Team Deliveroid

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Autonomous Campus Delivery Robot

Faculty Advisor: Dr. Charles Kim

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Meet the Team!

Ileana Bocage

Electrical Engineering;

Trinidad & Tobago

Noah Drakes

Computer Engineering;

Atlanta, Georgia

Aaron Gibbs

Computer Engineering;

Shrewsbury, Pennsylvania

Chrisserge Pierre-Louis

Electrical Engineering;

Brooklyn, NY

Problem Definition

Background:

Pioneer 3-AT



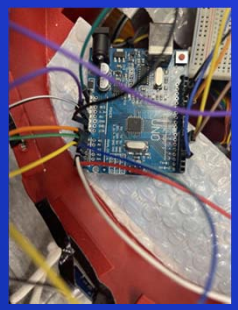

Problem Definition

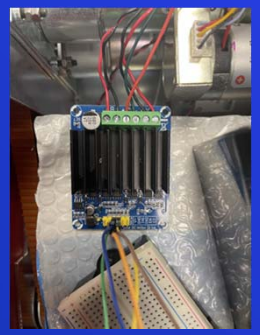
Problem Statement:

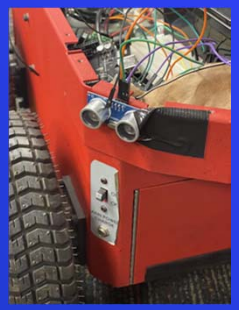
The need of Howard University given the contact delivery health risks posed by the Covid-19 pandemic as well as overcrowded cafeterias, too many food/package orders and too few people to fulfill these requests is to efficiently provide convenient contactless delivery to students on campus so that the cafeteria can maximize its profits and mitigate overcrowding.

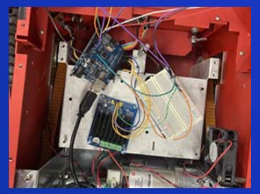
Design Requirements

1. Product Specifications







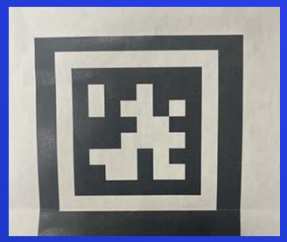


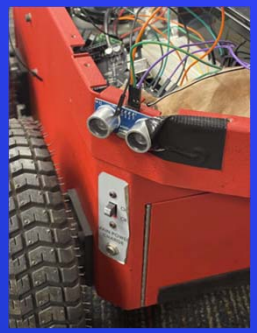
2. Constraints:
    a. Environmental Constraints
        i. Lead Acid Battery
            - Disposing lead is is highly toxic to the environment
        ii. Object Avoidance/Detection
            - Without proper sensors, deliveroid can be a threat to the public/environment

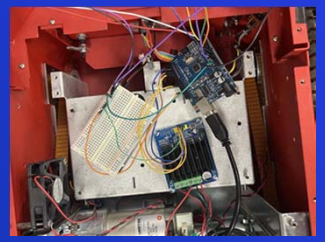
Design Requirements

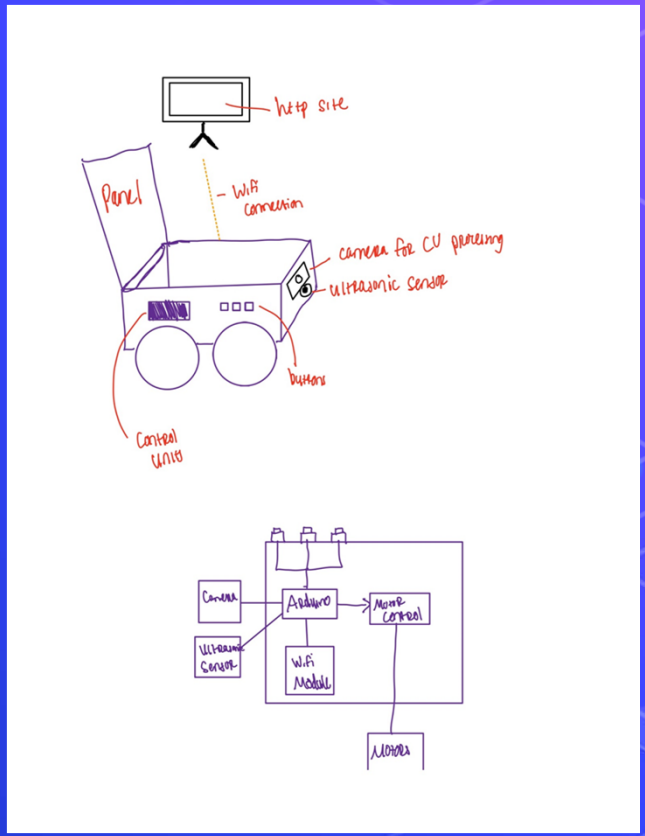
2. Constraints:
    b. Socio-Cultural Constraints
        i. Robot needs to be conscious of physical environment
        ii. Robot cannot impede or strike another human being or physical object
        iii. Robot cannot infringe upon the the privacy of others

Solution Design



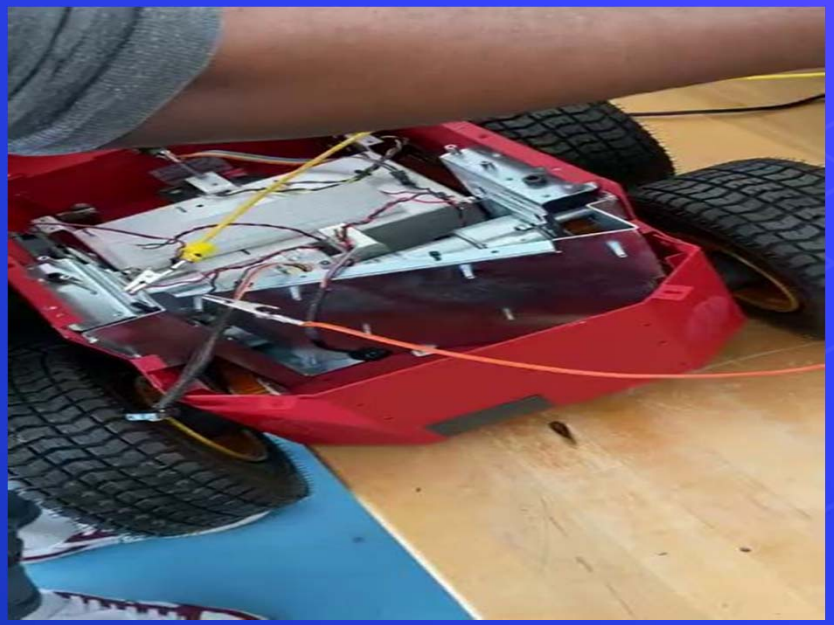






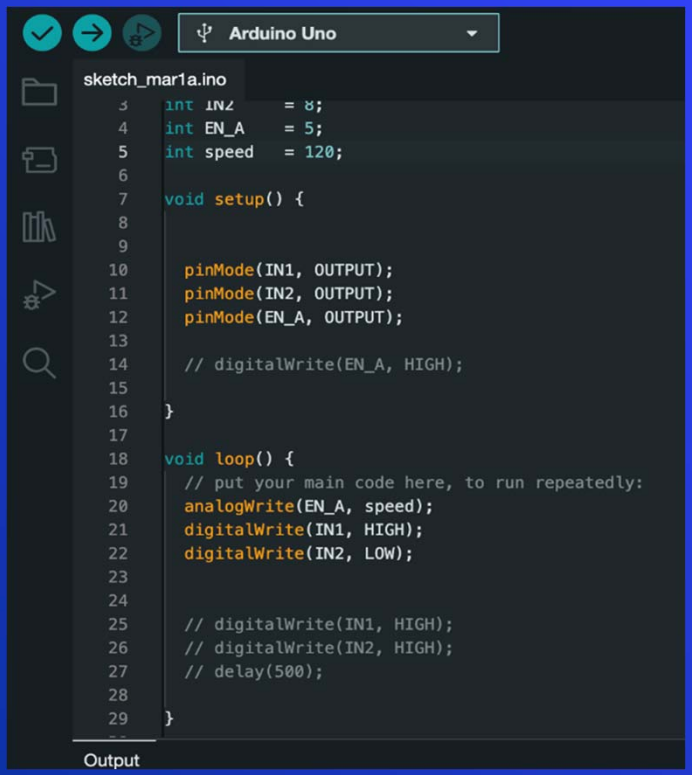
Implementation Process

Sprint #1:



Implementation Process

Sprint #2:



Implementation Process

Sprint #3:

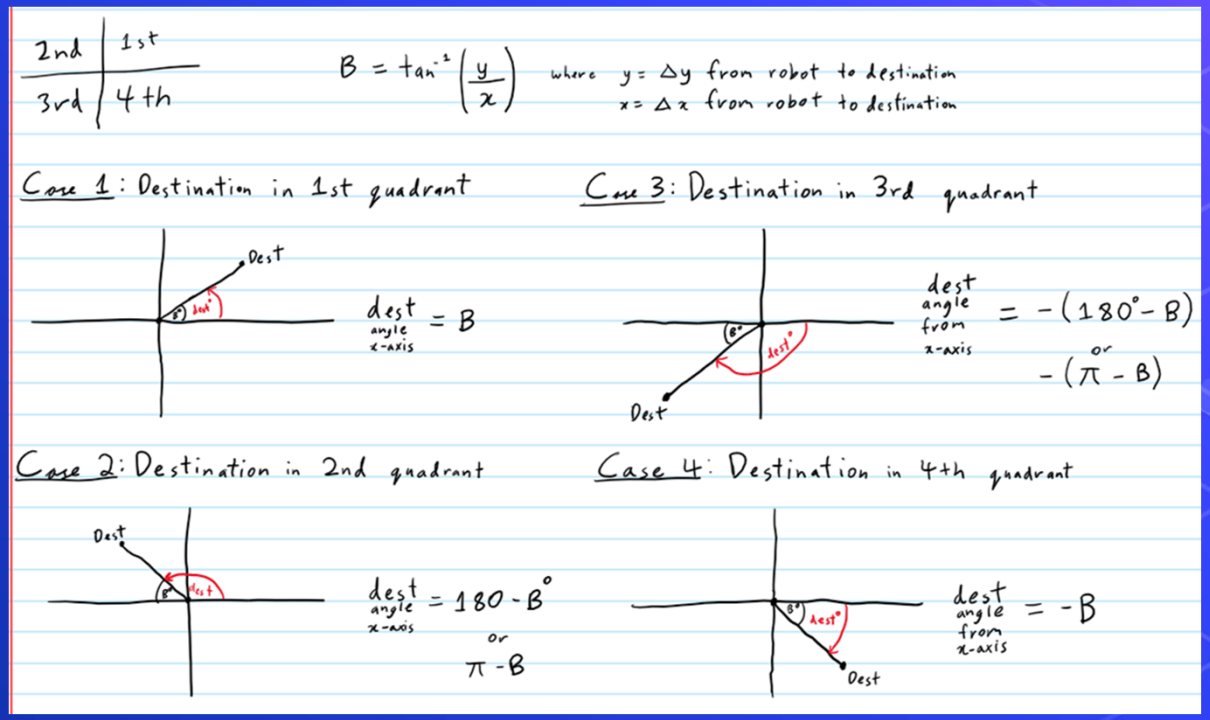
```
void loop() {

  deliveroid_basic_motor_test(500, 500);
  deliveroid_roam();
  STOP_PROGRAM();

}
```

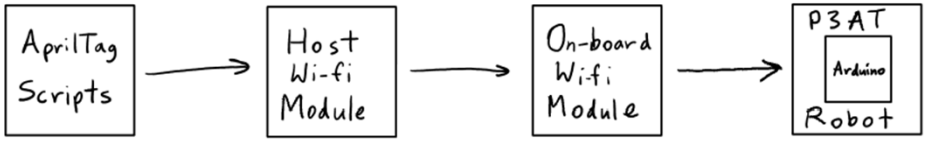
Implementation Process

Sprint #4:



Implementation Process

Sprint #4:



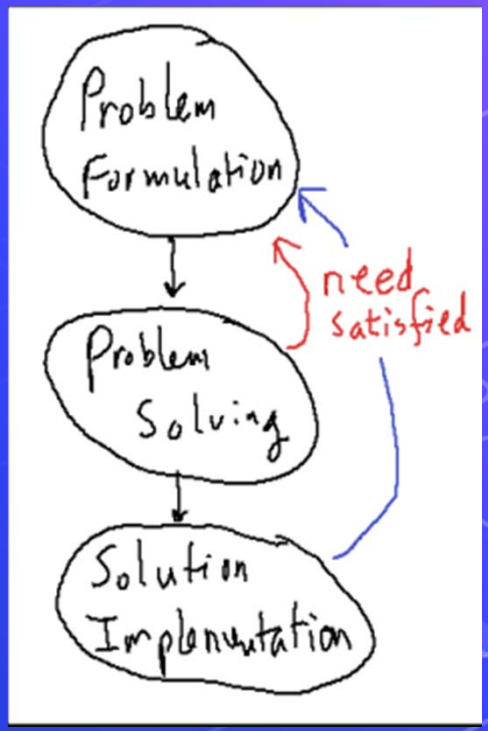
Implementation Process

Sprint #4:

Conclusion

This year we were able to accomplish the following:

- Fully immerse ourselves in the design process
- Bring our design to life from prototype to final product



Any Questions?