ABSTRACT

DESIGN AND BUILD AN INTERNET OF THINGS SYSTEM FOR CONTROLLING POWER OUTLETS USING A WHATSAPP MESSENGER BOT

Oleh :
Muhammad Iqbal Rasyid
19104041

Smart Socket is designed to provide smarter control over home electrical outlets through the use of fire sensors, MQ2 gas sensors, and PIR HC-SR501 sensors, as well as integration with Twilio and ThingESP platforms for command and notification delivery via WhatsApp. This research involves the hardware system design and sketch program to ensure the functionality of the required components. WhatsApp application testing is conducted to examine the capability of command and notification delivery using Twilio and ThingESP platforms. Evaluation is performed on the fire sensors, MQ2 gas sensors, and PIR HC-SR501 sensors to assess their detection capability and accuracy. The test results show a success rate of 84,80% for the fire sensor, 80,034%for the MQ2 gas sensor, and 80% for the PIR sensor. A 4-channel relay test is conducted to ensure the activation and power cutoff function of each relay channel. Functionality testing and command/notification testing are carried out to verify the overall system performance. Calibration testing is conducted to adjust the sensor parameters according to the actual testing environment. Equipment resilience and system resilience tests are performed to examine the reliability and stability of the Smart Socket. Overall, the Smart Socket has been successfully implemented with sensors that demonstrate adequate accuracy and successful integration with Twilio and ThingESP platforms. The test success rate reaches 90% with an error rate of 10%, indicating good reliability. Development recommendations include improving the accuracy of the PIR sensor and conducting further testing on the stability of the connection between the NodeMCU device and the WhatsApp application. The Smart Socket has the potential to provide greater benefits and convenience in home electrical outlet usage through appropriate improvements and developments.

Keyword : *Internet of Things (IoT), NodeMCU, Fire Sensors, MQ2 gas sensors, PIR sensors*