SYNTHETIC SOLUTIONS INC.

Project Deliverable F: **Prototype I and Customer Feedback**

GNG 1103 – Engineering Design

Faculty of Engineering – University of Ottawa

Team C01-1

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Abstract

A prospective project plan and a comprehensive cost schedule were showcased in the last deliverable to help organize the remainder of the project and layout all milestones and goals. The goal of this deliverable is to highlight the features of the first prototype of our mobile application, as well as analyze and discuss the client feedback received during the second meeting. Overall, the feedback was positive and concise, prompting the team to progress and move forward.

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Introduction

In the previous deliverable, a project schedule and a cost estimation were performed to help prepare for the rest of the project. The purpose of this deliverable is to bring the previous conceptual design to life via Unity, as well as review and evaluate the customer feedback from the most recent meeting. This deliverable will be divided into three parts: Presenting the first prototype, conferring the prototype's testing objectives, and discussing a plan for future customer feedback.

Prototype I

For the first prototype, progress was made on the app in unity and on the image recognition machine. Presently, the design of the user interface can be split into a home screen, a games page, and a learn more section, all of which will be explained individually in this section. Progress on the item scanner using Teachable Machine and p5* will also be discussed. The aspects of the project that need to be added or altered will also be outlined.

UI Design

The Home Screen

The Application will first open to the users with the home screen. It features buttons that will take users to the various pages of the application. The Item Scanner button will take users to the scanner, so they can figure out what is and is not recyclable. The Games button will take users to a games page and the Learn more button will take users to the section where they can learn more about recycling.

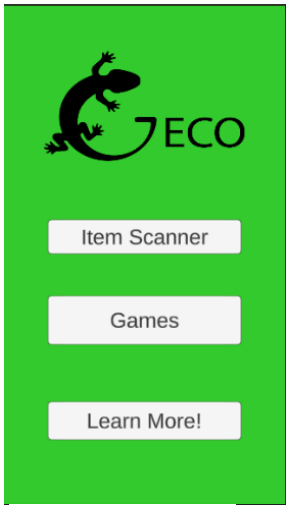

Figure 1-Home Screen

Games Page

After clicking on the games page button, the application takes you to the games page where the user can select which game they would like to play. The Trash Trivia! Button allows users to play a trivia-based game, where they select the correct answer to various questions. The Recycling Madness! Button takes users to a sorting game where they sort trash and recycling into their various proper bins.

Figure 2- Game Screen

Learn More!

The Learn more page also features a home button that will take users back to the home screen. The 'Local Regulations' will take users to their default browser with the search terms "Recycling Regulations [insert Current Location here]" using location services to achieve this. If location services are not enabled, then the term will default to Ottawa as their location. The 'Ways You can Help!' Button will take users to a graphic of how they can help recycling and make the Earth a cleaner place. Finally, the Sustainable Habits button will take users to an infographic on changes they can make in their life to make the Earth a better place.

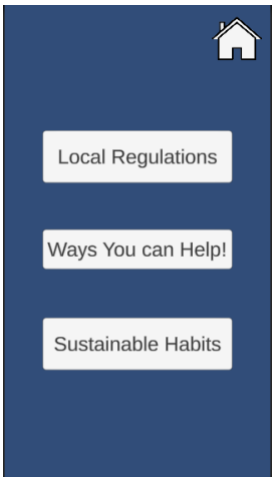

Figure 3-Learn More

Item Scanner

The Item scanner was created using Teachable Machine by Google. Teachable Machine is a program that uses machine learning to categorize data. For this project, a database of recyclable and non-recyclable images was used to teach the machine to differentiate between different items. Code in p5* JavaScript was created to convey the decision of teachable machine and display this on the screen.

Plan for Future Prototyping

For the UI, the next steps of the project are to change colour scheme to one that is more appealing and is easier on the user's eyes. All buttons need to be fleshed out to have proper pages, so that every page has something to offer to the user. The UI will also have to be linked to the Scanner so that it is a seamless transition from the app to where the user will be scanning the item. Finally, the UI needs to have the games built into it and debugged.

Regarding the scanner, the next step of the project is to make a website that the image recognition software and code can be run on. After this, the website needs to be linked to the scanner section in the app. There is also a chance that the recognition software will need to have a higher accuracy than it presently does, so that could be a focus for future prototyping.

Testing

The testing phase serves as one of the fundamentals of prototyping. The two main tests that were used to determine the functionality of the prototype were if it works on Unity PC, and if it works on both, iOS and Android mobile devices. The second test is yet to be performed.

A determining criterion for the unity platform was whether the buttons would function as scripted. Regarding the test results, prototype I did pass most of the Unity PC tests. Since Prototype I was a very "concentrated" prototype, the tests described above are not comprehensive and only intend to test the basic functions of the application and to prepare for the third client meeting. For future prototypes, more thorough testing methods will be used, including functionality across platforms and mobile devices, as well as aesthetics; model resolution; functionality and accuracy of all application features and overall user interface.

Acceptable Testing Objectives

In order to know when a certain aspect of the project is completed to satisfaction, acceptable testing objectives were determined. Regarding the app, the user should be able to easily navigate pages and at least one game should be fully functioning. The app should also be able to correctly refer the user to all of the linked webpages. Additionally, the scanner should be able to recognize items to 95% accuracy.

Feedback

For the second client meeting, we presented the finalized conceptual design for the app 'Geco.' Overall, the client had incredibly positive comments about the layout and the creation of the app. He liked the idea about an incentivization component linked to the number of products scanned that would allow the user to have the opportunity of planting/donating a tree. However, it was made apparent by the client that this idea would need monetization to be able to go through with it. After giving it some thought, it was decided to use paid advertisements to finance the tree planting incentive.

From the feedback given to other teams, it was realized that the app should include certain permissions to connect to other parts of the user's device. For example, the scanner portion will need access to the device's camera, there will need to be internet connection, and an option to have location services access. Finally, the client mentioned that simplicity is better than having any overwhelming system. Regarding this, the present design might be a little ambitious because there

are three different functional aspects to the app including the scanner, the games, and the information page. However, the group firmly believes that this can be achieved. As a safety, the features are being developed so that they are not linked to each other. If one of the parts does not work correctly for some unforeseeable reason, there will still be two independent and functional aspects.

Plan for Future Feedback

Alongside the client's feedback for the design, the group will need feedback on prototypes I and II. There is still a need for more client feedback as well so that the group can fully understand and fulfill their needs. However, the group is planning to gather feedback from people other than the client in order to gain insight into the compatibility with the market. This will be achieved by gathering opinions about the app's layout and the individuals experience with it.

Conclusion

The feedback received was very constructive and beneficial to the group's design. This will further improve the prototyping by continuing the development of each section and have games for the user to try. The apps' aesthetic will modernize to be appealing to the users' eyes. The prototype will then be tested and run to have a proper prototype for people to give feedback.