# ABSTRAC

*This thesis discusses the design and development of a coffee roasting machine based on the Internet of Things (IoT) using the ESP32 microcontroller. The aim of this research is to create a coffee roasting machine that can be controlled and monitored remotely via an internet connection. The IoT-based coffee roasting system involves several main components, including the ESP32 microcontroller, temperature sensors, humidity sensors, and a WiFi module. The ESP32 microcontroller functions as the central controller, processing data from the sensors and controlling the actuators based on predefined algorithms.Data from the sensors is sent to an IoT server, allowing users to monitor and control the roasting process in real-time through a mobile or web application. Test results show that the system works well, able to control temperature, humidity, and roasting duration according to the desired profile. The system testing also shows that the accuracy level of the K-type thermocouple sensor in detecting temperature inside the roasting drum reaches 99.6%. Additionally, users can access and control the roasting process remotely in real-time through the application. This system is expected to help coffee entrepreneurs improve the quality and consistency of their coffee roasting results.*

***Keywords :*** *Coffee roasting machine, Internet of Things (IoT), ESP32, Sensors, Mobile application.*