

## **ABSTRACT**

*Parking the vehicle is one of the things that are difficult for beginner drivers and older drivers, especially parked in parallel and in a narrow lane. The core of the problem is to set the steering direction and the speed of the vehicle when parked. Therefore, a system is needed to allow drivers to park their vehicles quickly and well. So in this final project, a system will be designed that can park the vehicle automatically.*

*This parking system uses the method of Ackerman Steering in determining the steering angle, which is the angle that will be implemented into the Path Planning Parking. After finding a parking space available with a safe distance, the user just activates the auto parking system, and the car will start the automatic parking. Automatic parking starts from the start point and will move to the end point with the formula movement through the Path Planning. When parked, the distance between the car and other cars will be measured using ultrasonic sensors. Speed and distance to go park the car when parked are measured by the Rotary Encoder. To control the system in this final project, an Arduino UNO microcontroller and a DC motor as the steering mechanism will be implemented using the Ackerman Steering method.*

*Based on the test results obtained by the data, the system works quite well. The rotary encoder is used as feedback to work well with the greatest error of 8.5%, as well as with ultrasonic sensors having a very small error value. The process of maneuvering when parking also works well and chooses a good degree of accuracy with an average time of 36.92 seconds in performance. It is also assisted with Path planning, thus simplifying the maneuvering of the designed car. This control system is implemented on the electric car.*

*Keywords: Ackerman Steering, Path Planning Parking, Ultrasonic, Rotary Encoder, Arduino UNO*