Usability Evaluation Report

Part 1. Evaluating the website

i) Investigating the functionality of the website:

Homepage Functionalities:

- Clicking on the “Identify New Zealand animals” allows users to navigate back to the homepage of this project so users can get back to where they started in case they do get lost using the system.
- Learn more and About links / buttons both navigate to the “About” page, so users can gain more information about the project.
- Get Started / Classify links allows users to start identifying and classifying New Zealand animals through sets of photos presented.
- Join in leads users to a forum and discussion section of the project webpage.
- To gain more information on the kind of statistics that the project has helped collect, users can go to the “Identify New Zealand Animals Statistics page”.

About Page Functionalities:

- Under the ‘About’ section users may learn more about the ‘Research’ and purpose of the Animal Identification project, get to know the team, with links to the profile of each team member, as well as lead them to a section of Frequently Asked Questions, ‘FAQs’.

Classify Page Functionalities:

- Project Tutorial Modal - get an overview of the project and understand how the identification process works.
- Arrows on modal allow users to switch between tutorial stages.
- Users can “Continue” through the tutorial using the button, moving from one stage to another.
- “Let’s go” buttons allow users to start the identification process after having finished going through the tutorial.
- Tutorial links to FAQs section on it’s last modal page.
- Play sequence - flip through the 3 photo set four times in a row to help users identify the mammal present.
- Pause sequence - stop the image flipping process so users can stop and focus on identifying animals.

- The three circles under the image tell users the image status, i.e. the image they are currently viewing, as well as allows switching between images.
- Image inverter - gives users another viewing angle, so the animal spotting & identification process may be made easier.
- Metadata - more detailed information provided about each of the images.
- Sign in or register onto the website to participate in discussions and create a profile to be credited for the work the user completes.
- Switching between light and dark website background themes, giving users freedom to choose between what aesthetically pleases them.
- Image panning to move around and across the current photo, particularly when zoomed in.
- Zoom in - enlarge image size to see small details more clearly when identifying mammals.
- Zoom out - minimising or reducing image size from zoomed in state.
- Rotate image - changing the image angles, with every click rotating the image to the right at 90 degrees.
- Reset option to switch image to default state, reverting any zoom, pan, or rotate functions.
- Animal size selection so users may find it easier to find and identify mammals based on their sizing characteristics - big, medium, small, with a clear options button as well.
- Clear filters function only gets activated when any sizing selections have been made, and reverts all changes.
- Removing identified animal tags at the bottom of the image, so identifications can be altered in case any user errors had been made.
- Mammal selection options with icons for each mammal - clicking on any one comes up with several images of that particular mammal, an image switching function (four circles under the images), identification confirmation buttons (‘Cancel’ & ‘Identify’) and a check to see how confident the user is with their identification (‘Confident’ & ‘Unsure’).
- A “Nothing here” option gives users the ability to choose a mammal that isn’t provided in the list or confirm that no mammal can be seen or identified in the image.
- Done & Talk allows users to confirm image identification and discuss selections made with other users of the system.
- A current status showing the number of animal options being displayed out of the total available - “Showing 13 of 13”.
- “Field Guide” side tab that slides open from the right when clicked, giving users more information and descriptions of each of the animals that can possibly be identified, along with an icon that represents it and multiple images of each. Users are also able to undo their action of selecting the animal by using the back arrow button, navigating back to the list of animals in the field guide.

ii) Perform a heuristic evaluation using Nielsen's usability heuristics:

Performing a heuristic evaluation of the project website against Nielsen's 10 usability heuristics, a number of usability issues have been listed along with the heuristics each of them violated:

1. When classifying images, there is no feedback provided to users on the number of images already classified, so they don't know where they are at.
   Also, there is no identification status on whether the animals users have identified have really entered and been stored into the system. There is no success message, which creates ambiguity. When submitting or clicking on the Done button, the only barely visible response that can be seen is the little 'You should sign in!' statement wobbling. This makes the users feel like they must sign in or register for their work to contribute to this project. Many may feel hesitant to have to create another account and provide their details, and so they eventually leave this website, not contributing any further.

    a. Violates the visibility of system status heuristic.

2. The zoom functionality when classifying images, gives users no zoom levels. It's a convention users would assume every zoom function to have. They can continuously keep zooming in to the smallest of pixels in the image. Users tend to get lost in this process as there's no visibility of system status. Zooming out to the level they want isn't possible, which means accelerators have not been incorporated for users.

    a. Violates the visibility of system status heuristic.
    b. Violates the flexibility and efficiency of use heuristic.
    c. Violates the consistency and standards heuristic.

3. Size functionality - The tooltips used for each of the size options just repeats itself and doesn't give any clear definition or explain what the terms mean to the user. Users are unsure of whether size refers to the size of the options or the size of the animals. Not only does the system use terms users don't understand but also violates the recognition rather than recall heuristic as well. Everytime the user has to use the size functionality, they have to try and remember what the term meant.

    a. Violates the match between system and the real world heuristic.
    b. Violates the recognition rather than recall heuristic.

4. Reset button - The tooltip for the reset button indicates that it only resets zoom levels. However, when the image is rotated or panned as well, this button reverts all changes. Users may not want such an action performed, as they may only want to zoom out but keep the rotation. So, what the button states isn't what it does, hence isn't a match between system and the real world. Also, since the reset button looks like a refresh button, users get confused as to what it does and have to try and remember, violating the recognition rather than recall heuristic.

    a. Violates the match between system and the real world heuristic.
    b. Violates the recognition rather than recall heuristic.

5. Annotate arrow - The selecting arrow button, with its tooltip indicating it can annotate, a user would assume it'd be possible to edit images, however it doesn't do so. Hence, there is no match between the system and the real world. Also, since it doesn't do anything or have any real function, it is irrelevant and violates the minimalist aspect of good usability.

    a. Violates the match between system and the real world heuristic.
    b. Violates the aesthetic and minimalist design heuristic.

6. The circles used to switch between images - Normally when there's a set of images being shown on a website, one can toggle between them using a carousel with arrows navigating backwards and forwards. As something that users would generally expect not being present, the consistency and standards heuristic is violated. The sizing of the circles are small, making it hard for users to switch between images manually. This hinders the heuristic of flexibility and efficiency of use, as users are not even able to use it properly. Moreover, image changing options should be more visible, where in this case it isn't and so users have to recall rather than recognise.

    a. Violates the consistency and standards heuristic.
    b. Violates the recognition rather than recall heuristic.
    c. Violates the flexibility and efficiency of use heuristic.

7. Once a user has identified and confirmed the image classification, they can't go back to check, either to re-identify the animals in case they made a mistake or possibly identifying more realising they missed something. This gives users no control and freedom, as there are no undo and redo options.

    a. Violates the user control and freedom heuristic.

8. Project tutorial modal - When trying to exit the tutorial modal window, clicking anywhere else on the page or using the ‘Esc’ key doesn’t allow a user to exit the window. Not only does it keep away from assisting an expert user who uses keyboard shortcuts, but also doesn’t follow platform conventions. The only option a user has is to click on the cross, which would just take extra time rather than help users perform actions faster.

    a. Violates the consistency and standards heuristic.
    b. Violates the flexibility and efficiency of use heuristic.

9. If an image has already been classified with an animal, clicking the “Nothing here” tag undos identified tags. As this may be an error made by the user indicating they have identified an image and can’t find anything else in the options, their previous selections should not be nullified on a click of a single button. There should be an error prevention confirmation pop up and the “Nothing here” option shouldn’t even be available.

    a. Violates the error prevention heuristic.

10. Panning possible when image in normal / no-zoom mode - As it not only violates aesthetics by showing a black no-image section when an image is panned, but such an action should be prevented as it isn’t a norm.

    a. Violates the error prevention heuristic.

11. The blue banner on the ‘Classify’ page has nothing to do with actually identifying animals and is only ignored by the general user when on the classify page. It is possibly only relevant to the homepage when a user first lands on the website.

    a. Violates the aesthetic and minimalist design heuristic.

12. FAQ’s section not easily visible and accessible on the classify page. As is it gives relevant information regarding animal identification, such info should be easy to find.

    a. Violates the help and documentation heuristic.

Part 2: Usability test plan

1. Product under test:

The 'Identify New Zealand Animals' website is one of the projects in the Zooniverse website. It uses crowd sourced science, which has been a popular and successful mechanism to bring significant human intelligence to various (mostly classification) problems.

It's core functionality is to get users to identify mammals which are present in photos from remotely triggered cameras.

2. Test objectives:

The main purpose and objectives of conducting this usability test is to determine design inconsistencies and usability issues users may have with the website interface. We will test whether users have trouble distinguishing buttons due to the colour scheming, if they can easily navigate to important information on the website, the difficulties they have when trying to classify images, selection errors due to ambiguities in function labeling, and any hindrances they may encounter during the process. User satisfaction levels will also be evaluated.

3. Participants required:

To emphasize on quality rather than quantity, five participants will be chosen for this usability test, each representing various attributes. As shown through research, testing with five people allows almost as many usability problems to be found as when using more participants. Also, the maximum benefit-cost ratio is achieved.

The participants will include a:

1. Researcher in the field of animal identification - since they would be one of the main audiences of this website.
2. UI / UX Designer - a source of specialist review and suggestions on usability.
3. Computer Science Student - a user with high computer literacy and someone who'd represent an expert website user, very important in testing aspects like flexibility and efficiency, consistency and standards, and match between system and the real world.

4. Colour blind user - they would be key to understanding whether the colour schemes used causes any hindrances while using the website.
5. Normal middle aged person with a not-so-frequent technology usage pattern - such a participant would represent a novice user, as well as someone who has no background of the website topic.

4. Tasks to undertake:

To test for the various objectives of this usability study, a number of tasks will be asked of the user to perform. To test navigation and presentation errors, participants will be asked to:

- Navigate to the 'Identify New Zealand Animals FAQs' page and not the main Zooniverse website's FAQs section. Their starting point will be the 'Classify' page.
- Classify 5 sets of three photos; so user's animal identification process may be understood.
- Try zoom in, rotate and pan images, and then reset just the zoom levels of the image (not the rotation or panning).
- Just by looking at the website and not interacting with it, identify which parts of the Classify page look like clickable buttons.
- Manually switch between the main animal images as fast as they can for about 10 seconds. This will test for user error frequency in button selection.
- Identify an animal in an image, and then try to undo your selection. This will help in understanding if what users expect to see and where, is what they really do come across.

5. Data collection:

The data to be collected as part of this usability test would include both qualitative and quantitative metrics.

- Participants will be given a background questionnaire to fill up before they start the test, so we're able to understand our user audience better. It will include questions on their age, educational background, device usage patterns, any illnesses or disabilities we should be aware of, as well as their interests in wildlife and animal research.

- Eye tracking equipment will be setup before users begin their tasks; this would provide very useful quantitative data, giving us user heatmaps, their eye

navigation patterns, aspects of the website that attracted them, as well as their navigation speed helping us understand their ease of use of the website. In addition to helping decrease the load off the person conducting the test, eye tracking would give us unbiased and highly accurate data.

- Moreover, after each task scenario is completed, their will be ease and satisfaction questions about the task, as well as how easy it was for them to get an understanding of what the website does at the end.

- Other quantitative metrics would include measuring successful completion rates, error rates and the time taken to complete tasks.

6. Test procedure:

As the participant enters the room / lab where the usability test will be conducted, the test researcher introduces themselves and gives the participant an overview of the study. Consents are taken and the participant is made aware that their actions will be recorded. The participant is seated in front of a computer with the eye tracker mounted onto the screen ready for data collection, and the video camera in place. The user is given the background questionnaire to complete before the tasks are to begin. The user is given about a minute to go over the website, just to have an understanding and get a feel for it. As the tasks begin, 10 minutes are given to each scenario, which includes explaining the situation and task to the user. The user is told to think aloud, explaining the steps they take throughout the process, what they expected to see vs what they actually did. They are asked to give an overview of their general outlook of the website as well, and if the colour scheming used affected the actions they took. The researcher records the errors made, the time taken to complete the tasks, the routes users took to navigate and perform a task, and analysed how difficult the participant found performing each task. At the end of each scenario, the participants answer the task ease and satisfaction questions. They are also asked if they have any questions for the team conducting this study. Once all tasks are completed and everything is recorded, the participant is thanked, given vouchers acknowledging the time and effort they devoted to our study, and escorted out.

7. Analysis:

Analysing the data collected from eye tracking would be straightforward using the heatmaps it outputs, understanding the fixations, and following the saccades shown for each of the users' eye movements, showing navigation patterns. The time taken to complete each task, the error rates and completion success rates in percentages will be

collated. Their mean and standard deviation would be calculated, giving us a value averaged out between participants, as well as showing the variation between users. This would give an overview of how often and how hard the users found each of the tasks, with qualitative data collected supporting the numbers. User feedback would be used to understand their satisfaction and difficulty levels as well as website aestheticity reviews. These would be collected and placed under a scale from 1 to 10, 1 being least positive to 10 being very positive feedback. Hindrances and selection errors which were observed by the test researcher will be placed under similar heading groups and presented.

8. Results:

The results will be reported as tables, box and whisker plots, and heatmaps. It will evaluate the usability metrics against the pre-approved goals, subjective evaluations, and specific usability problems. All results will be used to improve upon the functionalities and if there's features redundant or not what users expected, they'll be altered to the way the participants recommended.