

Task Name	Group Member	Finish by Date/Due	Sep-15			Oct-15			Nov-15			Dec-15			Jan-16			Feb-16			Mar-16			Apr-16										
			1	8	15	22	29	6	13	20	27	3	10	17	24	1	8	15	22	29	5	12	19	26	2	9	16	23	1	8	15	22	29	5
<b>Individual Behavior</b>																																		
Research Kilobot Sensors	Jared	September 28, 2015	[Blue bar from Sep 15 to Sep 28]																															
Research Kilobot Communication Protocol	Jared	October 12, 2015	[Blue bar from Sep 15 to Oct 12]																															
Research Q-bot Image Processing	Ryan/Greg	October 5, 2015	[Blue bar from Sep 15 to Oct 5]																															
Research Q-bot Sensors	Ryan/Greg	September 28, 2015	[Blue bar from Sep 15 to Sep 28]																															
Research Q-bot Communication Protocol	Ryan/Greg	October 19, 2015	[Blue bar from Sep 15 to Oct 19]																															
Research E-puck Sensors	Brittany	October 26, 2015	[Blue bar from Sep 15 to Oct 26]																															
Research E-puck Communication Protocol	Brittany		[Blue bar from Sep 15 to Nov 3]																															
<b>Individual Communication</b>																																		
Research/Test Kilobot - Kilobot	Jared	October 19, 2015	[Blue bar from Sep 15 to Oct 19]																															
Research/Test E-puck - E-puck	Brittany	December 14, 2015	[Red bar from Nov 17 to Dec 14]																															
Research/Test Qbot - Qbot	Ryan/Greg	November 2, 2015	[Blue bar from Sep 15 to Nov 2]																															
<b>Integrated Communication</b>																																		
Test Kilobot - E-puck	Jared/Brittany	December 14, 2015	[Red bar from Nov 17 to Dec 14]																															
Test Kilobot - Qbot	Jared/Ryan/Greg	November 16, 2015	[Blue bar from Oct 13 to Nov 16]																															
Test E-puck - Qbot	Brittany/Ryan/Greg	December 14, 2015	[Red bar from Nov 17 to Dec 14]																															
<b>Algorithm Design</b>																																		
Design Linear Based Model	All	December 14, 2015	[Red bar from Nov 17 to Dec 14]																															
<b>Integrated Behavior</b>																																		
<i>Formation Control Behavior</i>																																		
Localization	All	January 25, 2016	[Red bar from Nov 17 to Jan 25]																															
Point Convergence	All	January 25, 2016	[Red bar from Nov 17 to Jan 25]																															
Leader Follower	All	January 25, 2016	[Red bar from Nov 17 to Jan 25]																															
<i>Flocking Behavior</i>																																		
Neighbor Repulsion	All	February 1, 2016	[Red bar from Nov 17 to Feb 1]																															
Endpoint Attraction	All	February 1, 2016	[Red bar from Nov 17 to Feb 1]																															
Heading	All	February 1, 2016	[Red bar from Nov 17 to Feb 1]																															
<b>Testing</b>																																		
Software Implementation	All	March 7, 2016	[Blue bar from Sep 15 to Mar 7]																															
Hardware Implementation	All	March 7, 2016	[Red bar from Nov 17 to Mar 7]																															
<b>Deliverables</b>																																		
Project Proposal - Oral Presentation	All	October 1, 2015	[Blue bar from Sep 15 to Oct 1]																															
Project Proposal - Document	All	October 15, 2015	[Blue bar from Sep 15 to Oct 15]																															
Webpage Release	All	October 28, 2015	[Blue bar from Sep 15 to Oct 28]																															
Fall Progress Presentation	All	November 19, 2015	[Blue bar from Sep 15 to Nov 19]																															
Fall Performance Evaluation	All	November 19, 2015	[Blue bar from Sep 15 to Nov 19]																															
Fall Performance Review	All	December 3, 2015	[Red bar from Nov 17 to Dec 3]																															
Spring Progress Presentation	All	February 18, 2016	[Red bar from Jan 12 to Feb 18]																															
Student Expo Abstract	All	March 18, 2016	[Red bar from Jan 12 to Mar 18]																															
Project Demonstration	All	March 24, 2016	[Red bar from Jan 12 to Mar 24]																															
Final Presentation	All	April 7, 2016	[Red bar from Jan 12 to Apr 7]																															
Student Expo Poster Printing Deadline	All	April 11, 2016	[Red bar from Jan 12 to Apr 11]																															
Student Expo Poster Setup	All	April 12, 2016	[Red bar from Jan 12 to Apr 12]																															
Student Expo	All	April 14, 2016	[Red bar from Jan 12 to Apr 14]																															
Final Report (Draft)	All	April 14, 2016	[Red bar from Jan 12 to Apr 14]																															
Final Report	All	April 28, 2016	[Red bar from Jan 12 to Apr 28]																															
Final Web Page	All	April 28, 2016	[Red bar from Jan 12 to Apr 28]																															
Advisory Board Poster Printing Deadline	All	April 28, 2016	[Red bar from Jan 12 to Apr 28]																															
Advisory Board Poster Presentation	All	April 29, 2016	[Red bar from Jan 12 to Apr 29]																															

Complete In progress

Jared has been working on 2 different aspects of the project. The first is understanding and implementing how the Kilobots receive messages. He has taken code from the Kilobot library and rewrote it so that it may run on the labs Atmega128 boards, also using the schematic for the Kilobots he has derived a circuit composed of 3 op amps, several resistors, and an infrared receiver that is needed to receive messages. The other is implementing a localization algorithm onto the Kilobots. The algorithm was derived by Dr. Ahn and using an iterative form of trilateration. The challenge this poses is it requires matrices or multidimensional arrays, which require more memory and more time required for calculations. Brittany has continued work on the E-pucks. She has been working on creating an algorithm for the E-pucks to drive in a square continuously, as well as reading distance measurements. She has caught up on the researching the E-pucks, but still working on the communication protocol. She has also started to try and communicate with the Kilobots. Ryan and Greg worked on a  $xy$  coordinate system that was derived from the wheel encoder information from the QBot. The QBot heading,  $\theta$ , is determined using the  $atan2()$  function. The  $atan2()$  function maps the coordinates to an angle ranging from  $-\pi$  to  $\pi$ . From the depth sensor on the QBot, the position of a second QBot was determined. This position calculation was communicated to the second QBot allowing them to become localized. Kilobot to Qbot integrated communication has been theorized and understood, the next step will include implementation on the platforms. The next week includes continuing work on the E-puck communication protocol, Kilobot to Qbot communication, algorithm design, and integrated behaviors.