Explorer Post 1010, Team #160
Region: Greater DC/Virginia

Goals and Tasks for Botball 2019

Game Goals and Tasks

1. Familiarize team with game; 1/26/19
    a. Dedicate a meeting to read the full game review. Make sure new members understand the spirit of Botball and other important rules; 1/23/19
    b. Review game pieces. Look at scoring sheet to better understand the game; 1/26/19
2. Devise a strategy for completing this year's challenge; 1/30/19
    a. Dedicate time with the team to review all parts of the board and possible paths along with their point. Brainstorm ideas for efficient ways to path through the board; 1/28/19
    b. Examine the difficulty of each strategy based on building and coding. Decide on one main strategy to pursue; 1/30/19
3. Construct the game board; 1/30/19
    a. Buy needed PVC and recut old PVC. Make sure all measurements have minimal error so that board is as accurate as possible. Make sure all PVC is tightened and screwed into board securely; 1/10/2019
    b. Acquire all non-pvc parts shown in workshop - Corrugated plastic sheets, all colors of tape, game pieces; 1/23/19
    c. Organize game pieces received from workshop and fully complete board. Properly tape wooden figures and board lines, construct skyscrapers and medical centers; 1/30/19

Robot Building Goals and Tasks

1. Create prototype designs for both robots; 2/6/19
    a. Brainstorm several possible designs that could be used to complete the robots' objectives and choose the best ones while ensuring that the robots will not interfere; 2/4/19
    b. Create a basic blueprint for each robot which clearly shows all mechanical and electrical components of the robot; 2/6/19
2. Keep designs simple and sturdy; 2/9/19
    a. Designs should not be over complicated or contain an excessive amount of parts. It should be easy to make adjustments or repair should a change be necessary; 2/9/19
    b. The robots should be able to move smoothly without extraneous motion that may cause consistency problems. Thought should be put into factors like a certain side being too heavy, which may cause balance problems; 2/9/19
    c. Should a robot fail to meet either requirement, it should be redesigned; 2/9/19
3. Construct robots; 2/16/19
    a. If a robot is built differently from originally planned, there may by conflict with the other robot. Adjust designs for any issues with limited or illegal parts; 2/11/19
    b. Finish construction of base of robot and basic components like claws and sensor mounts; 2/16/19

Programming Goals and Tasks

1. Decide on the path of the robots; 2/11/19
    a. Communicate with building team to decide on an optimal path for both robots that ensures that they complete their task efficiently and do not collide; 2/9/19
    b. Write pseudocode to clearly show each robot's path and check for any problems that may arise in the planning process; 2/11/19
2. Create functions and logic for using sensors; 2/16/19
    a. The camera will be very important in this year's game. Review the camera functions and run tests with demobot to more fully understand how it works; 2/13/19
    b. Write functions for use of sensors - line following, camera detection, using ET sensor. Create movement functions using mav(), gmpc(), etc. for more accurate movement; 2/16/19
    c. Test functions using demobot; 2/16/19
3. Complete initial code for robots; 2/23/19
    a. Use variables to refer to sensors or important values like "open" or "close" for a servo claw; 2/20/19
    b. Run tests on robots to check basic functionality and sturdiness. Adjust variables for actual values for servos, motor speed, and sensor values; 2/20/19
    c. Use functions to write actual code for robot based off of previous pseudocode. Run extensive testing to check for consistency. 2/23/19

Documentation Goals and Tasks

1. Complete the first-period documentation; 2/5/19
    a. Go over plan as a whole team to write the first period documentation; 1/26/19
    b. Have several team members check and edit the documentation; 1/28/19
    c. Have adult mentor review the first period documentation; 1/30/19
2. Complete the second-period documentation; 2/27/19
    a. Learn to use github by reading given documents and start applying it to code; 2/11/19
    b. Choose a robot to use for creation of video. Assign one or more team members to the task of making sure that information is recorded throughout the design process; 2/16/19
    c. Have members and mentor review for submission; 2/27/19
3. Complete the third-period documentation; 4/3/19
    a. Sit down with entire team and go over the lessons learned and what members would have done differently given a new start. Use this information to complete the lessons learned portion of the documentation; 3/27/19
    b. Assign a specific time outside of the regular meetings for members to complete the online survey, as to not interfere with work time during the meeting; 3/27/19

Schedule Conflicts

1. Presidents' Day; 02/18/19 - Many members will be out of town due to the holiday and thus unable to attend the meeting that day.
2. Work; Every Saturday - Some team members work on Saturday and are sometimes unable to come to the meetings because of that.
3. Spring Break; 04/17/19 - 04/22/19 - Many members of the team will be traveling and unable to show up to meetings.

Team Organization

Schedule of Meeting Times

- Important dates:
    - Workshop: January 19th-20th
    - Regionals: April 6th
- General Meeting days:
    - Mondays: 6-9PM
    - Wednesdays: 6-9PM
    - Saturdays: 10AM-2PM, sometimes 10AM-4PM if time permits

Division of Labor

- Adult Mentor: Bob Ekman
- Although there are two robots, the team will collaborate on both, so there is no need to split the builders and coders into separate teams.
    - Captain: Samuel Du
    - Builders: Zain, Austin, Leo, Dominic, Chase
    - Coders: Eric, Alex, Lennard, Kaiwen, Tim, Ilan, Farah, Aneesha
    - Documentation: Zain, Samuel

Conflict Resolution

- If there is a conflict, it will be resolved as follows:
    1. If the conflict is based on two alternative ways of building or coding something, quick prototypes of each are made, and the team agrees on whichever one works better.
    2. If a quick solution cannot be made, the team will take a vote to choose one side. Each side should give good reasoning for why the believe their idea is better.
    3. Should a resolution fail to be made, the team captain has the final say.