



# S.A.T.I.R.E. Milestone 5

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## Software Team

**Faculty Sponsor**  
Dr. Phil Bernhard

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**Client**  
Dr. Stephen Wood



# Milestone 5 Task Matrix

Task	Complete %	Taylor	Sean	Robert	Clayton	To do
Create poster for Showcase	100	25	25	25	25	Done
Implement and test emergency system with placeholder methods	60%	20	20	10	10	Get multiple sensors inputting into the MOOSDB
Implement and test sonar obstacle detection.	60%	15	15	15	15	Simulate polygon input into MOOS through the Arduino
Hardware Installation and Arduino Connection	90	15	40	20	15	Add and test more sensors
Mission Planner	80	10	10	20	40	Add more configs/Bhvs

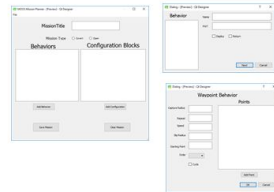
# Showcase Poster

## S.A.T.I.R.E. Autonomous Underwater Vehicle

Sean Small, Taylor McRae, Robert Booth, Clayton Esposito  
Faculty Advisor: Dr. Phil Bernhard, Dept. of CSS, Florida Institute of Technology

### Introduction

- The SATIRE project is a covert AUV for the purpose of remote observation.
- The AUV is intended to collect data from multiple sensors that will be collected in an onboard database.
- The device will operate based on a pre-planned mission script.



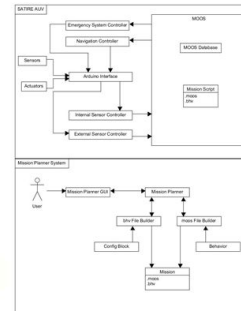
### Approach

- Uses the Mission Orientation Operating System developed by MIT and Oxford for AUVs as the system OS.
- Sensor data is sent from an Arduino board into the MOOS Database, and received by subscribing modules.
- A mission planner is used for automated mission script generation.

### Features

- Fully autonomous operation of a predefined mission plan.
- Emergency response system to detect system malfunctions and take actions based on the mission type.
- Use of a windows application for the creation of mission scripts.

### System Architecture



**NORTHROP GRUMMAN**

Engineering & Science  
Student Design Showcase  
at Florida Institute of Technology



# Emergency System

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- Hardware for the scuttle and data transmission will not be available this year, as such dummy methods are in place to represent them.
- Some sensor data is being received from the MOOSDB
- Progress is now focused on adding more more sensors to the hardware and transmitting their data.
- Will hard code values to test system until sensors are able to be used

# Hardware Installation & Arduino Connection

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- MOOS has been installed onto the Raspberry Pi and is running successfully.
- The connection between the Raspberry Pi and the Arduino is implemented, and data transmissions between the Pi and the Arduino are working on a test sensors.
- Data received from the Arduino is being successfully posted to the MOOSDB and is available for any MOOS Apps to receive.



# Obstacle Detection

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- Given time constraints we will simulate sonar input rather than implement the Hardware.
- Messaging has been implemented to receive data from the MOOSDB.

# Mission Planner

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- Continued work on adding config block and behaviors to the planner.
- Changed the main window gui around for ease of use.
- Changed the config/behavior selection for ease of use.



# Milestone 6 Task Matrix

Task	Taylor	Sean	Robert	Clayton
Create Project Documentation: manual, progress report for next years students.	25	25	25	25
Demo Video	25	25	25	25
System Testing	25	25	25	25
Finish Hardware Connections to send to all current system modules	30	30	20	20
Finalize Mission planner	20	20	30	30

Questions?

