ABSTRACT

Indonesia has vast mangrove forests that serve as crucial ecosystems, supporting various forms of life, including mangrove crab. The mangrove ecosystem in Indonesia also offers great potential for the development of crab farming. However, a major challenge in monitoring mangrove crab is the lack of an effective monitoring system to track crab growth, which can directly affect crab production. This creates an opportunity to reduce operational costs and increase economic prospects in mangrove crab farming. The development of Internet of Things (IoT) technology offers an innovative solution to optimize mangrove crab farming. This study aims to develop an IoT-based monitoring system using the ESP32-CAM to visually monitor mangrove crab growth without direct measurement. The system periodically captures images and sends them in real-time to a Firebase database. Firebase functions as a data storage center that can be accessed anytime and anywhere, allowing managers to monitor conditions more effectively. The methods used include literature review, discussion, and prototyping. The literature review involves gathering information from various books and journals, discussions focus on how both devices communicate in capturing images, and prototyping is the practical step that includes implementing the ESP32-CAM connected to Firebase to monitor the condition of mangrove crab. Test results show that the ESP32-CAM and Firebase function well, with the ESP32-CAM successfully capturing images and Firebase performing effectively in storing images in real-time.

Keywords: ESP32-CAM, Mangrove Crab, Firebase