

## ABSTRACT

*Indonesia is a developing country with a fairly rapid population growth rate. The increase in population affects traffic density in big cities. It is often found that motorized vehicle users violate traffic rules, such as using noisy exhausts. Noise due to exhaust apparently disturbs various sectors, including education, health and other occupations. To overcome this problem, a tool is made that is able to detect motorists who violate because they use a noisy exhaust. This tool is also created to create a safe and comfortable road environment by utilizing the concept of Internet of Things. There are two sensors used, namely the KY – 037 and MAX4466 sound sensors which function to capture the sound source. Other components used include Liquid Crystal Display (LCD), Arduino Nano and ESP32 – CAM as controllers. This tool is also expected to help the Department of Transportation (Dishub) to monitor motorists.*

*This research begins with the system design stage. After being designed, testing was carried out on the hardware and software tools. The MAX4466 sound sensor has a better value than the KY – 037 sound sensor, this shows that the quality of the sensor affects the accuracy of the results obtained. Furthermore, in testing the performance of the tool, good results were obtained because all installed components can be connected to each other. Then on the QoS measurement for data transmission carried out from the tool to the database, getting an average throughput of 19,500 bps or 19.5 Kbps then the average delay value obtained in the data transmission process is 212.465 ms or 0.2125 second and the average value of packet loss 0%. From some of these tests, it can be concluded that the noise detection tool for motorized vehicles can functionally work well and in accordance with the initial design and the data transmission to the firebase is successful.*

**Keywords :** *Sound, Noise, Internet of Things, KY-037, MAX4466, Arduino Nano, ESP32 – CAM.*