

# i-CAN Sorting System (Team 12)

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## Introduction

i-CAN is a self-sorting system that sorts between the recyclable and the non-recyclable trash for the users. The team was inspired by an article that talked about how China has refused to accept recyclable materials from the US to sort because the impurity level was so high for the recyclable materials

We thought that as Christians we were given the task to take care of the planet given to us and sorting the trash better was one way to do it. While designing for a solution, our team focused on two design norms which were Stewardship and Care. Stewardship because we were called to be resourceful and take care of our planet and Care because our inspiration was from caring for our community, country and planet.

## Objectives

The main goals of this project are to make ;

- The sorting system sort both quickly and accurately
- The system to be educational in the sense that people using it will learn more about what kind of materials are recyclable and not
- The system to be quiet and not become an annoyance to users nearby
- The machine to be easily cleanable making the odor level as minimal as possible
- The system, i-Can, help the community with sorting out different trash items

## Acknowledgements

Industry Consultant: Ron David, Engineering Manager, DEMATIC [Conveyor Belt]

Industry Consultant: Rob Spykerman, PADNOS Recycling [Industry Feed]

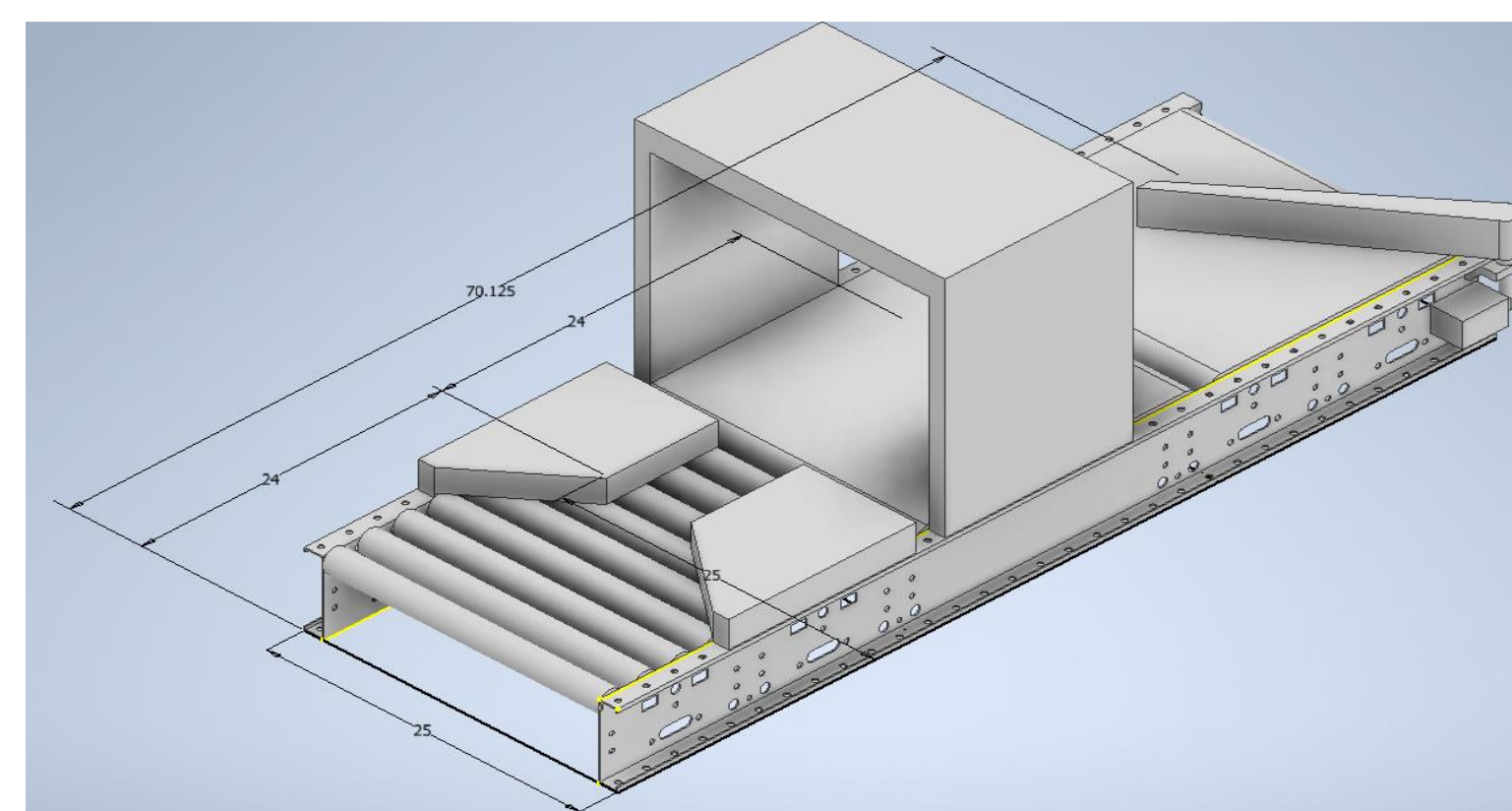
Advisor: Professor Mark Michmerhuizen

## Design

The team decided to use a belt conveyor and pivot arms to physically sort the different trash items while using computer vision technology to identify the different types of trash. The team chose this design because it was a design that seemed the most realistic and practical with the amount of time and resources available to the team--while also being a versatile design.

The process begins when a user puts a waste item on the conveyor belt. Infrared sensors on the rails of the conveyor belt work with a ladder logic program to direct the item to allow ample detection time for the camera.. The camera detects the type of waste material after running the image through a neural network. The output from the inference is used to direct the pivot arm on the last leg of the conveyor belt to move the waste to either recyclable or not.

## Results

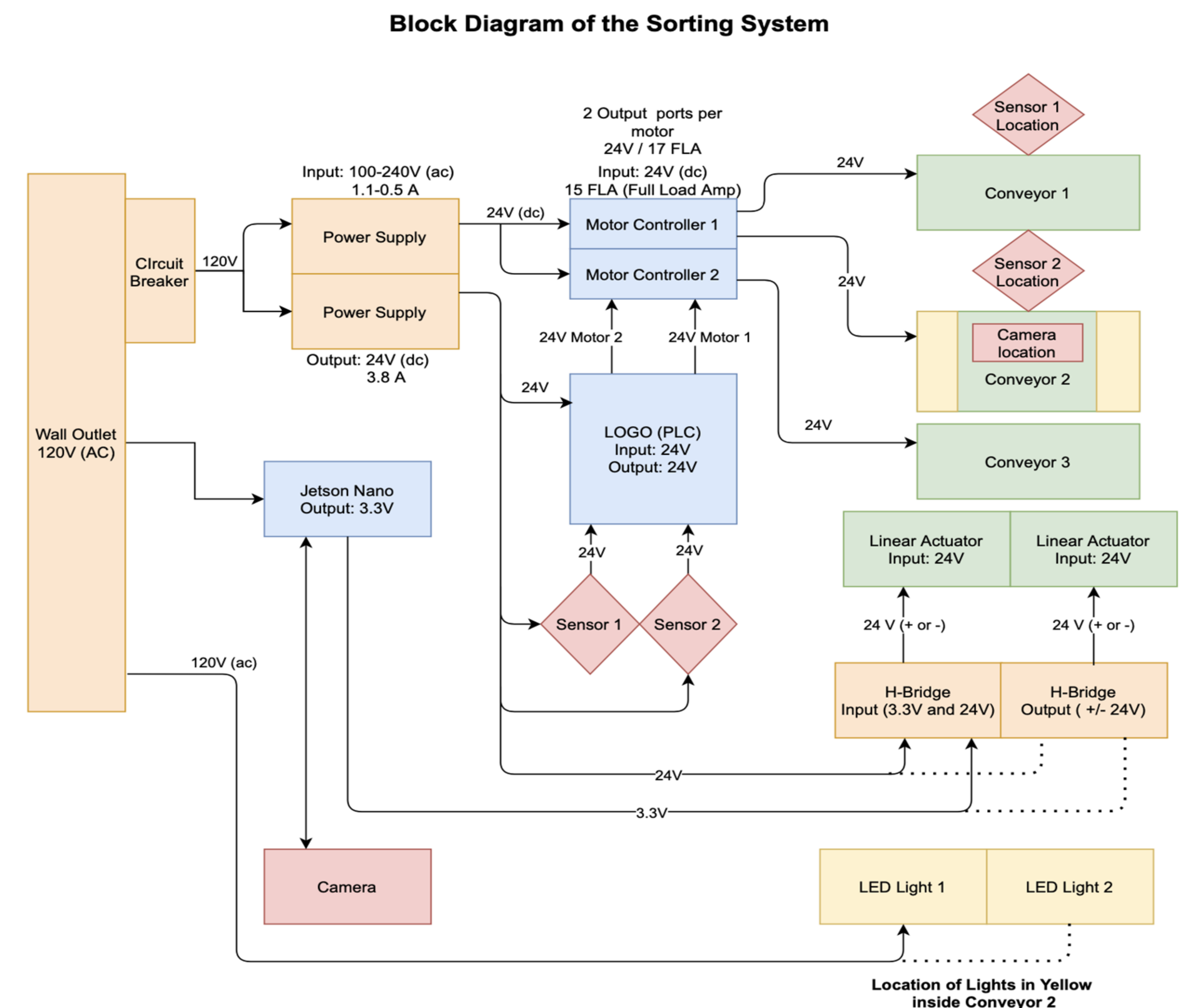


*CAD Design for i-CAN*



*Current i-CAN System*

## System Diagram



## References

- › Cheryl & Katz; Piling Up: How China's Ban on Importing Waste Has Stalled Global Recycling,[yale.edu/360]
- › Stanford TrashNet Dataset
- › At The Edge Project - [UCL]

## Team 12 Members

