

## ABSTRACT

Rapid technological development fosters new innovations that are efficient in helping human needs. This development also occurred in the transportation sector. Human activities that are increasingly busy and crowded make everyone need transportation that is comfortable, fast and can facilitate travel from one place to another. Innovation to fulfill this goal is self-driving car. Self-driving car has been and is being developed by big world companies such as alphabet, general motors, ford, tesla, and uber companies. These companies are conducting periodic trials.

In building a sturdy steering system on Self-driving car a control system is needed that can drive the car in the right direction so that it continues to run on the track. This direction control will help the car know the current position and direct it to the right angle. In this final project, a self-driving car robot product will be made that is equipped with directional control. Directional control results in a turning angle for the car robot while being driven to stay on the track. Turn angle is obtained from the tangent value between two Radius of Interest (ROI) in the frame resulting from image processing with the camera. The angle of turn obtained is conditioned to match the angle of the servo motor as the front actuator of the car robot.

The results of this Final Project are the turning angles that are read in the Python program on a straight track have an average of 90.4198 with an average error of 1,086, the right turning path has an average turning angle of 99.5502, 112.96973 and 117.0711 with an average error 3.03727, 3.62493 and 3.0636296, the left turn path 58.7540333, 71.218 and 80.1277667 with an average error of 1.61674, 1.88093 and 1.48696 so that they can direct the robot car in accordance with the sharpness of the bend in the path.

**Keywords :** Image Processing, Radius of Interest, Direction Control