

## Abstract

Smoker Detection System is one of the solution that perform to handle smoking problem in campus area faced by several universities in Indonesia. Unfortunately, there are deficiencies in the smoker detection system, one of the deficiencies is the connectedness of devices using cables. Connectivity of components using cables becomes a problem in terms of installation and system scalability. To overcome this deficiency, this study attempts to apply MQTT middleware where all devices connect to a MQTT broker wirelessly using the publish-subscribe method by utilizing the advantages of MQTT in the field of network optimization that can handle thousands of remote clients with one server. However, in its application, MQTT itself has problems with Quality of Service that have been proven in the application of the MQTT protocol as a means of bike sharing communication. In the study described, the MQTT protocol is susceptible to collision, where packet loss rates are high when subscriber scale increases. Thus, this study also performs QOS MQTT analysis for data transmission from nodeMCU to Raspberry pi which can be applied for wireless smoker detection system device to obtain optimal performance. Through the trial of the device performed for 4 weeks, the average delay data transmission time for each QOS MQTT is QOS0 of 0.141673423S, QOS1 of 0.18987227S and QOS2 of 0.170317308S, while the average packet loss data transmission respectively, each QOS is QOS0 2.78%, QOS1 0.71%, QOS2 2.00%.

**Keywords:** cigarette, MQTT, QOS, packet loss, delay, performance

---