Shallow Water Aquatics Vehicle

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Overview

SWAV is an underwater remotely operated vehicle (ROV) under development for UCSB's Computer Engineering Senior Design Class. The vehicle sends a video feed from an underwater camera that is displayed on a monitor. It also has the capability to recording the video to a compact flash card that can then be played on a computer.

SWAV is a useful tool for scientists, researchers, or hobbyists that are interested in exploring submersed objects or ecosystems. It gives them an up-close and detailed view for extended periods of time and can fit into tight spaces where a person could not. The key function of the ROV, however, is that it allows for the video to be re-viewed and analyzed at the convenience of the owner. This gives the project a lot of flexibility. A biologist could document undiscovered marine life and study the habits of sea creatures while an explorer searches a sunken ship or a system of small caves.

The vehicle is composed of a PVC skeleton with motors and a camera mounted on it. It is controlled via a base station above water, consisting of two microcontrollers: one to control the vehicle movement and the other to control the video subsystem. Maneuvering the vehicle at depths of up to 50 feet is accomplished with a user-friendly joystick. The printed circuit board fits into a small and water resistant enclosure that will allow the ROV to be moved easily, allowing it to be deployed from the shore, on a boat deck, or even pool side.

Functional Block Diagram