ABSTRACT

Red Spinach Plants have various benefits. those benefits are produced by the leaves, as well as the roots. However, this red spinach plant has numerous vulnerabilities and risks including watering, soil treatment, fungi, and pests that must be taken into account. Therefore, smarter agricultural technology is required to overcome that issues and formulate a solution.

Based on this problem, the authors developed a smart farm that can use IoT to determine optimal parameters. Sensors installed in the greenhouse collect data based on available information about the condition of the greenhouse space and the condition of the red spinach plants. The DHT22 sensor is one of the sensors used in greenhouses to retrieve data from indoor humidity sensors. The BH1750 sensor collects light intensity sensor data in addition to room temperature, and the YL-69 sensor collects soil moisture data. Based on soil moisture conditions, automatic watering will be selected to run through the relay. Meanwhile, the plant growth prediction model data was extracted from the MySQL server database and processed into a csv dataset. This prediction model employs the KNN method. This algorithm will generate classification results in the form of optimal and non-optimal values for each attribute used.

The purpose of this final project is to create a classification model for the optimal growth of red spinach plants, especially seedling growth. The data stored in the dataset of the IoT-based automation system is then translated into the appropriate requirements, simplifying the process of estimating the optimal quality of red spinach for farmers and using a MySQL database to store and send raw data to Firebase. The test results show that the system works well. During QoS testing, the average delay was 1.880 seconds. During QoS testing, the average throughput for reading data was 4,464 bps.

Keywords: IoT, smart farm, red spinach, Machine Learning, supervised learning