



COLLEGE OF COMMUNICATION AND INFORMATION TECHNOLOGY



**President Ramon Magsaysay State University**

**San Marcelino – Campus**

**College of Communication and Information Technology**



**AUTOMATIC PLANT WATERING SYSTEM USING ARDUINO: A PROTOTYPE**

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**A Thesis**

**In partial Fulfillment of the Requirements**

**for the degree of Bachelor of Science in Computer Science**

**College of Communication and Information Technology**

**President Ramon Magsaysay State University**

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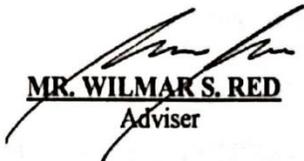
COLLEGE OF COMMUNICATION AND INFORMATION TECHNOLOGY



Republic of the Philippines  
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**APPROVAL SHEET**

This, study entitled "AUTOMATIC PLANT WATERING SYSTEM USING ARDUINO: A PROTOTYPE" prepared and submitted by JOMAR F. ALEGADO, REINAN B. DEL ROSARIO, JAYSON G. ROMERO, CHRISTIAN JAY C. TADEO in partial fulfillment of the requirements for the degree of BACHELOR OF SCIENCE IN COMPUTER SCIENCE are hereby recommended for oral examination.

  
**MR. WILMAR S. RED**  
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Approved by the Panel of the Oral Examiners on June 13, 2023 with a grade of 80.67%.

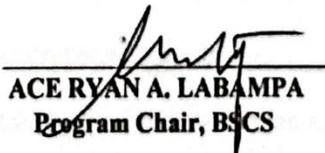
  
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Accepted and approved in partial fulfillment of the requirements for the degree of BACHELOR OF SCIENCE IN COMPUTER SCIENCE.

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## ABSTRACT

Sustainable and efficient agricultural practices have fueled the emergence of automated plant care systems, and developing an automated plant irrigation system to enhance water consumption effectiveness while preserving optimal moisture levels in vegetation is the primary objective of this investigation.

The proposed solution uses a blend of sensors and actuators that work under the control of a microcontroller unit which continuously checks soil moisture levels before delivering suitable amounts of water for plant growth. Additionally, the installation of soil moisture sensors in the root zone of plants can facilitate continuous detection of moisture content for real-time tracking of plant hydration status.

The network of pipes and drip irrigation systems for providing plant watering is controlled by a microcontroller which regulates the connected water pump according to readings from sensors. Based on plant type along with ambient conditions and moisture needs unique to each plant species or variety, an algorithm implemented within the system calculates ideal watering frequency and duration.

The conducted research has proven that with the use of an autonomous watering system it is possible to maintain proper moisture levels resulting in improved growth rates along with substantial savings on manual labor and water usage. Moreover, the automation of the watering process through



technology is something that professional farmers and household gardeners both find useful in achieving sustainable agricultural practices as well as better managing their water resources.

**Keywords:** *automatic plant watering system, soil moisture sensors, microcontroller, water conservation, sustainable agriculture.*