

UNDERWATER REMOTE CONTROL VEHICLE

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Global remote operated underwater vehicle (ROUV) sales in 2010 totaled approximately \$850 million. In 2010, oil and gas industries purchased approximately 50% of ROVs, while ROV sales for defense & security and scientific research equaled 25% for each sector [1]. The project we are working on is an underwater remote controlled vehicle. Most current underwater vehicles are tethered to the remote control, which limits the range and location of operation. The range is limited because the tether is connected directly to the remote control, which limits the depth reached by the ROV (Remotely Operated Vehicle). Another problem with the current underwater ROV is that the fixed length tethered cable gets tangled because most current systems do not have a feature that controls the length of the cable released at one time. The average price for a basic ROV model ranges from \$6,000 to \$10,000 USD.

Proposed design includes an independent mobile base that can be controlled from the fixed base by wireless communication protocol. The key advantage of the proposed design is in the flexibility of the ROV to be as far as few hundred feet as in present tethered design to 5,000 miles not possible in present configuration which can be implemented in later models of the ROV. We are further planning to reduce the cost to less than \$1,000 dollars in retails for the mobile base and ROV. Proposed system will have built-in GPS system in the mobile base. The way we plan to solve this problem is by combining wireless control, tethering, and autonomy.

The way we will incorporate these ideas is by building a wireless docking station that will be surfaced on the water. The user can control the docking station in any direction on the water surface. The vehicle will be tethered to the docking station, which will have various sensors and a camera with live video feed. The underwater vehicle will also have an autonomous function that runs a preset program. The budget of building this project has been set at \$700 USD. By combining these ideas the ROV will provide a wide spectrum of opportunities from oil and gas industry, navy defense systems, deep-sea fishing companies, hobbyist, researchers, and education purposes.

The proposed product will have significant impact in fishing industry, specifically, deep sea fishing. This is in addition to the existing markets like defense. We also plan to explore other markets like researchers, treasure hunters, and scuba drivers, as initial examples. We expect the market to hit several hundred million dollars since the proposed market is international.



