Automatic Irrigation and Lighting System for Succulent Ornamental Plant Cultivation with Fuzzy Mamdani Method

Rizky Zam zami

Study Program of Informatics Engineering

Majoring in Information Technology

ABSTRACT

This research discusses an Automatic Watering and Lighting System for the cultivation of succulent ornamental plants using the Fuzzy Mamdani method with an Arduino Uno microcontroller, conducted indoors. In the design of this system, there are two main parameters used as input values obtained from the Soil Moisture sensor for soil moisture input and the DHT11 sensor for room temperature input. The data is processed using the Arduino Uno microcontroller as the controller and data processor, and an RTC module is used to schedule the activation of the lights at 06:00 AM and their deactivation at 10:00 PM. The processed data is displayed on an LCD. The purpose of designing this system is to solve problems that occur in several fields where succulent ornamental plants are cultivated, such as root rot and stem decay caused by excessive watering and direct exposure to sunlight, which is indicated by wilting leaves or blackening at the tips of the succulent ornamental plants. In this study, a comparison was made between the Soil Moisture sensor, the DHT11 sensor, and the Soil Instrument 4 in 1, resulting in an average temperature error of 0.75℃ and a humidity error of 3%.