Journal

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| **Robot Challenge Journal** Challenge No.: 3  Team Name: 6 Team Members: Cody, Matt, Riley, Brandon  Lockers: #10 Code: 5162 #12 Code: 5162 | | | | |
| **Date** | **Seq. #** | **Name(s)** | **Hypothesis/Behavior** | **Description/Results** |
| 5/10 | 1 | All | Initial team meeting | - Will use a google drive folder to hold code, journal and all other shared documents  - General meeting time is best after class time, but all members are usually available 5 days a week  -We will try using the EV3 brick.  - Begin general plan for how division of labour will work  -Cody has a good starting point for an arbiter, will likely start with that  -Make a list of all behaviours that are needed and put them in a basic work flow  -Start thinking about state diagrams and how they function together |
| 5/10 | 2 | All | Plan for Thursday | -For Thursday, we will continue working on state diagrams  -Ask if the Hunger and Fear inputs can be included in sensor diagram  -Begin testing connecting EV3 Bricks  -If the bricks can connect, then start building the robot |
| 5/12 | 3 | Cody | Idea for brick-to-brick communication | After some research, Cody found that the bricks might be able to communicate using light sensors flashing at each other. Cody will work on that Today. |
| 5/12 | 4 | Riley | Will build frame for two Bricks | Will work on the frame that will hold 2 bricks today |
| 5/12 | 5 | Matt/Brandon | Will work on state diagrams | Will work on state diagrams today |
| 5/12 | 6 | Brandon/Riley/Matt | Finished basic diagrams | General outline of diagrams and state descriptions are done. Will talk with Prof. Fowler next week |
| 5/12 | 7 | Cody | Communication between Bricks | Cody thinks that it may be possible to work both EV3 bricks, we can use two light sensors to send red/blue signals back and forth in a serial fashion to determine the message. |
| 5/12 | 8 | Cody/Matt/Brandon/Riley | Determine sensor layout between bricks | The front brick will have two bumper sensors and the upward facing light sensor, because those are strictly ON/OFF sensors. Sending signals between the two bricks is going to be in three bits, so we can not send analog data. The analog sensors (sonar, downward light sensors) will be on the master brick so that values can be read. |
| 5/14 | 9 | Cody | Set up Serial Communication between bricks | Work to set up serial communication between bricks  Initially tried to send two ack. Signals so that both bricks know the signal has been sent. |
| 5/16 | 10 | Cody | Serial Communication cont | Bricks no longer send ack signals. Was only getting a 90% success rate.  Now, the bricks send 6 signals. One to start synchronization, and 4 to send a bitwise signal |
| 5/17 | 11 | Cody/Matt/Brandon/Riley | Discussion about serial comm. | We think this general setup should work. It might be slow to acknowledge signals from brick 2. But we will test with a wander and backup. |
| 5/17 | 12 | Riley | Build robot with EV3 bricks | Build a robot that will accept both bricks |
| 5/17 | 13 | All | Tested wander and bumper functionality and communication between bricks | Wander and bumper actions tested. The bricks need to communicate using the serial LED flashing in order to trigger the bumper actions from the controlling brick. We tested the two bricks together and found that we are able to trigger the robot using the serial LED flashes as expected. |
| 5/19 | 14 | All | Discuss diagrams with Prof. Fowler | Our diagrams have varying priority levels depending on what state the robot is currently in.  There is a way to perform the same functions without a global state value. |
| 5/19 | 15 | All | Diagram a new state diagram | Diagrammed a new progression for the robot given Hunger and Fear as input values to help determine which task should be performed.  White-boarded the diagram in a long meeting with all team members |
| 5/19 | 16 | All | Agreed on a new progression for tasks | Agreed on how the tasks should be laid out and what the trigger values for each task should be |
| 5/19 | 17 | Matt | Draw the new diagram | Draw the new diagram on the computer and add it to the shared online folder |
| 5/19 | 18 | Riley | Finish the robot hardware | Finish the robot hardware build so that it accommodates all the sensors we need as well as holds both bricks |
| 5/19 | 19 | Cody/Brandon | Build the skeleton of the program | Build a program skeleton with all the tasks needed so that we can break up work moving forward.  Code can be shared on the google drive we have set up. |
| 5/19 | 20 | All | Division of work | Matt - DEATH, SONAR, WANDER  Riley - FEED/FOLLOW GRADIENT  Cody - COMMUNICATE/BACKUP  Brandon - ARBITOR, ESCAPE |
| 5/24 | 21 | All | Start building arbitor | Build a general outline for the arbitor on the whitebord and then put it in the program |
| 5/24 | 22 | All | Test arbitor | Test the arbitor using two basic functions. It should wander, and decrement the hunger and then eventually die. |
| 5/24 | 23 | All | Arbitor is failing | Arbitor is failing. The hunger decrements and then restarts the main task. We suspect that this is because the task switching function is not handling task names as parameters as expected |
| 5/24 | 24 | All | Arbitor work | Removed the task switching function and switch tasks directly in the Arbitor switch statement. The arbitor acts as expected in some cases. Will investigate further on Thursday. |
| 5/24 | 25 | Riley | Work on Follow Gradient function | Work on follow gradient and prepare it for introduction into the code |
| 5/26 | 26 | Brandon | Robot design fix | Added castor to front of the robot to prevent too much weight driving the front of the robot down |
| 5/26 | 27 | Cody | Will implement the task switching from his Challenge 2 | Instead of the hacky style of task switching we have been using, will implement the task switching from cody’s challenge 2. |
| 5/26 | 28 | Cody | Task switching working as expected | The task switching from cody’s challenge 2 is working as expected. Will begin implementing the other functions to see the arbitor is working properly |
| 5/26 | 29 | Riley | Continue working the feed and line following | Lots of testing to see if the line following is working. At this point is appears that it is on the way to working |
| 5/26 | 30 | Matt | Implement the sonar from Matt’s challenge 2 | Implement the sonar task and associated functions from Matt’s challenge 2 |
| 5/26 | 31 | Matt | Sonar testing | Test the sonar. Needed to trace the program because some variable names were changed |
| 5/26 | 32 | Matt/Cody/Brandon | Sonar testing with arbitor | Testing the arbitor to ensure that the robot is choosing the wander, sonar and death tasks apropriately given the current death values |
| 5/26 | 33 | Matt/Cody/Brandon | Arbitor working as expected so far | The arbitor is correctly assigning from the three tasks we have currently implemented. |
| 5/26 | 34 | Brandon/Cody/Riley | Hooked up communication thread | Communication is setup to pass signals from one brick to another. |
| 5/26 | 35 | Brandon/Cody | Build the escape function | Escape function built and tested. The robot escapes as expected. Still need to add some kind of timer for aging and rebuilding fear. |
| 5/26 | 36 | Brandon/Cody/Riley | Computer issues, will restart work tomorrow | Robot C computer issues crashed the computer. Will restart tomorrow and add feeding to the arbitor and test |
| 5/27 | 37 | Riley | Add feeding into Arbitor | Add the feeding task to the arbitor. |
| 5/27 | 38 | All | Brace the light sensor on the robot | The light sensor for communication is loose, build a hardware brace so that the robot light sensor is stable. |
| 5/27 | 39 | Brandon/Cody | The sonar task is overriding all other tasks sometimes | Tested the robot and discovered that the sonar task does not sleep at any time, sometimes causing a failure where the sonar distance is calculated only once and never updated. |
| 5/27 | 40 | Brandon/Cody | Prep for demo | The feeding function needs to wander while on the feeding patch and not just drive in a circle. |
| 5/31 | 41 | Riley | Implement wander for the robot while feeding | Begin to implement a wander while the robot is feeding rather than the circle. |
| 5/31 | 42 | Matt/Cody//Riley | Demo 1 | Demo 1 was good. Only problem was that the robot was triggered to escape by the overhead lights on 2 occasions. Should be fixable by raising the threshold of the trigger value |
| 5/31 | 43 | Matt/Riley/Cody | Will meet Thursday to clean up code, finish journal and submit | Will meet Thursday am |
| 6/2 | 44 | Brandon | Decrease the sensitivity of the escape light sensor | Lower the sensitivity by increasing the threshold value |
| 6/2 | 45 | Matt | Update and clean up journal | Update and clean up the journal to prepare to submit |
| 6/2 | 46 | Cody/Brandon | Clean up code to prep for submission | Clean up code to prepare for submission |
| 6/2 | 47 | All | Take pictures of the robot to include in the journal | Take pictures of the robot for the journal. |
| 6/2 | 48 | All | Demo 2 | Demo 2 to fix the light sensor being triggered by overhead lights. Demo successful. |
| 6/2 | 49 | All | Finish journal and submit | Submit |