ABSTRACT

The Citarum River is the longest river in West Java and is a source of life for the surrounding community. But the Citarum River has also been named the dirtiest river in Indonesia. This causes anxiety about difficult water resources and very high levels of water demand. Water is the primary need of every living thing, with the availability of water for living things, it is very helpful for daily needs.

Especially river water in Indonesia has been heavily polluted, the pollution can come from industrial, household, agricultural and fishery waste. Therefore, the purpose of this research is to make a robotic solution to monitor river water quality regularly and can be monitored in real-time.

The results obtained from this test are spherical robots and for fuzzy logic controller systems use 5 membership functions for yaw parameters with a sensor reading angle limit value [-90^o, 90^o]. For the pitch parameter, there are 3 membership functions with the limitation of sensor reading angle value [-32^o, 32^o]. There is a moving average as a filter to process the reading value of the gyroscope with a sample value of 10 times the reading because the response is following the actual reading and minimal noise. Dispatch of robot control commands can be sent and received in real-time. Haversine Formula calculation results have an accuracy of 92.67076% compared to the calculation of the distance from google maps

Keywords: fuzzy logic controller, spherical, real-time, moving average, river gyroscope, sensor, membership function, yaw, pitch