



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

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FACULTY OF ENGINEERING

SCHOOL OF COMPUTING

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SCSJ 3553: ARTIFICIAL INTELLIGENCE

SECTION 11

ASSIGNMENT 1

SMART RECYCLE BIN

Name of Lecturer: DR AIDA BINTI ALI

Group Members: Alpha Tech

1. TOK KAI XIAN (A18CS0267)
2. HABIB HADMY BIN ZULKAFFLI (A18CS0067)
3. HOW KAH HUI (A18CS0074)
4. MUHAMMAD AMIRUL FAHMI BIN NOOR ANIM (B19EC0018)

1.0 AI SOLUTION

In order to reduce pollution, slow global warming and reduce waste products in landfills because when we recycle, recyclable materials are reprocessed into new products, and as a result the amount of rubbish sent to landfill sites decreases which reduces emissions of methane, a powerful greenhouse gas. The world should practice recycling saves and conserves energy because it takes far less energy to reprocess recycled materials into new materials than to process virgin materials like more trees. Malaysians produce an average of 30,000 tons of waste every day. Only 5 percent of it is recycled hence the problem of poor waste management in Malaysia is one of the nation's biggest issues to date.

Feel responsible as Malaysian, we form our group to develop an artificial intelligence which can help each Malaysian to learn and manage their waste by separating them into five types of rubbish such as paper, plastic, glass, tins and other waste. We plan to implement this AI on a smart recycle bin where it can scan the rubbish and classify them into the rubbish type. Hence, we can avoid the unpleasant smell around the bin because all waste is mixed . The smart recycle bin also will indicate the volume of the recycle bin so users will notice it is already full or not. The indicator will show three states which are empty, half-full, and full. This method is very useful for clean work later.

2.0 GOAL OF AI SOLUTION

1. To create an AI that can separate the rubbishes into five types which are paper, plastic, glass, tins and other waste.
2. Reduce the unpleasant smell around the bin.
3. Make cleaning work easier.
4. Enhance consciousness of citizens about recycling campaigns.

3.0 PROCESS OF EMPHASIZE IN DT

People nowadays are paying attention and their effort to take care of the environment. They start to not throw the rubbish everywhere, and even have the consciousness of recycling the garbage to protect the environment. There are a lot of recycling bins in the society. However, some of the people may not have the same consciousness as the majority, or they have some difficulties on garbage classification. Therefore, it is clear that there are two categories of users that face the stated issues, which are the user that cannot understand about the materials of garbage, and the user who lacks understanding about the information shown on the recycling bin. The issue is able to cause the user to throw the rubbish arbitrarily to any recycling bin. This situation disobeys the aim of putting recycling bins which are enhancing the recycle consciousness, and classifying the garbage accordingly. A solution should be come out with to ensure that the two users that are facing the problem are able to carry out their roles to throw the garbage to a correct recycling bin.

The first situation, the user is difficult to understand the made up materials of the garbage. For example, garbage can be made up of paper and plastic at different parts. At that point, they started to confuse which recycling bin that they should throw. Consequently, they will throw the garbage randomly to either paper or plastic recycling bins. Secondly, some users are lacking understanding about the information shown on the recycling bin, especially the children and teenagers. This group of users are lacking information about the function of each type of recycling bin. Thus, the innocent user will throw the garbage into any recycling bin as they think all types of bin are the same.

The users are looking forward to an alternative solution to solve their problem. They will be glad to use a recycling bin that has the functionality to guide them where the garbage should throw. The guidance system of the recycling bin will be able to help them to make the decision on where they should choose the garbage.

With the guidance system, the user will be able to learn and understand more on how the garbage should be classified, at the same time, the recycle consciousness of the user enhanced.

In conclusion, the user wants to be able to throw the garbage without thinking much to decide which recycling bin they should throw the garbage. They think that the garbage disposal step should be much easier without having tough decisions. Therefore, it is

important to develop a smart recycling bin with the features of identifying the materials of garbage, as well as navigate the user on which recycling bin they should throw their garbage. This will ensure that our environment can be protected in a more effective way.

3.1 SUMMARY OF USERS

Lack of knowledge on the material to be discarded:

- Confuse due to various materials on garbage
- Different parts of the garbage can be made up of different materials
- Do
 - Throw garbage into any related material recycling bin

Lack of understanding on information displayed on recycle bin:

- Happened especially on teenagers and children
- Lack of knowledge on the function of each type of trash can
- Do
 - Throw garbage into one of the recycling bins randomly

4.0 PROCESS OF DEFINED IN DT

According to the descriptions of people at different levels in modern society, most of them face the problem of not knowing how to sort garbage. They are confused about the types and materials of the garbage, and then they give up sorting or throw away the garbage at will. There are actually many types of garbage, and other substances in garbage can also be converted into resources. If humans throw all the garbage together without sorting, those "resources" that can be recycled and reused will be regarded as "garbage". A large amount of unsorted garbage will cause environmental pollution, and over time will also pose a threat to human health. Therefore, in order to allow people to respond to environmental protection and contribute to the society, the AI system can help people sort the recyclable garbage by scanning the material of the garbage. People can scan the garbage through the AI scanner, and the smart recycle bin will open the corresponding recycle bin lid by distinguishing the garbage materials so that people can throw the garbage into the correct recycle bin. Thus, people no longer have to worry about wrong garbage classification.

4.1 SUMMARY NEEDS OF USER

Lack of knowledge on the material to be discarded	Lack of understanding on information displayed on recycle bin
● Confuse due to various materials on garbage ● Different parts can be made up of paper or plastics	● Happened especially on teenagers and children ● Lack of knowledge on the function of each type of trash can
● Needs: 1. Helping to identify the material of garbage 2. Helping to sort the recyclable garbage	● Needs: 1. Helping to choose which type of recycle bin to use 2. Guiding users classifying the type of garbage