Design and Development of an IoT-Based Automatic Clothesline Roof Prototype Using Fuzzy Inference System Method

Supervised by Choirul Huda, S.Kom., M.Kom

Akbar Firmansyah

Study Program of Informatics Engineering

Majoring in Information Technology

ABSTRACT

The current global warming phenomenon has led to increasingly unpredictable weather patterns. This poses a challenge, particularly for individuals who rely on direct sunlight to dry their laundry. To address this issue, this study develops an automatic clothes-drying system based on the Internet of Things (IoT). The system utilizes an ESP32 microcontroller connected to a rain sensor, a Light Dependent Resistor (LDR), and a DHT11 sensor. Data collected from these sensors is processed using a Fuzzy Tsukamoto to determine the weather conditions. If the system detects rain or low light intensity, the clothesline roof is automatically closed using a servo motor. When the roof is closed and the clothes are still detected as damp, a fan is activated to assist the drying process. Conversely, if the weather is sunny, the servo motor opens the roof to allow sunlight exposure. The system is also integrated with the Blynk platform, enabling remote monitoring and control via mobile devices. Experimental results indicate that the fuzzy logic system is capable of making accurate decisions with 100% accuracy, demonstrating that the system is both functional and reliable for practical use.

Keywords: ESP32, *Internet of Things*, *Clothesline*, *Fuzzy*