THE VARMINT WEEKLY

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Field Set Up

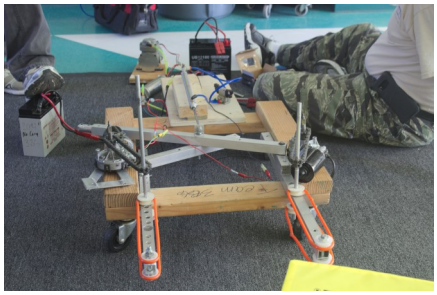
To improve our strategy and to refine our tactics, we set up a mock field in our cafeteria every weekend. This year we had to make some adjustments to our practice field, since last summer the cafeteria where we usually set it up was renovated. Recreating game elements is something that we have to do every year, so we were able to adapt to the changes easily. The scale and switch that are needed for this year's game have been recreated in wood by our mechanical team. It took ten plywood sheets, eight 7 - foot 2" by 4" planks, and many hours of work to complete the replicas.

Having a mock field is incredibly important to our team's success, since it gives us an idea of vision problems and other interactions.. It also helps enormously when testing prototypes and even having mock matches. This was a great experience for the students because they are able to attain a familiarity with the game as well as learn basic construction skills. It's also a great team building exercise, since setting up the field requires the effort of the entire team.

Software Team Update

Our software team has split into multiple groups to complete a variety of vital tasks. We have made significant progress in the process of developing sensors, motors, team synchronization, and vision. In vision, we've made progress towards automating the process of searching for and retrieving power cubes. Most teams' vision code would work by looking for a specific color to identify the cubes. We have also successfully programmed the robot to find all of the outlines of each cube, allowing us to pick up one cube from a pile of cubes. Though this is a big progress for our team, we've done more than just that. We've also worked on adding ultrasonic sensors to the robot, which would allow it to detect the distance between it and an object using sound. This can help for when we need to map out the arena in autonomous mode, or making the robot autonomously follow a path to an objective. We've worked on fixing our motor code from last year. Previously, we would get issues with motors not responding properly or motors drawing more power than we could give it and burning out. We're currently working on fixing these errors and improving our code further. We also had another team tasked with making our robots autonomous functions. These functions include the robot's movements during the game's autonomous period. In years past, our software team would be one small team that only worked on one computer with one version of our code. We've changed that by using GitHub, which allows us to save and backup our code and distribute it to every member of software through cloud storage.
Thanks to this, multiple teams can work on the same project at once and cut down the time required to finish it. This also allows for everyone on the software team to be working at once rather than one person at a time with the same computer. This also most importantly allows us to change the code any time. We can work on the code at meetings, or we can work on it at home at any time of day.

Mechanical Team Update



Over 60 hours of work have been put in by our mechanical team. They have made great strides towards our goals. We were able to narrow down our pickup ideas to four types of pick up systems: wheels, rubber belts, chained wheels, and clamping mechanisms. Using these, we had a trial to decide which type would be used for our second tier prototype. This trial tested efficiency and consistency in picking up power cubes. Eventually, we chose a combined design of chained wheels using tension from two springs to shape around the power cube. Following this, prototyping for our elevator began. We chose to base our elevator system off of the one we designed in 2015 for that year's robot game, Recycle Rush. More information about this game can be found on our website, www.teamvoltage.org, under the history tab. It's a simple mechanism that will double as both an elevator and cube moving mechanism. This combination will allow us to save space and make the robot lighter. Lastly, we came to a decision to invest in a new drive system. This will take weight off the robot and will allow us to reach optimal speeds more efficiently.