

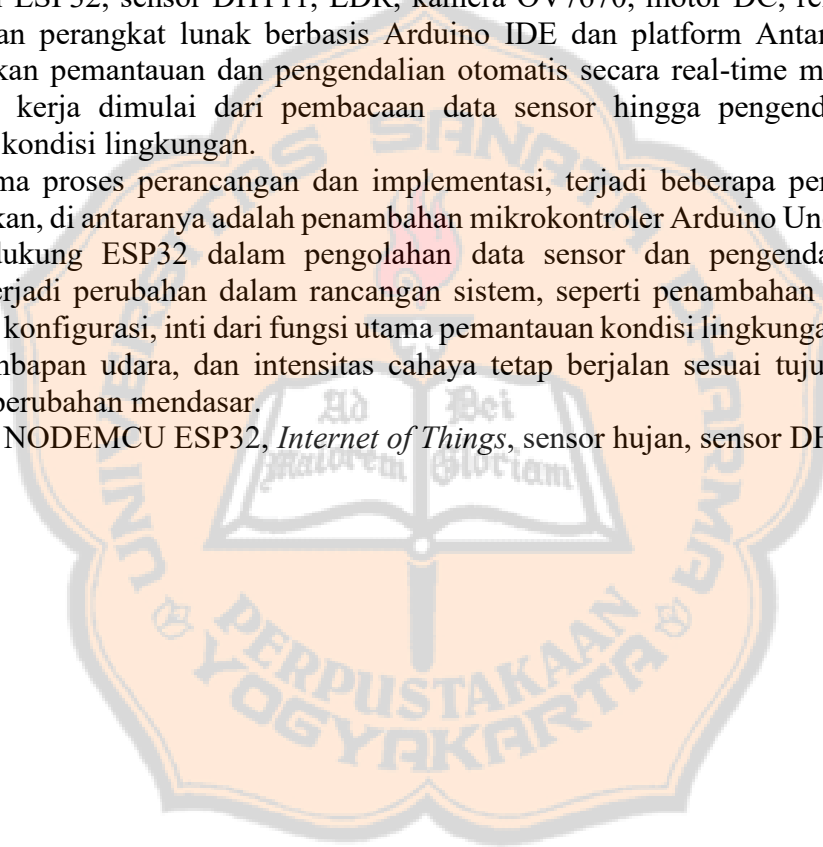
## ABSTRAK

Kegiatan menjemur pakaian merupakan aktivitas rumah tangga yang sangat dipengaruhi oleh kondisi cuaca. Hujan yang turun secara tiba-tiba dapat membuat pakaian basah kembali dan menambah pekerjaan rumah tangga. Untuk mengatasi masalah ini, dikembangkan sistem jemuran otomatis berbasis mikrokontroler yang mampu merespons perubahan lingkungan secara *real time* tanpa keterlibatan manusia. Sistem ini mengatur lampu LED secara otomatis berdasarkan intensitas cahaya, serta menyediakan mode manual melalui saklar untuk pengendalian langsung.

Perancangan sistem jemuran otomatis berbasis IoT mengintegrasikan perangkat keras seperti ESP32, sensor DHT11, LDR, kamera OV7670, motor DC, relay, kipas, dan lampu dengan perangkat lunak berbasis Arduino IDE dan platform Antares. Sistem ini memungkinkan pemantauan dan pengendalian otomatis secara real-time melalui internet, dengan alur kerja dimulai dari pembacaan data sensor hingga pengendalian aktuator berdasarkan kondisi lingkungan.

Selama proses perancangan dan implementasi, terjadi beberapa perubahan teknis yang signifikan, di antaranya adalah penambahan mikrokontroler Arduino Uno sebagai slave untuk mendukung ESP32 dalam pengolahan data sensor dan pengendalian aktuator. Meskipun terjadi perubahan dalam rancangan sistem, seperti penambahan perangkat dan penyesuaian konfigurasi, inti dari fungsi utama pemantauan kondisi lingkungan yaitu deteksi hujan, kelembapan udara, dan intensitas cahaya tetap berjalan sesuai tujuan awal tanpa mengalami perubahan mendasar.

Kata kunci : NODEMCU ESP32, *Internet of Things*, sensor hujan, sensor DHT11, sensor LDR,



## ABSTRACT

The activity of drying clothes is greatly influenced by weather conditions. Sudden rainfall can cause clothes to become wet again and increase household workload. To address this issue, an automatic clothes drying system based on a microcontroller was developed, which is capable of responding to environmental changes in real-time without human intervention. In this system, LED lights are automatically controlled based on light intensity, and a manual mode is provided via a switch for direct user control.

The design of the IoT-based automatic clothes drying system was carried out by integrating hardware components such as ESP32, DHT11 sensor, LDR, OV7670 camera, DC motor, relay, fan, and lights, with software developed using the Arduino IDE and Antares platform. This system allows for automatic real-time monitoring and control over the internet, with a workflow starting from sensor data reading to actuator control based on environmental conditions.

During the design and implementation process, several technical changes were made, including the addition of an Arduino Uno microcontroller as a slave to support the ESP32 in sensor data processing and actuator control. Although some modifications in system design occurred, such as hardware additions and configuration adjustments, the core functions of environmental monitoring including rain, humidity, and light intensity detection remained consistent with the initial objectives.

Keywords : Internet of Things, LDR sensor, DHT11 sensor, raindrop sensor, NODEMCU ESP32

