

ABSTRACT

The modern era characterized by rapid technological advancements the Internet of Things (IoT) has become an important benchmark in changing the way people interact with devices on a daily basis. One example of a recent breakthrough is the use of advanced 4G networks and voice recognition technology to control smart devices such as smart lights. The combination of IoT, 4G connectivity, and voice recognition capabilities opens the door to a more intelligent, intuitive, and connected user experience in managing home lighting. This final project researches the performance analysis of automated lights using voice recognition based on telegram bot.

Automatic voice-controlled lighting, based on sending notification messages through a Telegram bot and transmitting sound signals using voice recognition devices, is one method that can be used to control lighting. This system employs the NodeMcu ESP32 as the main controller, with a relay serving as a switch to connect the lights, and the Telegram bot acting as a sender of messages or a controller to turn the lights on and off. By using voice recognition as the input control, the Telegram bot is instructed to turn on the lights.

The entire process to assess the performance of voice recognition-based automatic lighting is aligned with the design, which includes distance testing, sound testing, Qos testing, delay and throughput testing, and sending message reports in the form of notifications to the Telegram bot. The test results for maximum throughput reached 140.208 Kbps, and in the minimum delay test, it was recorded at 164.14 ms.

Keywords: Lighting, NodeMcu ESP32, Voice recognition, Telegram Bot