

IEEE REGION 5 ROBOTICS COMPETITION

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Project Summary

We will be building and programming a robot that is capable of scoring highly in this year's IEEE Robotics Competition gameplay. The strategy that we will be using is a small quick robot that will deliver tokens one at a time. We will implement a line following algorithm to navigate the game board autonomously during rounds. This project is important because it will have lasting effects on the University of Houston in the form of higher prestige for placing among the top three winners. We as a team possess the skill set needed for this project.

Problem and Need

In order to reach our goal, we must build and program a robot that will be capable of running through the IEEE Robotics course. We must also write the code in the most efficient way to keep our robot competitive. Increasing our school's reputation is something we all believe is important.

Significance

Some universities will take note of high placements in this competition, will be impressed and hopefully can boost the University of Houston's rankings on a national scale. Additionally, future UH robotics teams can benefit from our archived code as well as hardware configuration.

Goal

Our goal is to represent University of Houston at the 2018 IEEE region 5 robotics competition and give prestige to the University by placing in the top 3.

Customer/User Analysis

There is no direct customer for our project; however future University of Houston students that enter robotics competitions could use our code and possibly hardware. These users would need to have extensive coding experience and understand how to use the hardware.

Deliverables

Our final deliverable is an autonomous robot which is capable of navigating the game board using an array of infrared sensors to detect lines and intersections. The robot is also capable of picking up the colored steel tokens at each intersection using an electromagnet and correctly identifying the color painted on the bottom of the acquired token using an RGB sensor. The robot is able to pick up and drop off all tokens into their corresponding colored squares on the board and then navigate back to one of the white squares and stop moving.

Terminal Objective

The target objective of our team was to enter the IEEE Region 5 Robotics Competition on April 7, 2018 and score the maximum number of points in each of the three rounds of competition as well as in the possible tiebreaker round.

Overview Diagram

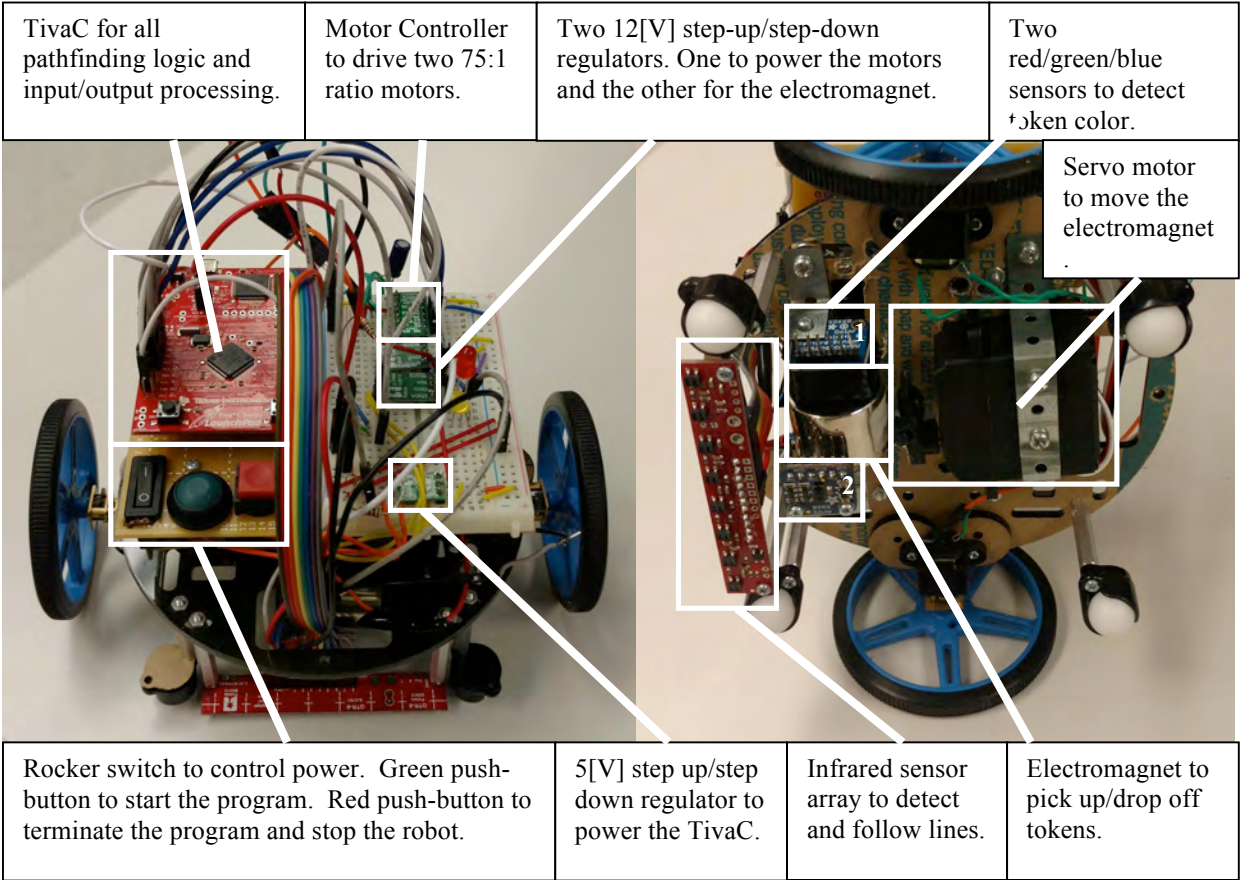


Fig. 1. Overview diagram detailing the components used in the construction of our competition robot.