

## **ABSTRACT**

The rapid increase in the economic value of commodities and the continuous increase in online shopping habits have made the online shopping market wider and the number of goods increasing. The increase in online shopping interest has led to an increase in logistics needs, which has led to an increasingly high demand for the development of the logistics industry. Due to the popularity of online shopping in the new era, the logistics industry is being widely discussed. Warehousing has become an important part of the supply chain of modern companies.

Applying smart transportation to a prototype that will be applied to the logistics industry is a solution to help logistics workers and minimize work accidents. This prototype can read sensors to obtain the required information, wireless communication over long distances, make decisions automatically, and utilize elements of existing transportation with information and telecommunications technology electronically. In this research, a prototype was designed using VLC as a communication method, using a photodiode as a receiver, and an LED as a message sender with light blinking similar to Morse code. The information sent is the result of the sensor reading several things that will become fuzzy logic parameters such as RPM speed, distance between vehicles, and the position of the vehicle behind it. After the data is received by the receiver vehicle, the parameters will be processed using fuzzy logic that produces an execution in the form of vehicle control and the speed of vehicles between vehicles so that the vehicles do not collide.

The final result of the design of this smart vehicle prototype can perform data communication, the data sent is the same as the data received, perform data transmission with 175 to 196 characters with a distance of 50 cm only takes 1 minute, process vehicle speed data with fuzzy logic applying fuzzy rules that will affect the defuzzification results, and two vehicles (Transmitter and Receiver) have low power consumption with a power of 0.037666 Watt.

Keywords : VLC, Light, Smart Vehicle, Fuzzy Logic