ABSTRACT

One of the most difficult thing to do by drivers, especially beginners is park their vehicle in a narrow space. It is difficult to set the steering position and velocity when parking. Because of that, we need a system that can help parking process. So in this final project will be designed a system that can park the vehicle automatically.

This automatic parking system implement path planning one trial parallel parking method. First, the vehicle will detect safe distance with another vehicle by ultrasonic sensor. After safe distance fulfilled, the vehicle will scanning the parking space. If the first parking space is not enough, system will find another parking space, until the third parking space.

If parking space is enough, system will move to start point, then maneuvering to end point. To count the mileage, a rotary encoder is used. For the controller, we use ATMega 128. And for actuator, this system use DC Motor as main actuator, and servo motor as steering actuator.

Based on test results, system works well enough. Test result for rotary encoder's pulse per rotation is 862.5 in forward, and 864.8 in backward. In scanning process, average distance detection error is 2.03 % for first parking space, 4.65 % for second parking space, and 3.98 % for third parking space. But system accuracy in find appropriate parking scape is 100 %. While for positioning process, acquired start point formula, $\Delta x = 1.2\Delta y + 6.6$.

Keyword : automatic parking, path planning, ultrasonic, rotary encoder, motor