

## ABSTRACT

*Conventional drying methods are still considered the most economical option for the community; however, they are less effective in the event of sudden rain and lack direct supervision. The development of Internet of Things (IoT) technology can help address these issues. This research aims to design and build an automatic roof control system for clotheslines that can be monitored anytime and anywhere. The design of this automatic roof control system utilizes the ESP32 microcontroller. This control system employs a DHT11 temperature sensor, a BH1750 light sensor, and an anemometer that sends information to a servo motor and an internet-connected device about real-time weather data. The servo motor will move the roof to open or close after data is received, and the readings from the sensors, along with the roof's status, will be sent via a Telegram bot. The results of the control system align with the programmed logic: the roof will close if one or more sensors detect a temperature  $\leq 27.6^{\circ}\text{C}$ , light intensity  $\leq 400$  lux, and wind speed  $\geq 2.87$  m/s. From the DHT11 sensor test data, an error of 2.09% was observed; for the BH1750 sensor, an error of 10.21% was noted, and for the anemometer, the error was 9.36%.*

*Keywords: Clothesline, ESP32 Microcontroller, Temperature Sensor, Light Sensor, Telegram Bot*