INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue IV
March 2025
Available online at https://www.instabrightgazette.com

****

DEVELOPMENT OF IOT-INTEGRATED FARM MONITORING AND AUTOMATION SYSTEM ACCESSIBLE VIA SMART DEVICES

BECIDO, MARK RAVEN D.
CORTEZ, JOHANNE M.
CORTEZ, TRISTAN ALHDREI V.
CUDIAMAT, AIDEZH ANNE S.
Balayan Senior High School

ABSTRACT

The advancement of agricultural technology has led to the integration of the Internet of Things (IoT) in farming practices, enhancing efficiency and sustainability. This study focuses on developing an IoT-Integrated Farm Monitoring and Automation System Accessible via Smart Devices designed to assist farmers in monitoring crucial environmental parameters such as soil moisture, temperature, and water levels. The system utilizes a wireless sensor network, integrating Arduino microcontrollers, GSM modules, and various sensors to automate irrigation and provide real-time data access via SMS and mobile applications. Experimental testing demonstrated the system's reliability in monitoring water and soil conditions, activating irrigation systems automatically, and allowing remote control via Wi-Fi. Results indicated high accuracy in detecting environmental conditions and seamless remote operation up to 10 kilometers via a Wi-Fi and Bluetooth connection. This technology significantly reduces manual labor, optimizes resource usage, and promotes sustainable farming practices. The study highlights the potential of IoT in modernizing Philippine agriculture by addressing inefficiencies and promoting precision farming solutions.

****

****