

## ABSTRACT

Rapid technological developments were affecting the development of sensors that are used in autonomous robots. Many industrial companies are using robots to help / replace human work that hard to do. Autonomous Guided Vehicle (AGV) is one type of robot used in the industrialized world in the automation system that operated for distribution. To support the operational effectiveness AGV robots needed an information about the situation around for further data processing and calculation system estimates robot position to determine the exact position of the robot.

In this final project, the author will use the sensor rplidar A1M1 to determine the circumstances surrounding the popularity output distances and angles are visualized in the monitoring system and created a system of calculation of the estimated position of the robot AGV using a Kalman filter that processed offline by reading sensor data rotary encoder installed as patents on each wheel robot.

As a result of this research was obtained visualization circumstances surrounding the robot to reach 360 degrees with a distance detection error is still there around 1.09%. Around the robot in real-time and position estimation calculation system based on the robot rotary encoder sensor. The system estimates the distance based sensor position rotary encoder has an error of up to 0.5-3%. caused by the floor surface which makes the wheels slip. To anticipate the estimation and correction of the position of the sensor rotary encoder has an error reading then also made the position estimation using a Kalman filter that can reduce the deviation position of the robot with the actual position.

Keywords: *rplidar A1M1, rotary encoder, kalman filter, AGV*