

ABSTRACT

Motor vehicle accidents, especially car increases recently. Data from the police which was released in 2009, an average of 20,000 lives per year in a car accident. According to research conducted by the National Highway Traffic Safety Administration (NHTSA), the main cause of accidents is human error factor is loss of concentration and fatigue. So we need a tool that can help people to drive a car so that accidents can be reduced. In this study, built speed control and braking systems concepts adjust the speed and the distance between the front of the car. This system can reduce or increase the speed according to the distance between the front of the car.

As the system uses sensor input XL-MaxSonar-EZ or RPLidar AIM1 that serves to determine the position of the range car with the car ahead. Arduino TFT LCD touch screen as the input distance and maximum speed. The system also uses a rotary encoder to read the speed of the car. The fourth input will be processed Arduino Mega with fuzzy logic control and the PI control, so the PWM output fuzzy shapes and distances. The final goal of this research is to produce a prototype speed control and braking systems on electric cars that can automatically adjust the distance according to the distance between the front of the car which has been determined and the increase or decrease the speed of the car in accordance with a specified maximum distance. With this system the driver can help to control kenderaannya so as to reduce the rate of accidents due to loss of concentration in menngemudi.

From the results obtained, the proximity sensor is suitable for this system is sensor-MaxSonar XL-EZ. Sensor XL-MaxSonar-EZ can be read with the object of a good car. The larger the PWM value given to the DAC, the faster the motor rotation as well. The greater the value given to the PWM buck converter, the better the regenerative braking.

Keywords: electric car, control, speed, regenerative breaking, BLDC motor, rotary encoder, XL-MaxSonar-EZ, RPLidar AIM1.