

Abstract

Blind spots are a significant contributor to car accidents, prompting continuous efforts by automakers to develop technologies aimed at mitigating this issue. In this context, the use of object detection sensors that facilitate communication between drivers in blind spots has gained traction. This study addresses the pressing concern of road accidents in Indonesia, where statistics reveal a rising trend. By employing fuzzy logic with the Sugeno method, this research proposes a blind spot object detection system for trucks. The system integrates five ultrasonic sensors strategically positioned at the front, left, right, and rear sides of the truck, coupled with fuzzy logic algorithms to process the sensor data. Visual and auditory warning signals, such as buzzers and LEDs, are utilized to alert drivers of potential hazards. The device incorporates input values derived from observation results, utilizing the coefficient value of the sensor distance data. The validity test, employing R² (R Square), reveals a remarkably strong correlation. This conclusion is supported by the author's meticulous observation of distance data from each sensor, performed 30 times, which yielded an average correlation value of 0.99. The proposed system showcases its efficacy in addressing blind spot-related risks and promises improved road safety through intuitive decision-making mechanisms that are easily comprehensible to drivers.

Keywords— Sugeno Fuzzy Method, Blind Spot Object Detection, LED, Buzzer