

## ABSTRACT

*Internet of things (IoT) is a technology that can make the devices communication each other and can controlled from everywhere. Through this IoT technology the smart lamp was made so the human can control the lamp in their house from everywhere and the lamp can work automatically based on the environment.*

*This research was developed from the device was made before with three features, can control the lamp manually using button on android application, can control the lamp automatically using ultrasonic sensor and light sensor connected to microcontroller ESP32. The sensors collect the data and storage to cloud server, to control the lamp using application in the smartphone with android operating system.*

*From the functional test light sensor, ultrasonic sensor, cloud server, and android application can work as its function. From end to end testing Ultrasonic Sensor mode from the lamp condition turn off to on has the lowest average delay 2.05 s. From network testing using fiber optic wifi connection from ESP32 to ThingSpeak the On Button mode has the lowest average delay 0.35 s with throughput 7.485 kbps. And from android application to ThingSpeak the Ultrasonic Sensor mode when the lamp condition is turn on has the lowest average delay 0.34 s with throughput 7.127 kbps. From network testing using 4G wifi connection from ESP32 to ThingSpeak the Off Button mode has the lowest average delay 0.37 s with throughput 8.151 kbps. And from android application to ThingSpeak the Off Button mode has the lowest average delay 0.19 s with throughput 9.119 kbps.*

**Key words:** *Relay, light sensor, ultrasonic sensor, ESP32, ThingSpeak, Android, Lamp.*