ROS-Powered AUV for Underwater Exploration

Breif Background

Conventional underwater surveys face challenges such as poor visibility and limited maneuverability, restricting the efficiency of marine research, environmental monitoring, and subsea inspections. To address this, there is a growing need for affordable, AUVs capable of reliable navigation and detailed mapping. However, Existign AUVs have Limited Autonomy, Limited Real-Time Data Processing and Complex Integration. Hence, an autonomous AUvs necessity is there which must be an independent of Environment.

Application Sectors

- Marine and Environmental Research
- Defense and Coastal Surveillance
- Oil and Gas Mining

TRL  **4**

Tech/Prod. Summary

ROS-Powered AUV is an Autonomous Underwater Vehicle leveraging SLAM and sensor fusion technologies for real-time 3D mapping, precise navigation, and environmental monitoring in shallow or turbid waters for scientific, industrial, and defense applications.

Tech/ Product Description

ROS-Powered AUV is a compact version integrates stereo vision, sonar, IMU, and pressure sensors for autonomous underwater navigation, obstacle avoidance under low-visibility conditions, and real-time SLAM mapping, with modular hardware and open-source architecture suitable for research and marine applications.

Impact - SDG:

- SDG 9 – Industry, Innovation and Infrastructure: Advances indigenous marine robotics.
- SDG 14 – Life Below Water: Enables long-term ecosystem monitoring.

Market Potential

1. India's Underwater Robotics Market: USD 0.15 billion in 2022 → USD 0.39 billion by 2030.
2. India's AUV Market is expected to reach 267.9 million by 2029.

Value Proposition

A Sensor and SLAM based precise Autonomous & Reliable Navigation even under low visibility conditions. Cost effective comapred to Commercial AUVs