Underwater Inspection
&
Monitoring Camera

ELECOMP Capstone Design Project 2024-2025

Sponsoring Company:

DBV Technology, LLC
376 Dry Bridge Road, Unit E1
http://www.dbvtechnology.com

Company Overview:

DBV Technology is an underwater acoustic research and design company. We specialize in underwater recovery systems, acoustic recorders, and custom instrumentation. Our partnerships include defense and private enterprises from all around the world.

Technical Directors:

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Project Motivation:

As a designer, manufacturer, and operator of underwater instruments the need often arises to observe and monitor the equipment under test or in operational use. There are choices available today ranging from simple pole mounted video cameras with small displays to remotely operated vehicles (ROV's) that have cameras designed into them. Neither of these approaches are adequate for several situations that DBV has recently encountered.

Anticipated Best Outcome:

The team will design, build, test and demonstrate an Underwater Inspection & Monitoring Camera that will meet a set of requirements provided to them. The design activities will encompass include market research, electrical hardware design, software design, and mechanical packaging design.

Project Details:

Overall system concept:

A camera that can be lowered into the water to a predetermined depth. Camera must be powered and in a waterproof housing. Camera will be attached to a pole or simply weighted and lowered on a cable. Above the water, the camera signal will be transferred wirelessly to a remote display and control device (mobile phone, tablet, or computer with app). The underwater camera will likely require pan, tilt and zoom functionality and choice of camera and said features will be an important trade off study at the beginning.

Hardware/Electrical Tasks:

Below water - camera selection (mounting, enclosure, power supply, signaling)

Above water – power supply, computer, wireless imagery data server

Firmware/Software/Computer Tasks:

Above water – power supply, computer, wireless imagery data server, user equipment application development, remote wireless monitoring

Composition of the Team:

2 Electrical Engineers & 2 Computer Engineers **(preference will be given to those taking the PCB Design course with Mike Smith on Thursday evenings; those having interest in mechanical aspects)**

Skills Required:

Electrical Engineering Skills Required:

- Circuit design
- PCB Layout
- Mechanical (3D solid modeling)

Computer Engineering Skills Required:

- Embedded system programming (headless computer)
- Wireless communications (exact protocol TBD)
- Server programming
- Application programming (choice of language flexible)

Anticipated Best Outcome's Impact on Company's Business, and Economic Impact

If the capstone design project results in a functional prototype, it will allow DBV to better collect imagery (video and still) to assess performance of systems and also develop marketing materials.

Broader Implications of the Best Outcome on the Company's Industry:

It is possible that the system developed could be further developed and refined into a marketable product for DBV to license or sell other companies working in the undersea space.