

ABSTRACT

Blind spot is an area around a vehicle that cannot be reached by the driver's view even with the help of the rear view mirror on the vehicle. Moreover this happens to 4 or more wheeled vehicles such as sedans, minibuses, trucks, buses and others. Aside from the position of the driver's seat, this is also due to the fact that the vehicle has a vehicle body that does not allow the driver to see some areas of the vehicle, especially in some areas of the side, rear area and even the front is sometimes sometimes not clearly visible. Therefore a proactive solution is needed to deal with this problem. So that this final project created a system that can detect other road users in the blind spot area. This system uses the Bluetooth Low Energy (BLE) module to detect the presence of objects (smartphones) belonging to other road users. Prediction of the distance to the road user is obtained by calculating the RSSI value between the user's smartphone (beacon) and the BLE module that detects it. Whereas, the position of the object is obtained using a multilateration algorithm by determining the intersection of the circle detected by 2 BLE modules. In this research, Kalman filter is also used to suppress the noise obtained during the target detection process. Detection results in the form of a user's distance and location prediction are displayed on the driver's smartphone screen. Detection experiments of other road users in a stationary condition resulted in an accuracy value of 88.3%.

Keywords: beacon, blind spots, RSSI, smartphones, multilateration, noise