New England Region - Pembroke Robotics(0121)

Period One - Project Plan

Deadlines are indicated in bold
Indicates "Wallaby Team" task
Indicates "Create Team" task

Goals and Tasks for BotBall 2019

Game Goals and Tasks

1. Analyze game documents, including rules and videos, **1/28/19**
    a. Instruct selected team member to review the rulebook, **1/28/19**
    b. At a meeting, have selected team member discuss the rules with other team members, fielding questions and informing them of any rules changes, **1/28/19**
    c. Watch 2017 BotBall sneak peek video and servo and motor videos, allowing team members to brainstorm strategy ideas, **1/28/19**

2. Discuss broad strategy for point scoring, **2/4/19**
    a. Convene co-captains, documentation captain, and lead strategist to discuss broad strategy, **2/4/19**
    b. Bring basic outline of strategy to the entire team for discussion and receive feedback from all, **2/4/19**
    c. Get feedback from students in robotics classes as reported data saved by the teacher, also Botball Coach **2/11/19**
    d. Review plan with rules expert in order to ensure that all aspects of strategy are compliant with rules, **2/11/19**

3. Build the test board, **1/28/19 - 2/25/19**
    a. Work with teacher team leader in order to acquire materials through the school, **1/28/19**
    b. Touch base with independent study students to help build the board to schedule a date to construct the board, **Week of 1/28/19**
    c. At the designated time, bring materials and tools to the school and build the board, **Week of 1/28/19**

Robot Building Goals and Tasks

1. Construct a "claw" mechanism that will be programmed to manage the servo with the Wallaby micro-controller, **2/25/19**
    a. Introduce the Wallaby building team to overall strategy to get the injured people on the game board to the medical center; related to the Wallaby and communicate the robot's necessary function, **2/25/19**
    b. Prototype the "claw" and run preliminary tests with game items, **3/4/19**
    c. After any early revisions, mount the "claw" mechanism on the Wallaby robot base, **3/4/19**

2. Build another strong and stable arm and a plow for the Create to collect the water game pieces (cube and blue pom pom) and move the pom poms to the water reclamation unit. **1/28/19 - 3/11/19**
    a. Introduce the Create build team to the overall strategy and the Create's necessary function within said strategy, **2/11/19**
    b. Prototype the arm and run preliminary tests to maximize stability, reproducibility, and effectiveness, **3/18/19**
    c. After any necessary revisions to the design, mount the collector arm to the Create base, **3/18/19**

3. Integrate sensors into the Wallaby and Create, **3/25/19**
    a. Mount an IR sensor securely on the Wallaby, **3/25/19**
    b. Mount a stable camera sensor on the Wallaby bot, **3/25/19**
    c. Mount an IR sensor for line following securely on the Create, **3/25/19**

Programming Goals and Tasks

1. Ensure that every member of the team has the ability to contribute to programming, **2/28/19**
    a. Conduct a presentation with Workshop attendees recounting their programming progress, **2/28/19**

b. Conduct tutoring sessions with co-captains and experienced programmers to aid younger members, **2/4/19**
c. Work with younger programmers, as well as middle school students who were Junior Botball participants, to develop the the simple, basic game functions and motions into our preliminary game code, **2/4/19 - 3/18/19**

2. Develop a line-follow program, **3/25/19**
   a. Develop a basic line-following program, **3/25/19**
   b. Test on board using the IR sensor and evaluate results, **3/25/19**
   c. Review the code and revise the program if necessary to ensure repeatable success, **4/1/19**

3. Develop a pom-pom detection and sorting program, **4/1/19**
   a. Develop a basic program using the camera that can detect colors, **4/1/19**
   b. Test the program on the board using the Wallaby "claw" bot designed by the building team, **3/25/19**
   c. Revise the code in order to perfect the color detection and ensure the best repeatability, **4/1/19**

Documentation Goals and Tasks

1. Excellently complete all periods of documentation, **4/24/19**
   a. Complete period one documentation project plan in great detail and to the best of our ability, **2/6/19 (We missed this documentation period and are turning it in on 2/26/19 for 50%)**
   b. Complete period two documentation of mechanical systems design and code samples in great detail and to the best of our ability, **3/13/19**
   c. Complete period three documentation of Lessons Learned in great detail and to the best of our ability, **4/24/19**

2. Deliver a well-planned documentation presentation, **4/22/19**
   a. Identify the best communicators and most knowledgeable to participate in the onsite process, **4/22/19**

b. Plan our presentation in great detail and allocate our time appropriately, practicing multiple times, **4/22/19**
c. Prepare onsite documentation materials in great detail and accuracy including a binder, poster and photos, **4/22/19**

3. Utilize the Project Plan in order to provide structure to meetings and encourage productivity among all members, **1/28/19 - 4/22/19**
    a. Post the Project Plan in meeting room as well as on online communication center in order to provide a reference document for all members, **1/28/19 - 4/22/19**
    b. Refer to the Project Plan before all Monday meetings to set goals and outline the day's tasks and goals, **1/28/19 - 4/22/19**
    c. At the completion of meetings, evaluate the accomplishments of the day and make any necessary adjustments to the Project Plan in order to remain on schedule for programming and building completion, **1/28/19 - 4/22/19**

Schedule Conflicts

1. Track & Field Practices- many members of the team including a co-captain and team lead are on the Spring Track team and have mandatory practices that will limit their time at some meetings, **Beginning 3/6/19**

2. National Honor Society- some members of the team, including both of our captains, are a part of NHS and thus meetings that are in conflict with NHS events will require reschedule or adjustment, **Beginning 1/31/19**

3. After School Physics Sessions- Many members of the team are enrolled in high-level physics classes at the school and often must spend significant time after school with their teacher, causing them to be tardy to some meetings, **Beginning 1/31/19**

4. February and April Vacations- Both vacation weeks will fall during the Botball season and will require meetings during

those weeks to be rescheduled to Thursday on the week prior to the vacation week, **Week of February 18th and April 15th**

Team Organization

Schedule of Meeting Times

20 = team meeting date

each meeting runs from 2 p.m to 3:45 p.m.

20 = workshop date

20 = tournament date

January

Mon	Tue	Wed	Thu	Fri	Sat
21	22	23	24	25	26
28	29	30	31		

February

Mon	Tue	Wed	Thu	Fri
				1
4	5	6	7	8
11	12	13	14	15
18	19	20	21	22
25	26	27	28	

March

Mon	Tue	Wed	Thu	Fri

				1
4	5	6	7	8
11	12	13	14	15
18	19	20	21	22
25	26	27	28	29

April

Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6
8	9	10	11	12	13
15	16	17	18	19	20
22	23	24	25	26	27
29	30				

Division of Labor

Teacher Team Leader: Ms. Griggs
Student Team Co-Captains: Steven Rolfs and Zach Fritz
Lead Strategist: Zach Fritz
'Create' Team: Big Bot
Leader: Steven Rolfs
Programmer: Liam
Builders: Cooper G. and Zach Fritz
'Wallaby' Team: Small Bot
Leader: Zach Jackson
Programmers: Kevin Murphy and Declan B. and Ben D.
Builders: Riley L. and Zach Jackson
Documentation Team: Max, Luke Saia, and Mike Carlton
Charging: Ricky Gifford
Table Building Student Team: Ricky Gifford and Sean Spring

The team uses Slack in order to communicate as an entire team and also within the Wallaby and Create teams (which have individual Slack channels) for easier file sharing, personal questions outside of meetings, and team-wide updates.

Team leaders coordinate with co-captains in order to determine the tasks that must be completed within their groups. Team leaders then work with the programmers and builders and ensure that tasks are completed correctly and report back to co-captains.

Conflict Resolution

1. Team members will attempt to resolve their conflicts within their respective teams (Create or Wallaby teams) first, and try to come to a consensus together. Here, all conflicts will be handled by a group vote. An emphasis will be placed on avoiding escalation of conflict, and encouraging teamwork and constructive criticism.

2. If a conflict cannot be resolved at this level or is more serious, the co-captains will discuss it in conjunction with those involved. An appropriate decision will be made by co-captains.

3. Finally, if a conflict still has no resolution, it will be decided by the teacher team leader in conjunction with the co-captains. They will make a decision in the best interest of the team, and that decision will be final.