

## ABSTRACT

*Population growth in urban areas has reduced green space, while the need for quality food continues to increase. The construction of rooftop greenhouses with Internet of Things (IoT) technology offers a solution to maximize the use of limited space in food production.*

*This research develops an automation system for the greenhouse on the roof of Selaru Building, Telkom University. The Grape Plant Watering Automation System works based on the measurement results of several sensors including soil moisture sensor to measure soil moisture, DHT22 to measure air temperature and humidity, and flow sensor to measure the volume of water flow. The watering system is designed using two irrigation methods, namely drip irrigation and mist irrigation, which are controlled based on a real-time schedule.*

*The results showed that the system succeeded in automating watering, where both irrigation systems (drip and mist) have successfully run on the specified schedule. LoRa technology has also successfully transmitted greenhouse monitoring data to the gateway, enabling optimal monitoring and management of the greenhouse.*

**Keywords:** *Greenhouse, LoRa, Internet of Things (IoT), monitoring system.*