designed to be utilized on smart phones; thus, users can easily track, record, and document their travel events. Each user is expected to log in, by using his/her MTU account in this case, so they can be recognized by the scientist in the data output. Users who do not have an account may create one by entering required information such as name, gender, age, MTU email address, etc. It is worth mentioning that, since the application will be used by Dr. Zhang's students, users who do not have an MTU email, might not be able to create an account. Users should log every trip by creating a new log and entering some information such as origin, destination, dates, and time of the trip. GPS may also be utilized to specify the user's trip origin and/or destination. In addition, purpose (e.g. work trip, school trip, etc.) and mode (e.g. car, bicycle, etc.) of each trip can be specified. Users can view the added trips, if any, which can be edited if users accidentally entered incorrect information. The list of the added trips can be observed by date.

Besides, the scientist uses the application to observe and obtain the users' records. The scientist may filter the data output by a specific individual or all the records that have been logged by students in the class. Note that, the students' records can be distinguished by a unique ID, which is their email address in this case.

## 2. Heuristic Usability Principles

- Match between system and the real world

The UI should be friendly, easy to understand for any types of users. Although a guide should be provided for the users about how to use the app., they should be able to work with the app with no difficulties.

- Visibility of system status

Through an appropriate feedback, users should be notified of their actions.

- Consistency and standards

The words, icons, situations, buttons, etc. that are utilized to represent a specific meaning, must remain the same through the entire application.

- Error prevention

Conditions that may cause error should be recognized and addressed properly. Indeed, some of those conditions might be easily eliminated while others may need to be prevented by keeping the users informed about the proper utilization of the app.

- Flexibility and efficiency of use

Accelerators – unseen by the novice user – may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.

- Aesthetic and minimalistic design

The irrelevant information should be eliminated such that users merely observe meaningful/necessary records.

- Help users recognize, diagnose, and recover from errors

Users should be provided with an easy-to-follow guide that assists them to deal with errors.

- Help and documentation

As mentioned above, users should be able to work with the app even without documentation.

However, a brief helpful guide should be provided for users to help them how to use the app properly.

- User control and freedom

Users should be able to leave the current screen (e.g. back to home screen) at any time and from any page. Also, users should be provided with the ability to edit and delete the added entries.

- Easy transition to more in-depth information

Information should be easily and quickly accessible to the users.

### **3. Usability problems and suggestions**

- The app's home screen provides "learn more". Does this option provide users with the purpose of the app.? will it guide users about how to use the app.? If it will not assist the users on how to use the app., it violates "help and documentation" principle.
- There is no option that allows users to retrieve their username/password. Although the users will use their MTU email, an option like "forget username/password" might be necessary if the app requires users to create a username and password. Indeed, if the users can only login to the app. with their MTU account, why should they create an account at the first place? This may violate the "flexibility and efficiency of use" principle.

- Does user require to enter all the requested information when creating an account? It has been shown in the walkthrough that if a user enters an email address that is not an MTU email, user receives an error suggesting to use an MTU email. What will happen if users ignore entering one or some of the asked information? “Help users recognize, diagnose, and recover from errors” principle is satisfied if the users are provided with proper guide to deal with errors. The developers are suggested to specify the required information with a special symbol (e.g. \*) to prevent such errors.
- What will happen if users cannot use GPS? Will there be enough information to guide users about how and when they can use GPS?
- Users can edit the added trip if they accidentally enter incorrect information. What about the case when a user mistakenly adds a trip and wants to delete it? Users should be able to do so otherwise it violates “user control and freedom” principle.
- Will users be informed about their added/edited trips? Indeed, users can be notified of their actions. This satisfies the “visibility of system status”.
- Users can see their trip events by day. This allows them to access to their travel history in a certain date; however, the entries increase with the passage of time. Users should be able to access to their desired travel records as easy and quickly as possible. Developers are suggested to use “progressive disclosure controls” so that users can show/hide entries by day, weeks or even month depends on the number of entries. This satisfies the “easy transition to more in-depth information” principle.
- Thus far, there is an error prevention mechanism built into the app such that if a user enters any email addresses other than MTU email, the user receives an error. There could be more

error mechanisms that, for instance stop users from entering trips with a distance less than  $D_{min}$ .

#### **4. Critical usability concerns**

- Beside editing, users should be able to delete their mistakenly added trips. Even though added trips can be used for user's next trip, the scientist may need to observe the current users' travel records.
- Number of travel events continuously increases which, makes it difficult for the users to access to the trips in a specific day. By using progressive disclosure controls, users are able to find a desired record in a timely manner.
- There should be an option in the login screen that enables user to retrieve his/her password. Otherwise, user cannot log in to the app.

#### **5. critical usability concerns: Scenario**

- a) There are 50 Students in Dr. Zhang's Spring class. For their first assignment, student should use iPatts for 6 consecutive weeks. Students record their travel events as instructed. The scientist also uses the app. to observe and obtain the students' data output. After collecting the output, the scientist observes that some students have added trips with no information.
- b) James is a Ph.D. students and researcher in Dr. Zhang's transportation class. He is working on finding the best possible path from a source to a destination. He is given an assignment in the class that he needs to tracks and records his travel events for a period of time. Because of his research interests he carefully observes the records in iPatts. The number of entries

dramatically increases with the passage of time, making it difficult to re-observe the past trips even if he knows the date.

- c) James is a Ph.D. students and researcher in Dr. Zhang's transportation class. He should track and record all his trips for the entire summer semester. He creates an account with his MTU email address and logs in to the app. However, after he logs out, he forgets his password and cannot find a way to log in or retrieve his password.