

Evaluation Assignment 2:

Heuristic Evaluation

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Development team:

Coffee

Application:

Roya Survey

Scientist:

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Application Idea:

The Roya Survey App seeks to provide feedback to scientists working with long-term climate data to generate models predicting levels of risk for infection of coffee farms by the coffee rust fungus in Mexico. The app will allow coffee farmers to register and then provide several photos and a personal estimation of the degree of coffee rust infection in their farms that will then be compared to existing model predictions to help refine them. In exchange, farms will be able to send additional photos of other pests and diseases in their farms and a request for help in identifying them and obtaining suitable control measures.

Scientist :

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Roya Application Design:

- The initial start up page of the Roya application will consist of the login and the register feature.
 - Any new user - who is the farmer in this case - will have to register to the Roya app first entering their e-mail, selecting a username, a password, phone number and the municipality they belong to.
 - Once the user registers for the first time, every time they can use their username and password they had selected to login to the Roya application.
- Once the farmer logs into the system, they get to see their personalized dashboard
 - The dashboard consists of nearby submissions - which displays the submissions made by other farmers around the same coffee farm.
 - The user can filter the submissions they can view - submissions made by them, submissions made by others, submissions made by everyone.
 - The farmer can view the posted submissions by clicking on the Post button link
 - To create a new post, the farmer has to click on the create new post button.
- When the farmer clicks on the post link, the view post page pops up. It has the following details:
 - The location map of the place where the submission was posted
 - The pictures of the infected coffee plants and leaves
 - The summary of the infection spotted and analysed
 - The severity of the infection based on a color coded scale from low to high with various checkpoints
 - Other comments of the post
- If the farmer wants to create a new post and clicks on the create post page, he will see the following options:
 - To add a photo of the infected coffee leaves
 - To select the severity of the infection through color coded scale with green being least infected and red being the most infected. The increase in the severity will be shown using smaller checkpoints from which the farmer can select whichever he feels is appropriate for the infection found.
 - The farmer then can enter a summary of what the infection looks like according to his observation.
 - The farmer can specify if the infection is roya or not roya. This information need not be always correct but it can be changed later by the scientist

- Apart from this the scientist dashboard, he can see the postings submitted by the farmers in chronological order and also he can use the export data button to get the submitted data in the needed format.

UI Domain:

Roya is a mobile based online web application which is used to collect data from various locations. The application is to be used typically by farmers of the coffee farms especially in Mexico. The application's main use is to collect valid information regarding the wide spreading roya virus across the Mexican coffee farms. The farmers when they find infected coffee leaves, they need to take pictures of the infected plants and submit the data to the application's server which can be processed by the scientists researching on roya virus. Considering the location of the coffee farms and the potential of bad internet connection in these areas, the app needs to handle such situations carefully. The UI for such an application should be highly user friendly, efficient and should contain clear information on the usage methods because the farmers may not be highly knowledgeable about mobile applications and smartphone usage.

Heuristic Usability Principles:

based on:

Jakob Nielson's Heuristic principles

Visibility of system status

The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.

- In the roya app, the farmers should be notified every time when their data has been successfully submitted. In case the internet connection gets bad and the connection is lost, the farmer must be notified of that and when the connection gets back they must be able to submit the data again. Also, when the scientist analyzes the data and sends back feedback the farmers must be alerted of the same.

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.

- In this app, the farmers may or may not know English. So, the app must support multiple languages. If not many, they must provide support for english and mexican at the least.

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.

- In the roya app, the users must be allowed to edit the information they have entered. In case they enter anything by mistake they must be allowed to correct it.
- If the user presses exit by mistake, they must be given an alert asking them to confirm if they really want to exit.

Consistency and standards

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

- The terms for uploading an image, submit, sign up, sign in and the basic conventions should be maintained here also. Especially the farmers may not know many technical terms. Basic low level terms could be best served for the purpose of the roya app.

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.

- Exception handling is an important part in any mobile or web application. In the roya app, considering the users who might use the application, there is an increased chance of the users entering erroneous data. Like not uploading proper images, giving wrong gps locations, etc.. The developers need to handle these error situations proactively.

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.

- In the roya app, all options in the create new post page should be made very clear and the farmers should not be asked to remember some details of the previous pages before the uploading process is complete. Once the user registers and sign's on to the application, they must not be asked of their personal details, email, etc.. again when they are about to submit data. Once they select the location of the particular coffee farm, if they send multiple data from the same farm, the location must be automatically obtained from the previous post rather asking the user to select the location for every data they have to post.

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.

- The application must be very efficiently designed and should not have any lag when a new post is inserted or whenever data is viewed by the scientist to analyze the findings. For this the database should be as simple as possible and traversal modes should be the best suited.

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.

- Although this app is going to be used mainly by farmers, and the main purpose is to get the data uploaded, aesthetic values still play a role. The design must be

sleek and simple. The colors must be very clearly used. The send buttons, upload image, etc should be highlighted using strong colors. The severity range selector should be an increasing scale from green to orange to red.

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.

- In case the internet connection goes down, the user must immediately be notified of it and the data partially uploaded must be saved so that once the connection gets back not the entire data has to be submitted again. If the user does not submit certain parts of the post, validation should be carefully designed to explain to the user clearly on what parts of the post have they missed to fill up.

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.

- Help is an important aspect of this application. Also, the documentation must portray the flow of the application clearly pictorially.

Usability Concerns and suggestions:

- If the user chooses the wrong location for the farm, the app must be able to handle it before the data is submitted. Using GPS tracking of the mobile used to detect the location of the coffee farm and verify it with the data entered by the user could be a possible solution.
- The severity of the infection is said to be selected by the user by selecting from a range of colors from low to high. Here, it might not be consistent that all the farmers have to select the severity in the same scale. For this, some example images of how severe the infection could be for selecting a particular range value could be provided on the side of the scale. This could make the data a little more consistent.
- Writing summary for every post could be a challenge for new farmers if they do not know about what they are witnessing.
- The farmers must know which leaves are infected and which are not.
- The camera and the pictures are necessary in the roya application and the type of camera and its quality could become an issue here.
- The scientist have to identify the submitted posts and analyse them. The format in which they receive the data is important.
- The internet connection losing out is also an important usability concern.

Critical Usability Concerns:

- The app so far shows an error message if internet connection goes down to notify the user. This could be an issue and the user might not know what they can do after that. Either all the data must be saved locally and when the internet connection arrives, the user must select a button to upload the data or to continue from where they left off before connection was terminated.
- The farmer's uploading the right image is a critical concern in the correct functioning of the application. For this, enough examples of what the roya virus means, how it looks, and the different levels of the infected plants and leaves should be included in the documentation and should be made to read by the user.
- Another major usability concern I though was there could be a forgot password feature added. The users should be given a way to retrieve their registered details in case they forget them.

Short story explaining the critical usability concerns:

- Consider Mr. John, a coffee farmer in a Mexican coffee farm and is aged 32. He has been in this field for over 5 years. He is not very well versed with technology but he has a smartphone with the Royo app installed. When he signed in, he forgets to read entirely on how the application works and gives continue just to get to the dashboard page. When he comes to create a new post, he gets confused on what image he needs to upload to identify the infection. In this case it would be very helpful if the app contains a documentation and clear examples of the infected image types. Then, when he proceeds to upload the images and fills in other details, the internet connection goes off. He would be happy if the application could save all the data he had entered and later when the connection gets back alert him to submit the data through one click. Later, another time when John changes his mobile phone and reinstalls the app, he forgets the password he had set for his profile. He would want the application to help him find his password through some way.