

CEEMBA CDR



Product Description

The goal of this project is extremely broad: Develop a mobile underwater system to facilitate the study of bioluminescent plankton.

The system will record stereo video using low light cameras from multiple angles.

In addition, various telemetry, such as depth and salinity will also be recorded.

Product Development Team

Bobby Heyer: Software architecture and file system

Caio: Project lead, system architecture, and camera integration

Eddie Franco : GPS and INS integration

Jovan Hernandez: Media processing

Molly Smith: Environmental sensors

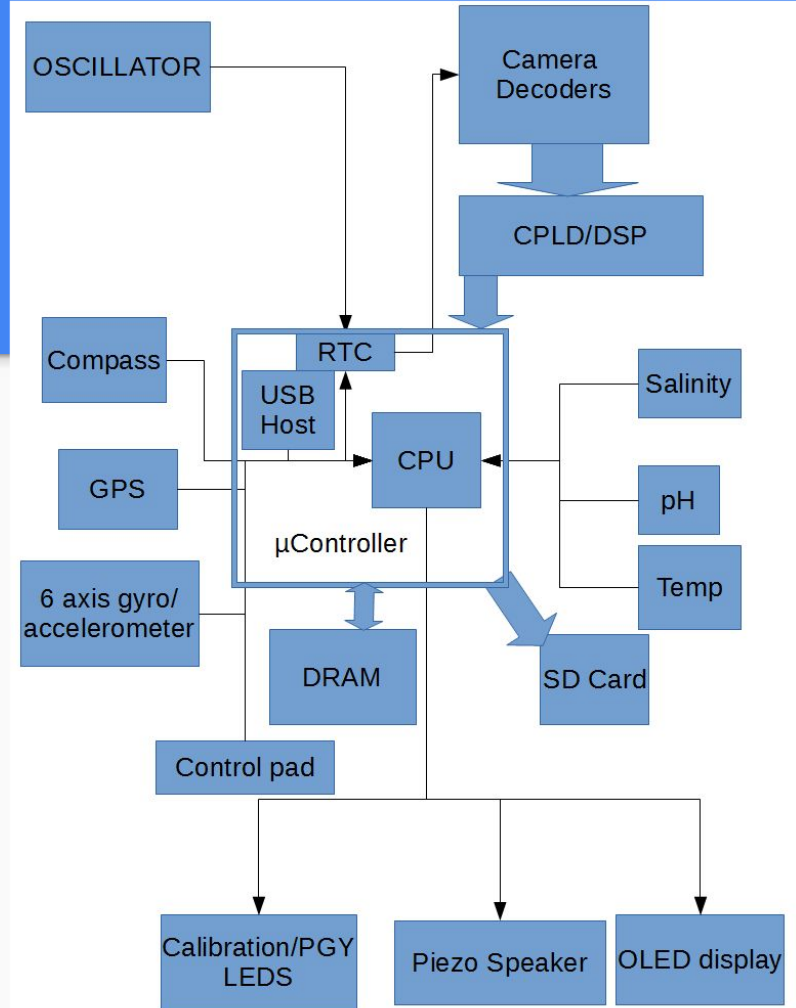
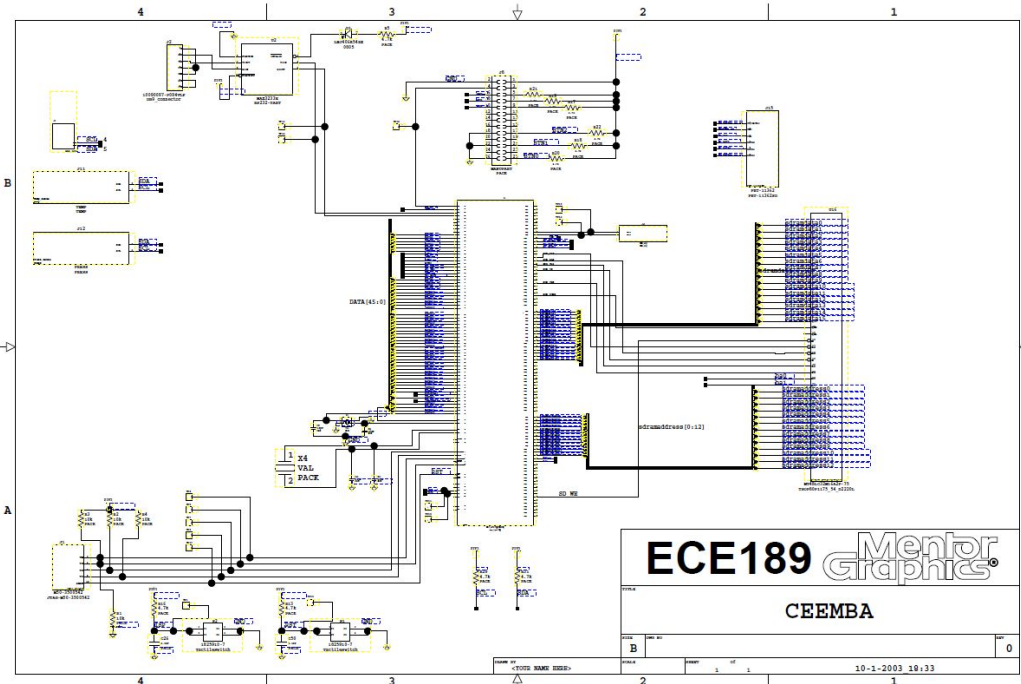
Initial Specification

- Computer Vision
 - 2 low light cameras to provide stereo vision
- Sensors
 - Pressure, salinity, temperature and pH sensors
 - compass, GPS, gyro, and accelerometers for position estimation
- Interface
 - contextual button menu
- Storage
 - SPIFI interface for fast SD card writes

Current Specification

- Computer Vision
 - 2 low light (WAT-910) cameras to provide stereo vision in 480 60i
- Sensors
 - Pressure, salinity, temperature and pH sensors
 - compass, GPS, gyro, and accelerometers for position estimation
- Interface
 - 3 buttons, 1 LCD display, 3 LEDs
- Storage
 - SD interface for card writes
 - SDRAM for image buffering

Block Diagram & Schematic



Critical Elements

- Need to maintain a temporal relation between the two videos being captured
 - CPLD with multiple clock domains will allow for accurate FIFO
- Must be waterproof
 - Sexton Co offers waterproof cases
- Must be able to be calibrated
 - up to 3 LED outputs
- Must have high bandwidth to support video
 - CPLD -FIFO and SD interface
- Must have high sensitivity cameras
 - Watec 910

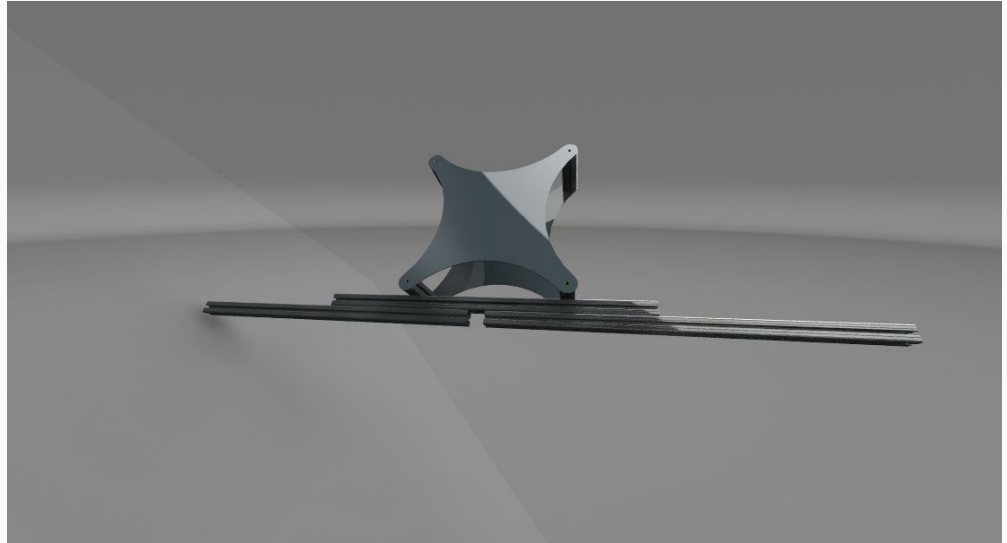
Hardware

Sexton Co for waterproof cases.

Approximate budget: \$3000

Insource design to save on money

Collapsible and modular



Camera

Camera

Watec WAT-910HX

Effective ISO: > 2000000

Still need to find NVD device for M12 lens

\$700



PCB Layout

