

## ABSTRACT

In this day and age, many people use technology to be a solution to the problems and jobs faced by humans. An example is the human hobby of today in urban areas is farming at home. The problem he faces is that the majority of people in urban areas are busy with their work from morning to evening, so the plants he cares for are difficult to monitor and control. The presence of Internet of Things (IoT) technology is a big breakthrough for the problems that exist in society. With IoT, it is easier for people to monitor and control their plants at any time remotely.

Robot is a system in the form of a tool that can move according to what is programmed with a computer or code. The automation robot applied to chili plants in this study is a Cartesian robot with the concept of a CNC machine. This type of robot is commonly used for automation in factories. The arm of this robot is a sprinkler and plant fertilizer that can move according to the coordinates of the recorded plants.

This study carried out the development of a prototype of an IoT-based automation system for chili plants in a greenbox. The prototype design of this research automation system is a CNC Cartesian robot with X and Y axes. The prototype performs automation depending on the input value of soil moisture or soil pH from the sensor with data transmission using LoRa. The method of testing the performance of the tool is in the form of testing distance, accuracy, repeatability, automation process time, and data transmission quality.

The result of this research is the achievement of an automation system for watering or giving liquid fertilizer to the greenbox containing chili plants. The automation is watering or giving liquid fertilizer based on input from sensor results. The accuracy of the obtained tools reaches 95.53% for the X axis and 99.15% for the Y axis. The application of this prototype automation system is considered efficient in the use of human power. The quality of data transmission received by LoRa is also quite good.

**Keywords** : IoT, automation robot, watering, soil moisture, soil pH, CNC, cartesian robot, plants growth.