The Applications of LiDAR within Robotics

Evanston Garneau, Matthew Semak and Cynthia Galovich

Department of Physics and Astronomy, University of Northern Colorado, Campus Box 127, Greeley, Colorado, 80639

Garn5355@bears.unco.edu

Abstract

As society progresses, robotics has become more prominent. With advances in the field, the focus is on improving machine learning and autonomy. A useful remote sensing tool in this regard, light detection and ranging ,also referred to as LiDAR. This uses properties of light to navigate and update information stored in real time. This specific research is focused on the properties of self-navigating robots. Using a Raspberry Pi 3, a single board computer, to communicate with the robot and its LiDAR to maneuver and function on its own. The ROS2 Foxy, Robot Operating System, is a system of libraries that allows for the robot to map and model the environment. The objective of this research is to have multiple sensors on the robot preforming distinct functions working with the information being processed by the LiDAR. With this, the robot will be able to navigate a space independently and live track a moving object. LiDAR technology in robotics is a remote sensing technique that allows a robot to adapt to any changes in the path of navigation.