

## ABSTRACT

Technology progresses very rapidly that makes a variety of industries vying to produce new innovations, especially the automotive industry. One example of innovation in automotive industry is a self-driving car that can drive itself. Self-driving car is a vehicle that is able to operate by looking at the surrounding environment and determining the direction of destination without a driver which in other words, the vehicle is driving itself. Obstacles detection is an important task in a self-driving car because of this ability which can detect the danger of driving.

This final project makes a self-driving car robot in form prototype which focuses on the quiescent blue obstacle detection that blocks the path of car robot and the red light of traffic lights. Obstacle detection uses a webcam using digital image processing.

The results of this Final Project have a success rate at distance from webcam to object with actual distances of 38,3 cm and 55 cm amounting to 85,9% and 92,83%, success rate at distance from webcam to blue obstacle with actual distance 37,8 cm and 44,5 cm amounting to 91,865% and 97,744%, accuracy, precision, and recall percentage of red HSV are 80%, 76,47%, and 86,667% and also accuracy, precision, and recall percentage of blue HSV are 83,33%, 81,25%, dan 86,667%.

**Keywords: self-driving car, digital image processing, obstacle detection**