

## ABSTRACT

*Very rapid technological developments in this era of globalization can be necessary to apply to the aquarium, because at this time humans are still using the monitoring system and controlling the aquarium manually. Therefore, monitoring the condition of the aquarium automatically and realtime is one of the more practical technologies to make it easier for humans to care for their pet fish in overcoming various problems that occur in the aquarium. Users can monitor and control the aquarium through websites and android applications.*

*In this final project the author creates a Smart Aquarium website and android application that can monitor and control the aquarium. Smart Aquarium is an aquarium that implements a recirculation cultivation system that is supported by technological advances at the moment, namely by connecting several microcontroller sensors using Visible Light Communication (VLC) based on websites and android applications. The website will be integrated with a microcontroller tool that is connected to the internet network in realtime by using Google Firebase to transmit data generated from several microcontroller sensors. The features in this Smart Aquarium are that it can read the temperature / water temperature and turbidity of the water.*

*The results of the design testing in this final project show that the smart aquarium website and android application can be used properly, the user can monitor and control the aquarium. In the monitoring feature, users can monitor temperature status, turbidity status, pump status, heater status, controller mode. While in the controller feature, users can set auto mode (manual / auto), pump (on / off), heater (on / off). Where the minimum temperature is 24 °C and the minimum turbidity is 3NTU. The average delay on pump on the application is 1.53 seconds, the average delay off pump in the application is 1.433 seconds, the average delay on pump on the website is 1.081 seconds, the average delay off pump on the website is 1.146 seconds, The average delay off heater in the application is 1.787 seconds, the average delay on heater in the application is 2.378 seconds, the average delay off heater on the website is 1.266 seconds, and the average delay on heater on the website is 1.179 seconds.*

**Keywords:** *Smart Aquarium, Google Firebase, Realtime, Website, Android Application.*