

Period 1: Project Plan

Goals and Tasks for Botball 2016

1. Game Goals and Tasks, 3-7-2016

- a. Analyze challenge, and have a team-wide brainstorm. *3-7-2016*
 - i. Watch the Botball 2016 video, featuring Botnet, and attempt to brainstorm ideas to come up with basic (and imaginative) concepts. *2-24-2016*
 - ii. Recreate the game board, complete with foam pieces and poms, so that robots can be tested as this is an autonomous competition. *3-7-2016*
 - iii. Read through the Game Review, and identify rules that would either not have otherwise been expected or could cause trouble. *2-24-2016*
- b. Brainstorm ideas, creating a plan to insure maximum points. *3-2-2016*
 - i. Decide on which points to go for, so as to procure the maximum number of potential points. *3-2-2016*
 - ii. Decide on optimal chassis, which would provide the maximum stability for the robot and provide space for all necessary attachments. *3-2-2016*
 - iii. Brainstorm possible ways to accomplish tasks, keeping in mind the limited size of the robot and therefore insuring that all pieces are multipurpose. *3-2-2016*
- c. Gather materials, making sure they are all organized for easy access and maximum productivity. *3-7-2016*
 - i. Put together a metal, LEGO, and electronics parts kit for our team, finding suitable containers to make sure that the parts can easily be accessed. *2-24-2016*
 - ii. Get together team paraphernalia, and find a location where the team can set up the equipment and spend less time on set up each week. *3-7-2016*
 - iii. Acquire snacks, so that when the team is working past dinner hunger does not impact their productivity. *3-7-2016*

2. Robot Building Goals and Tasks

- a. Assemble Omni-Chassis, for robot number one (to complete tasks on the starting side) *3-19-2016*
 - i. Mount Wallaby, and read any new wallaby-related instructions such as do not let the battery get to zero. *3-2-2016*

- ii. Mount Wheels, and run some basic tests on how the omni chassis runs for future reference. *3-2-2016*
 - b. Assemble Standard-Chassis, for the second robot, this one to enter the opposing team's side. *3-19-2016*
 - i. Mount Wallaby, but with extra care to protect it from any potential damage from the opposing team's robot. *3-2-2016*
 - ii. Mount Wheels, and make sure that not only are they rubbery enough to provide grip but that they do not impact the line following ability of the robot. *3-2-2016*
 - c. Assemble Appendages, with care that placement does not impact their performance. *3-26-2016*
 - i. Mount servos, making certain that their performance is not impacted by their placement and testing all micro servos as they have a tendency to break. *3-19-2016*
 - ii. Construct claw, as this will be the most multi-purpose item and therefore not only needs the most refined design but the most testing. *2-19-2016*
3. *Programming Goals and Tasks, 4-23-2016*
- a. Navigation, so that the fully autonomous robot can reach its individual tasks and perform its missions. *4-23-2016*
 - i. Line Following, so that all black lines are clearly and precisely followed. This operation is paramount because if the position is not correct the angle of the turn will be severely impacted. *4-23-2016*
 - ii. Turning. This also involves heavy calculating to ensure that a precise angle is found and translated into a specific turn speed and ratio. *4-23-2016*
 - b. Motor and Servo Movement, *4-23-2016*
 - i. Configure appendages, this also involves calculations because the positions of the servo have to be precise or the dependency of certain movements cannot be judged. *4-23-2016*
 - ii. Configures wheels, this to make sure that in all operations that involve specific movements can be performed correctly and in a manner that does not limit servo movement. *4-23-2016*
 - c. Sensors, to gage position on the field and give some feedback to the robots. *4-23-2016*
 - i. Camera code, to ensure that the robots can find the individual poms on the playing field and also identify them by color. *4-23-2016*
 - ii. Tophat code, this code is to determine the distance of the robot to other items as the camera code does not sense depth. This could be used, for example, to calculate the distance to the poms after having located them. *4-23-2016*

4. Documentation Goals and Tasks, 4-18-2016

- a. Complete First Period Documentation with input from builders and programmers. *3-7-2016*
 - i. Meet with programmers to discuss goals, especially the individual tasks that have to be completed as the need to build a robot can often overshadow them and waste time. *3-7-2016*
 - ii. Meet with builders to discuss goals, making certain to make note of the plans for their build so that the programmers could start making code prototypes and basic line following. *3-7-2016*
- b. Complete Second Period Documentation, with clear data and photographs of designs. *3-28-2016*
 - i. Take data as the building continues, remembering to take pictures and data so that the graphs and photos may be eventually added. *3-28-2016*
 - ii. Complete second period documentation little by little so the accurate information is still added but the documentation does not get in the way of building and programming the robot. *3-28-2016*
- c. Complete Third Period Documentation, *4-19-2016*
 - i. Hold a team meeting to discuss lessons learned and things the team did well so as to be a better post 1010. Make sure all members have a chance to speak. *4-18-2016*
 - ii. Write up notes as the meeting progresses and then type them up in the designated format to communicate the team's knowledge of things they can improve upon. *4-18-2016*

Schedule Conflicts

- a. Spring break, 3-24-2016 -- 4-1-2016
- b. Snow days, 2-17, 2-24 and 2-29
- c. Move to new building

Team Organization

Meetings are:

- a. Mondays and Wednesdays 6:00pm-9:00pm
- b. Saturdays (morning or afternoon)

Special meetings:

- a. Workshop - February 20/21
- b. Tournament Preparation – April 23
- c. Tournament – April 24
- d. Feedback Review – April 27

February						
SUN	MON	TUES	WED	THU	FRI	SAT
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29					

March						
SUN	MON	TUE S	WED	THU	FRI	SAT
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

April						
SUN	MON	TUES	WED	THU	FRI	SAT
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Division of Labor:

- Adult Team Leader: Robert Ekman
- Student Team Leader: Josh Haddock
- Vice Team Leader: Elvin Liu
- Builders: Hayley Goddard, Josh Haddock, Jennifer Moy, Yoga Rajamani
- Programmers: Elvin Liu, Aine Kenwood
- Documentation: Hayley Goddard

Team Conflict Resolution

1. All team members must agree to abide by what is written in our Conflict Resolution Plan. If something is not stated in the plan we will decide by majority vote.
2. Conflicts within the team will be mediated by team members who are not part of the argument.
3. If it is a conflict in which all members take a side, Mr. Ekman will be asked to step into help in the resolution.
4. Complete professionalism is expected of all team members despite their personal feelings for each other, as this is a team effort and a competition, not a personal affair.