

ABSTRACT

At present, the population in an area is growing very rapidly. Therefore many of them have vehicles to meet their needs. Many car users, especially those who come to the shopping center and want to shop monthly, but often happens in a parking lot mall / supermarket that is full because of the many people who shop at the place. So people have trouble finding an empty parking lot and the road to the empty parking lot.

The purpose of this research is to be able to design and implement a wireless sensor network for monitoring systems that provide parking information that is available and not available then passed on to the user. This study uses two parts, namely end user and user. The researcher will focus on the end user, which is to make sure parking data is available and not available using ultrasonic sensors that are connected to Arduino. The data will be sent to the user so that the user knows and can provide information to the user about parking available and not available parking.

The results obtained, the smart parking prototype that has been designed can function properly as expected, the sensor can detect vehicle objects that enter the parking area, or those that come out of the parking area. With a maximum distance of 200 cm. The result of throughput is 639k bps. According to TIPHON standardization, the throughput is good with index 4. The results of packet loss testing at NodeMCU to Thingspeak get very good results because the packet loss value is 0%. This means that there is no number of packets lost due to collisions or congestion. The results of the NodeMCU delay test with sensors and Thingspeak obtained a total delay of 218 ms and an average delay of 0.07 ms. According to the TIPHON standard, the delay is good.

Keywords: *Smart parking, Maps, QR Code.*