SCHOOL OF COMPUTING

FACULTY OF ENGINEERING

SECJ3553 ARTIFICIAL INTELLIGENCE

SECTION 10

PROOF OF CONCEPT

Project Title: Smart Recycle Pick-Up Route Application

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Contents

PROOF OF CONCEPT

1. Problem Formulation

The smart bin consists of different detectors such as a waste detector and full level detector. The initial state of the smart bin will change to different states according to the action of the waste detector and full level detector.

Initially, the smart bin will not open since there is no recycled waste detected. The smart bin will change to another state and provide action when the waste detector detects the recycled waste and classifies recycled waste material. There are 3 main compartments which include paper, glass, plastic/aluminum. The types of the recycled waste will be determined.

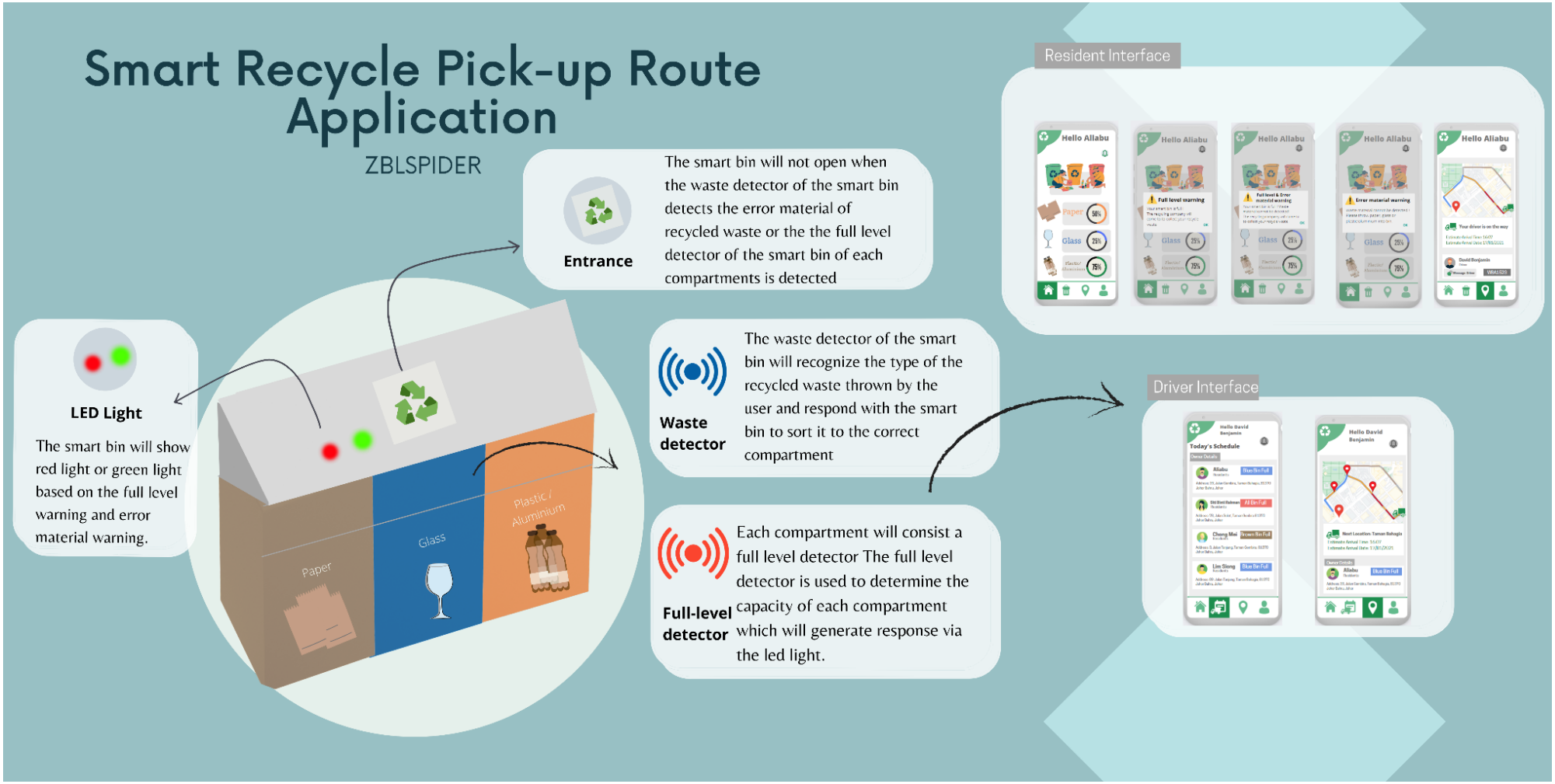
Next the smart bin will determine the full level capacity of each compartment in the smart recycle bin and generate the response. The smart bin will show red light or green light based on the full level warning and error material warning.

If the waste detector of the smart bin detects the error material of recycled waste, the smart bin will not open and it will show red light, and send error material notification to the mobile application when it detects the waste that cannot be classified as any kind of recycled waste material.

If the full level detector of the smart bin of each compartments is detected, the smart bin will not open and it will show a red light, and send full level capacity warning to the mobile application.

The smart bin that is connected with the mobile application will send a warning notification to the mobile application user according to the full level detector and waste detector that detects error material of recycled material. The smart recycle bin which integrates Google cloud to monitor and analyze data collected will generate predictive routes for recycling centre drivers to collect the recycled waste from residential areas.

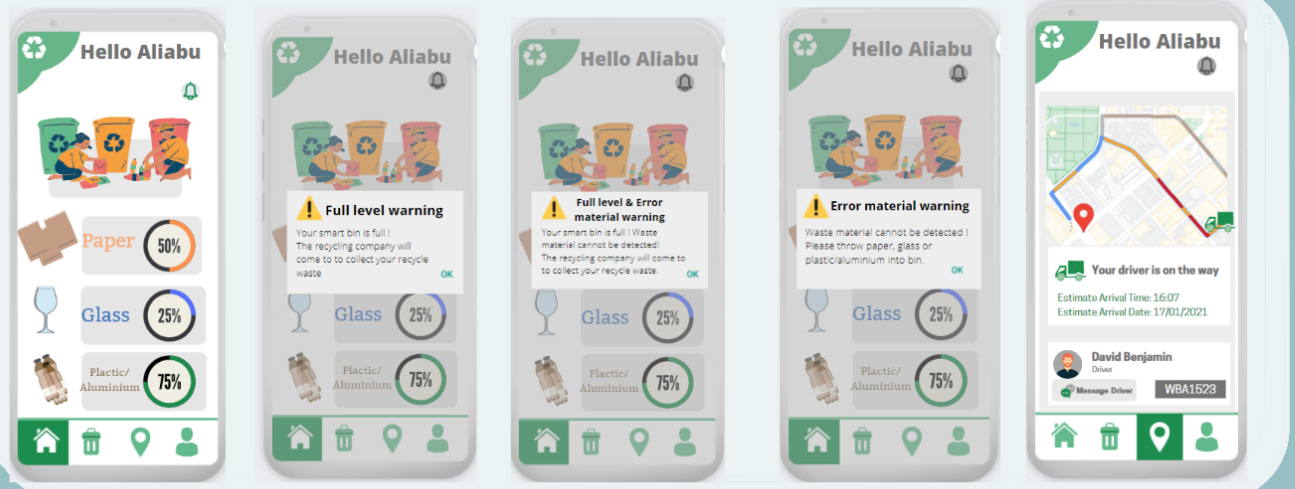
2. Design Concept



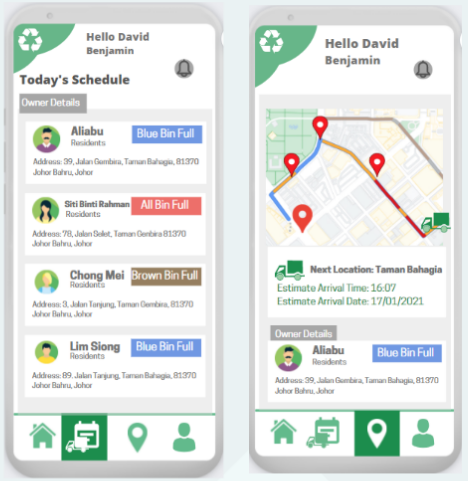
Smart Recycle Pick-up Route Application

ZBLSPIDER

Resident Interface



Driver Interface



1. There is a huge amount of recycled waste collected by the household residential areas causing a lot of waste management problems. The AI solution proposed allows the citizens to easily manage the overwhelming amounts of recyclable waste collected as the driver will pick up the recycled waste consistently. And the AI solution proposed also improves the recycled waste management by sending notification to the user via mobile application.
2. The current recycle pick-up system does not provide a consistent route to collect the recycled waste from the residential areas. It causes the driver of the recycle center to do rounds without destination. The proposed AI solution helps to reduce the waste of energy and money for the driver of the recycle center doing rounds for collecting the recycled material without destination.
3. As in the proposed AI solution, The smart recycle bin is also able to analyze and sort the recycled waste to the correct compartment. This helps the user to categorize the recycled waste faster and make it easier for the driver of the recycle center to collect the recycled waste.