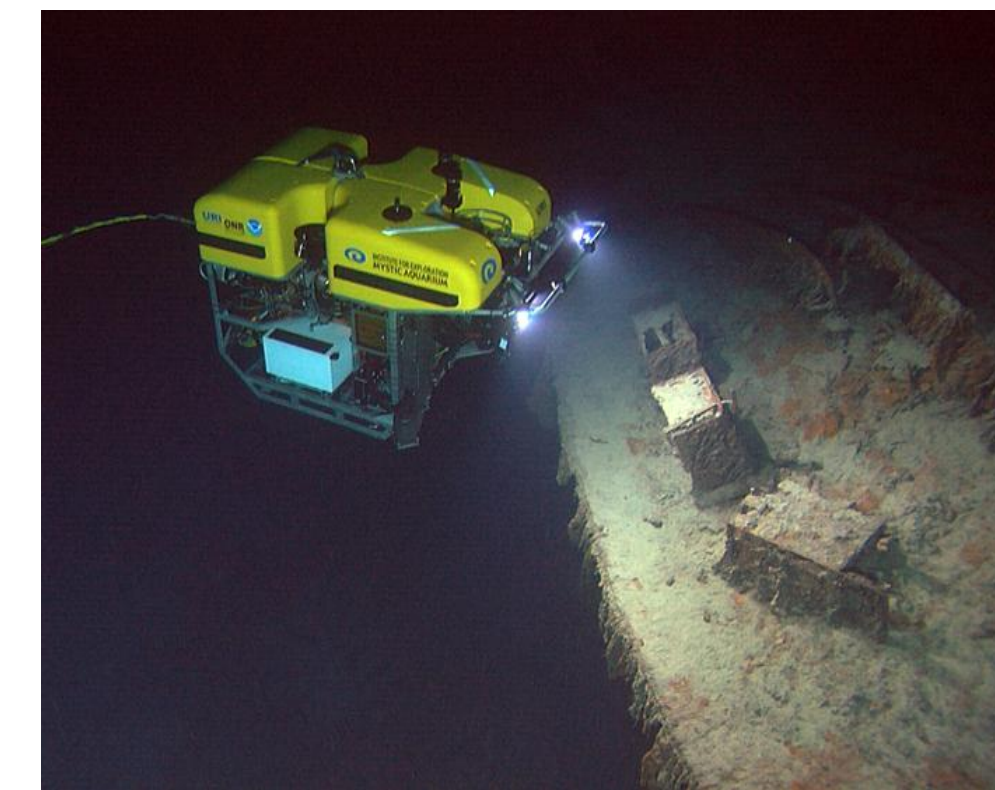
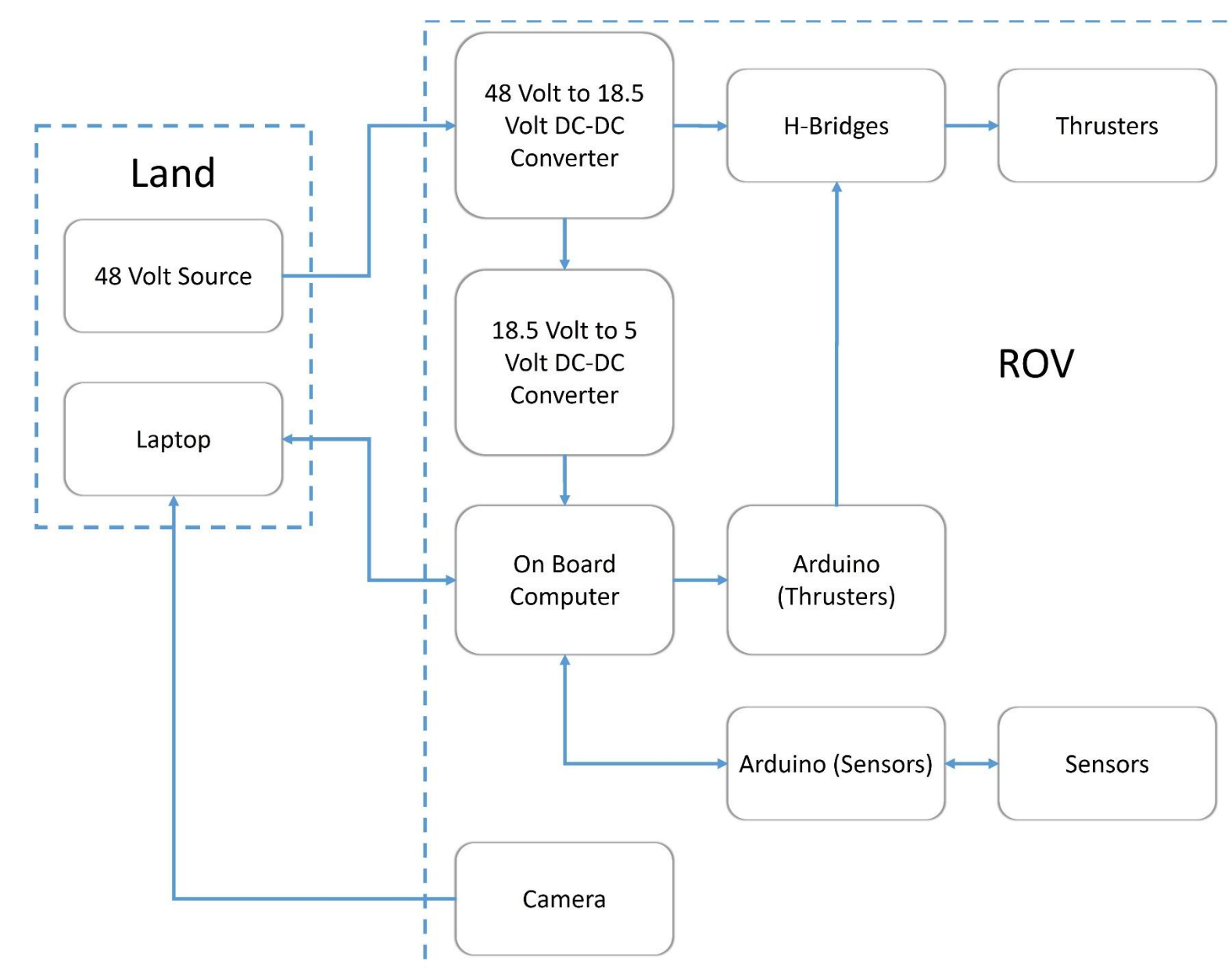


# Underwater Remotely Operated Vehicle

**Team Members:** Chris Barr, Eric Boudreau, Ryan Cahill, Tyler Fausnacht, Nick Geist, Sean Gribbin, Alex Leboeuf, Sean Leighton, Matt Sweeney

**Advisors:** Prof. May-Win Thein (ME/OE), Prof. Rob Swift (ME/OE), Firat Eren

## Electronics Schematic



Application of ROV  
investigating Shipwreck

## Project Goals & Applications

- 2014 MATE ROV Competition
  - Shipwreck exploration mission
  - 3 categories: Identification, Science, and Conservation
  - Gain information to identify shipwreck
  - Take scientific samples and return to surface
  - Remove debris/waste
- Test Platform for PhD Research
  - Provide ROV for optic sensing research
  - For use with leader-follower technology in unmanned underwater vehicles (UUVs)
  - Applications with ocean mapping
  - 2<sup>nd</sup> ROV to be built summer 2014 to test optic sensing between vehicles

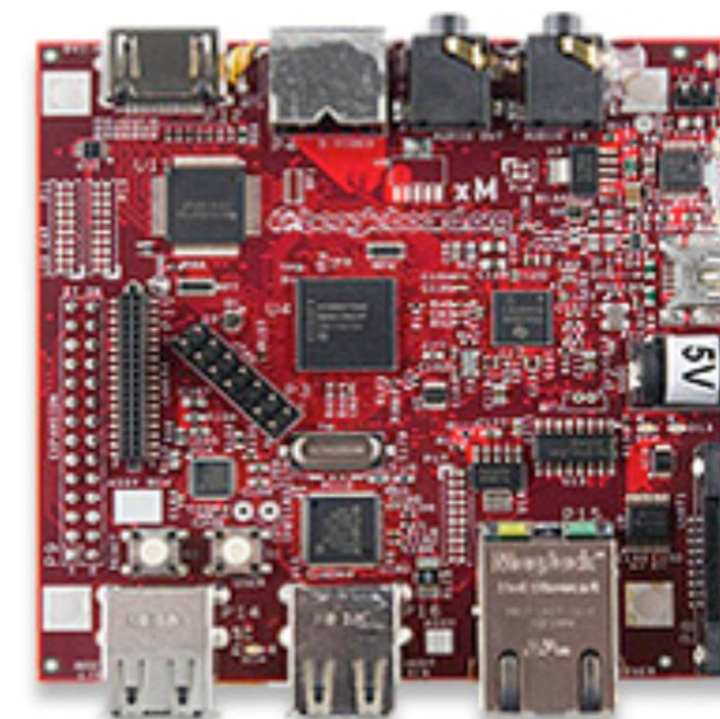
## Control Scheme

- Arduino Mega (2)
- Beagleboard XM
- IMU (inertial measurement unit)
- H-bridge (6)
- PS3 Controller
- Microsoft LifeCam
- Combination temperature/humidity (CTD) sensors
- Pressure sensors

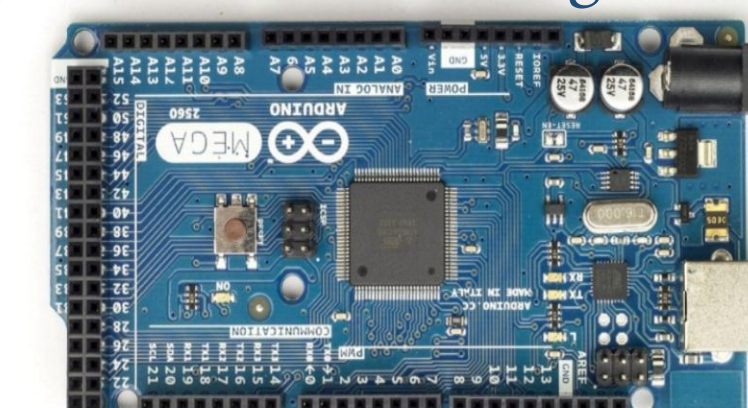
## GUI & Coding

- Communication with onboard computer (Beagleboard)
- Control of all 6 thrusters in both directions with ps3 controller
- Readouts from temperature and humidity sensors through Arduino
- Display of vehicle's orientation based on data from IMU
- Video feed through USB

Beagleboard XM



Arduino Mega



## Chassis Design

- Minimize size in accordance with mission tasks
- Maintain slight positive buoyancy
- Symmetry to eliminate roll
- Waterproof housing of electronics and camera
- Safe mounting of tether on rear of ROV
- Space for PhD research equipment



SeaBotix BTB 150 Thrusters

## Propulsion Design

- Pitch and Yaw control
- 6 thrusters for 3 translational degrees of freedom
- Reversible thrusters for ease of control
- Position around center of mass

## Special Thanks To:

UNH Ocean Engineering Dept., UNH Mechanical Engineering Dept., UNH Electrical & Computer Engineering Dept., Tara Hicks-Johnson, Jenn Bedsole, Sheri Millette, Tracey Harvey, Paul Lavoie, CEPS Dean's Office, Parents Association, Kevin Maurer, Jeff Maggio, Max Cinq-Mars, Chris Brown, The Boudreau Family