**Proposal Follow Up with Mark 2/21/2021**

Define Object Detection and add to requirements.

1. How large of an object do we want to detect?
2. Does density of objects matter? Are jellyfish objects?
3. In what field of view do we want to sense objects?
4. How far away from AUV should we be looking for objects?
5. Operating distance from seafloor.

How to control AUV using existing systems.

1. Did the previous teams implement autonomous control?
2. Can they control the AUV without autonomy? (keyboard mouse / controller)
3. What is the nose MCU? Can we get a copy of one for prototyping?
4. How does MCU interface with sensors? With BBB?
5. Can we simulate AUV at home using MCU and BBB/VirtualBox?
6. Can we write a very simple program to control AUV to show understanding of controls?

Define what our collision avoidance protocol is:

1. Does the AUV slow down before turning?
2. Does it come to a stop and reverse?
3. What will our algorithm look like?

Changes to add to Proposal:

1. Revise requirements to prioritize sensor requirements.
2. Include collision avoidance parameters in requirements.
3. Create a Block Diagram that reflects the sensor subsystem with BBB. Suggestion: (Left box that is the sensing subsystem, Middle box of collision avoidance protocol/algorithm, Right box being the existing AUV controls)
4. Revise milestones to include (not necessarily in this order):
   1. We understand how the control system works, we can write a program to do a basic task.
   2. Selection of a sensor based on requirements we need to define.
   3. We can interface Sensor with the MCU and send usable information to BBB.
   4. Integrating it all together and verify that it works either in simulation or AUV.
   5. Perform testing on a fully integrated system in the pool.
5. Possibly revise deliverables, include the pool test.

Things to do ASAP:

1. Contact Drew about Object Detection requirements. Find out about how the AUV is currently controlled (was Autonomy fully implemented, is manual control also through MOOS-IVP). What is the nose MCU? Are there spares we can use for prototyping, if not can we purchase them so that we can have a simulated system at home?
2. Contact Matthew about the turning radius of AUV, possibly ask about how he is currently controlling it? What condition is it in, how similar is the current version to User Manual? What is the status of MOOS-IVP, do we have access to the current version of the software, what changes were made to it from the version we find online/ in drive?
3. Assign tasks to team members:
   1. Continue shopping for echosounders.
   2. Learn how hardware integrates. How would a sensor share information with Nose MCU, how does MCU communicate with BBB, how does it share information with AUV controls.
   3. How does MOOS-IVP work? Can we control the AUV manually? Can we write a simple program to do a simple task? Can we write an algorithm for active collision avoidance? Does the BBB run the collision avoidance program or is the role shared with Nose MCU.
   4. Update proposal to include items mentioned above.

Sensoring system

What existence about the subsystems

Include in sensor system (control box to control the AUV to go down, up, left, right)

C code for the BeagleBone Black this week ideally

And in the same time, sensors shopping

Revise the requirements

Plot our project architecture

Sign people

Split up the project to each people