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Smart Aquaponic System based Internet of Things (IoT)

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Abstract: *Getting appropriate water source for fish and plant cultivation seems difficult. Moreover, the agricultural production is decreasing due to narrower lands so that land- and water-saving technology combined with a variety of vegetable is important to produce maximum yield. Aquaponics is a sustainable agriculture system in a symbiotic environment by combining aquaculture and hydroponics. This water system should flow on the planting medium periodically to ensure the plants get the nutrients, while the water can be filtered properly by the medium. This research designed a smart aquaponics system that could control and monitor the degree of acidity, water level, water temperature, and fish feed that were integrated with internet-based mobile application. In this system, there was a sensor installed to retrieve data, which was then transmitted to Ubuntu IoT Cloud server that could be accessed in real time through the internet network. Thus, the quality and water circulation were well- preserved. Results showed that the success rate of measurement for ultrasonic sensor was 99.94%, pH sensor of 92.35%, and temperature sensor of 97.91%. The temperature and pH water pool that were suitable for aquaponics ranged between 20-300C and 7-75 and the monitoring system proceeded as expected.*

Keywords: *Aquaponics*

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