

Michigan Tech University

# Heuristic Evaluation

CS5760 Human-Computer Interactions & Usability

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2016-2-15

Dead Bird Group

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## **1. Short description of the undergrad design**

This application would function to allow users to document and identify bird mortality events. The application is broken down into three main parts, the data entry which is done on the main app page itself, the database which will sit on the back end somewhere and store all gathered data, and the data view which will allow scientists who are interested in this information to examine it.

Our app has a data entry portion, which is comprised of the main app web page itself. This will be the part of our app that is seen and used by end users. This will include the part of the app which takes pictures of dead birds/roadkill, collects GPS data, weather data, speculative cause of death, and speculative species of dead animal. This part of the app will also interface with the database and send all the information that the user enters into to the database.

The database part of our app is the part that will store all of the information gathered from the data entry part of our application and facilitate its connection to the data view part of our application.

The data view is the part of our application that will be used by scientists. It will provide various ways to view the gathered data, including the ability to directly display the pictures that have been collected, as well as display GPS information conveniently in the form of heatmaps. It will also allow scientists to access all other gathered data in the hopes of extrapolating something useful from it.

## **2. Identification of the UI domain and short description**

The dead bird app is a web-based mobile application and belongs to mobile database and logger.

For primary users, their main task is collecting data through mobile devices and submitting to the system. All the information will be stored in a public database for the future analysis. So users need to login to the system to view the data table through desktop version.

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

### **UI domain**

References from <http://cs4760.csl.mtu.edu/2016/resources/HE2.pdf> and <https://www.nngroup.com/articles/ten-usability-heuristics/>

- **Visibility of system status**

The system should always keep users informed about what is going on,

through appropriate feedback within reasonable time.

- **Match between system and the real world**

The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.

- **User control and freedom**

Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.

- **Consistency and standards**

Users should not have to wonder whether different words, situations, or actions mean the same thing.

- **Error prevention**

Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.

- **Recognition rather than recall**

Minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.

- **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 minimalist design**

Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.

- **Help users recognize, diagnose, and recover from errors**

Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.

- **Help and documentation**

Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.

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

Submit Form:

1. What if users upload a picture that is not related to the dead bird or the picture's quality (size \ pixel) is not suitable for analyzing?
2. Submission feedback. Users may upload more than one pictures in one time, there should be a dialog message to confirm if it's successful.
3. Users don't need to add timestamp manually, it can be accomplished when they upload pictures in the first time
4. There is no "back" button or "picture change" function in the submit form, so what if users uploaded a wrong picture and want to edit it again?

Design:

1. The background color is black which is not suitable in sunlight mode.

Heatmap:

1. Default should be standard map with points, and can toggle to heatmap
2. Heatmap needs a lot of data to be effective: switchable views; heatmap scale should be modified to reflect little data
3. Color-level difference cannot cover the details since the total amount of dead bird may not be large but dead cases are centralized in some seasons. More Information: when users click certain area, exact number should be displayed.

Login:

1. The purpose of login function should be identified exactly. Could users track their past submission?
2. The permission for primary users and secondary users is different since the later need to check the old data and make a final confirmation. So what if

some primary users edit the submission after scientist correcting the data?

Data View Table:

1. Lack of search function, the data should be more visualized. So what if users want to query certain species of dead bird just based on the table?
2. Lack of category function, the data displayed should sorted by location, species, time period, etc.
3. Diagrams and graph for data analysis are necessary. Otherwise it's difficult for users to get more information just based on the table.

## **5. Critical Usability Concerns**

1. Data View Table: Diagrams and graph for data analysis are necessary. Otherwise it's difficult for users to get more information just based on the table.
2. Lack of search function, lack of category function. The data should be more visualized. So what if users want to query certain species of dead bird just based on the table?
3. There is no "back" button or "picture change" function in the submit form, so what if users uploaded a wrong picture and want to edit it again?

## **6. Critical usability based on the short story**

Helen Swift, a 23-year-old graduate student who studies in Environmental Biology department, has used the dead bird app for two weeks. She submitted several reports to the system when she is outside. Frequently, dead birds could be seen on the road nearby and cleaners have to set up Notice: Be careful, drive slowly for birds. Then Helen wants to collect enough data to make analysis through this app for one related project.

One day, she walked along with the river side and found a dead bird, so she launched this application and took a picture. But she found the picture is a little vague after uploading. Maybe there were beads of moisture on the phone camera due to the wet weather. So she wanted to change the picture but didn't found any "back", and then she clicked the picture and there's no "change" message to pop out. So she had to come back to homepage and upload photos again.

Later, she logins from desktop version to collect the data in this city. But she can only get a total data table including all the cases within the country and results are sorted by time. Plus, she can't sort the data by her standard. Then, to do further research, she need to download all the data and make graph to display the analysis manually.