ABSTRACT

Singapore Autonomous Underwater Vehicle Challenge (SAUVC) is a robotic Autonomous Underwater Vehicle (AUV) competition organized by IEEE OES Singapore. The purpose of SAUVC is to increase students sensitivity to underwater robotics technology and develop Autonomous Underwater Vehicles (AUV) which have the ability to navigate, visual identification, acoustic localization and robot manipulation. Underwater robotic control system is divided into two types namely AutonomousUnderwaterVehicle (AUV) and Remotely Operated Vehicle (ROV).

The most important system in the AUV robot is a visual sensing or identification system. Therefore, in this Final Project entitled "Implementation of Visual Processing for Underwater Robot with ROS" this visual processing system with ROS is used as a framework for improving the performance of AUV. Robot Operating System (ROS) is a meta operating system or framework that is open source that can be used for robots. ROS will be operated as middleware and integrated system that will process the data communication of AUV.

Underwater robots can detect objects up to a distance of 1.5 meters with good lighting using OpenCV with HSV configuration low H = 7, low S = 91, low V = 120, high H = 110, high S = 250, high V = 255. Therefore, it can improve robot performance when tracking objects using the PID system to get responses according to the require specifications with the PID constant kp = 0.5 ki = 0.1 kd = 0 or kp = 0.5 ki = 0.5 kd = 0.001.

Keywords: SAUVC, IEEE, Robotic, AUV, ROV, ROS