Spring 2020 ECE Capstone Program

Project Abstract & Info

Project Number: 46
Project Title: Autonomous Underwater Diver Assisting Robot

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Project Keywords: ROS
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Abstract

An autonomous underwater robot will be implemented using the BlueRov robot with capabilities of tracking, detecting hand gestures, and following the diver. We will develop tracking and detecting algorithms such that they will operate with the Robot Operating System (ROS). ROS allows us to control and automate the BlueRov sensors, motors, and the camera. The detection and tracking algorithms will be processed on the Nvidia Jetson TX2 GPU, mounted on a buoy connected through a router. Automation of the BlueRov and tracking algorithms will be tested in the swimming pool to shape the accuracy and speed.

The application of our project includes assisting scuba divers while they explore the underwater environment and discover new marine life that settles within it. The aquatic world is one of the most colorful and attractive places that are still to be fully discovered. Scuba diving is a popular way of exploring the underwater world, but with it comes diving fatalities. Due to the fact that it is an unexplored environment, danger from marine creatures, unexpected diving injuries and potentially life-threatening hazards may occur. The robot will assist the diver and prevent such issues from occurring by detecting hand signals and marine life around the diver.