GNG1103

University of Ottawa: Faculty of Engineering

Project Deliverable B: Needs Identification and Problem Statement

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Group 4

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Introduction

The purpose of this project is to create a simple and effective phone application that can be used to separate recyclable items. The program will be used by the general public to help improve the quantity of recyclable materials that end up in landfills. The program will apply virtual and augmented reality technologies to help sort through commonly found items. Creating a new application to assist users in the sorting of these materials can help prevent the wrongful sorting of materials. Included below is the analysis of the client's needs regarding his views towards the current recycling and the identification of where the major problem in the current system lies.

Problem Analysis

The client is interested in designing an application that organizes and controls the flow of recyclable materials. The client wishes for users of the application to be welcomed to a simple UI and for users to be clearly aided. The goal of the application is to aid citizens across the globe in recycling their waste whenever possible to avoid landfills from becoming even larger in size. Ideally, the application will optimize the carbon footprint of its users.

Question	Customer Statement	Interpreted Need
Typical Uses	The app will identify varying recyclable materials and organize them according to their bin.	Needs to Identify and sort things correctly (#3)
	Identify common recyclable materials used by the everyday citizen.	Identify household items. (1)
	Must be efficient in organizing the flow of recyclable materials (at least 95%).	High success rate of sorting waste (95% accuracy) (2)
Likes	The application contains a simple user interface to welcome the user.	Simplistic/friendly user interface. (6)
	A game-like system that can keep the user interested and coming back.	The app should have some reward (8)
	The app ideally spans most platforms in order to maximize use by customers across the globe.	App available on multiple platforms (4)
	The app should utilize SI units so that most customers can use the app with little to no problems.	App uses SI units. (5)

	The client appreciated the use of augmented or virtual reality in applications.	App will incorporate the use of AR or VR. (11)
Dislikes	An overwhelming amount of information is not encouraged since it will repel the user from the app.	Complicated user interface. (6)

#	**Needs From the App**	**Significance (1 - not important, 10 - very important)**	**Difficulty (1 - easy, 10 - Very hard)**
1	Encompass the simple household objects to recycle (IE: cardboard, types of metal)	10	9
2	High success rate of actually getting things in the right bin (around 95%)	10	9
3	Needs to sort the different materials correctly	10	9
4	On the largest platform (IOS) but preferably cross-platform	10	8
5	In SI units (if applicable)	10	1
6	Friendly User interface	9	9
7	Clarify which bin is which	9	9
8	Has to have a reward for using (like a game)	8	7
9	Needs built-in training	6	4
10	Needs to encourage cleaning the waste first	5	2
11	App will incorporate the use of AR or VR.	9	9

Problem Statement

There is a need for citizens to be guided in organizing their recyclable materials in the simplest possible manner such that recycling bins are used correctly and waste in landfills is drastically reduced.

Design: Research and User Benchmark

The current benchmark is to create an application that utilises augmented or virtual reality to identify recyclable materials and to place them into the correct recycling bin. The client is looking for a recycling app to follow residential recycling protocols in order to spread awareness and educate the public about recycling. A high degree of success and a widely compatible app that can be used with all platforms, including iOS and Android, are of importance to the client. Similarly, the client would like the app to be user friendly and appealing, with a reward system involved to promote usage. Currently, there is not a wide market of available products that fit the clients needs. However some apps that have a similar idea are; MyWaste, Gimme5, and Waste Management.

Conclusion

The final product should be able to correctly identify and sort recyclable materials into their respective bins. The implementation of this project will be helpful for preventing recyclable material from ending up in landfills and will increase the amount of secondary products made from recyclable material in society.