

# Engineering Design - GNG 1103 [C]

## **Project Deliverable B**

VR/AR for Recycling

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Section C03 – Group 11

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## **Abstract**

*The purpose of this report is to document the needs of the client, Mitch Bouchard, for the development of an application that would improve the recycling process. This document will include a brief description of the client and the project at hand, a list of the needs and limitations of the client, and a formal problem statement.*

## **Introduction**

Recycling is an effective means to reduce the environmental effects of waste; salvaging materials reduces the waste in landfills and provides materials to be reused. Often, consumers are responsible for sorting materials in their own households and around the city. In Ottawa, the consumer must sort the waste into a blue bin (for plastic and metals), a black bin (for paper materials), organics (food waste), yard waste or garbage. Although the task of sorting the waste appears simple at the surface, the intricacies of sorting make recycling more difficult than anticipated. According to Oceana about 86% of Canada's plastic ends up in a landfill [1], showing that the Canadian recycling process needs improvement.

The client Mr. Bouchard is a former University of Ottawa engineering student who works in a family business manufacturing bearings. Mr. Bouchard observed the complexity of the issue while touring the University of Ottawa campus and nearly disposing a pizza box in the wrong bin. The issue was further explored by the client while visiting a local waste management complex, where he discovered that missorted waste is thrown in a landfill. These encounters have led Mr. Bouchard to seek out solutions to this growing recycling problem.

The client has tasked our team with simplifying the recycling process and finding ways to encourage consumers to properly sort their waste. The client highly values accessibility and an intuitive design. The client noted that he finds many corporate applications awkward and cumbersome to use and that he was often impressed by the appealing designs and natural feeling of many mobile games. The appealing aspects of mobile games should be incorporated into the final product.

## **Client's Needs**

The client is looking for a way to increase the amount of people who recycle and ensure that they are recycling properly in a creative way. The goal of the project is to create a program that will achieve the client's vision of an easily accessible and accurate application that encourages people to recycle. A list of the client's needs are as follows:

*Table 1. Client's Needs*

Number	Ranking	Customer Need	Interpretation
1	5	User Friendly	The product has features that allows a wide audience to easily follow and is intuitive for all ages. Any menus are laid out nicely and prompts are easy to follow.
2	5	Accessibility	The product can function in various location (home, University, Ottawa). Later iterations may expand to other cities, provinces, and countries.
3	5	Accuracy	The product accurately indicates if an object is recyclable and sorts the recyclable objects into their proper bins. The product must sort the recyclable material with at least a 95% accuracy.
4	4	Cost Effective	The product is be inexpensive to develop and mass produce.
5	4	Creativity	The product presents a fresh a solution to the recycling challenge.
6	3	Aesthetics	The product has a clean and memorable presentation that does not alienate the users.
7	3	Fun	The product is enjoyable to use. This will incentivize people to continue to use the product.
8	2	Education	The product has features that teaches people about the importance or recycling and some of the important issues in the recycling industry.

## **Problem Statement**

The client needs an easy, reliable, and cost-effective method to encourage people to recycle and to assist people in recycling properly.

## **Conclusion**

In conclusion, the client desires the development of an application that encourages more people to recycle properly. The most significant aspects of the product include emphasizing user friendliness to encourage continuous use, enabling widespread accessibility to affect as many people as possible, and providing an accuracy of at least 95% to ensure improvement in daily recycling effectiveness. The client would also like the solution to be implemented in a cost-effective way with an emphasis on simplicity and creativity.

## References

- [1] R. Young, "Canada's plastic problem: Sorting fact from fiction," Oceana, 25 October 2019. [Online]. Available: <https://oceana.ca/en/blog/canadas-plastic-problem-sorting-fact-fiction#:~:text=%E2%80%9CCanadians%20recycle%20their%20plastic%20waste,enters%20the%20environment%20as%20litter..> [Accessed 29 January 2021].