Phase 5 Executive Summary | Building Cabbage and Broccoli
Team Mazarine | By Raiyan Ishmam | May 8, 2018

Deliverables

1. Bot Design
   a. Functionality: The design of the bot should be robust, flexible to meet changes, and meet the height, weight, and speed requirements specified in project description.
   b. Implementation: Both groups met multiple times to decide a final high-level design of the bot.

2. Bot Building and Testing
   a. Functionality: The bot can perform all four challenges specified in the project description.
   b. Demonstration: The successful runs of both bots for all four challenges were recorded and the videos were sent and approved.

Timeline

Phase Start Date: 3/31/18
Projected Challenge Demo Date: 05/08/18
Actual Challenge Demo Date: 05/07/18
There were no delays or changes made in original projections.

Conceptual and Design Activities

The following activities were carried out for both bots.
- Schematics of all the relevant modules (comms, motion control, sensing, collision detection, and accessories).
- The overall design of the bot (placement of each module, height of the bot, positioning wheel base, etc.) was agreed upon by all six members.
- Each individual module was soldered in and tested individually. Once it passed its own tests, it was integrated into the bot.
- Both bots were tested for simple tasks at first, slowly building up the requirements of the tests until the bots could perform Challenge 1 successfully. Challenges 2, 3, and 4 were then tested until successful.

Experiments Performed

a. Comms module tested. Both receivers and transmitters worked with TCC as well as each other. Most severe problems were the capacitance increases after soldering, which affected the receiver greatly. Using a lower capacitor value solved the problem.

b. Motion control module was tested. This was successful on the first try,

c. Collision detection module was tested. Worked perfectly. Possible wear and tear hampering future run was anticipated and identical spare bumpers were built just in case.

d. Sensing module was tested. The Hall Effect sensor worked as expected, but time was needed to calibrate the light sensors. Used two sensors and two sets of lights for better tracking.

Work Designations
1) James – Worked on building the bot, and the comms module

2) Raiyan – Worked on the comms module, and coding three of the challenges

3) Harrison – Worked on the comms module, the entirety of the Go Beyond (both hardware and software), and calibration of the light sensor

4) Diego – Worked on the collision detection module

5) Ely – Led the design of the bot as well as the actual building of it, worked on the motion control module

6) Emily – Worked on the sensing module, and the entirety of the calibration of both light sensors

Cost

Overall Bot Cost	(Itemized cost list included in sales invoice)	$151.89
Overall labor	6 people * 24 h * $41.32/(h*person)	$5950.08
Total cost of both bots	$5950.08 * 2	$11900.16

Team Stage Assessment

Our two teams feel like a reasonably good fit with each other. Apart from managing to get all six people in a room at the same time, there were no major issues or concerns. Communication was an issue, since work would be done without it being made aware to the other team members. Overall, the level of dedication is appreciable. Everyone puts in good effort to make a valid contribution.

Recommendations for Next Leader

Make sure the communication is more effective in future. Clear goals and deadlines must be set for each member so that everyone is in sync.