ABSTRACT

A line follower robot is a robot that can follow a line. In general, the robot uses a PID controller to control the movement of the robot, but the PID controller has disadvantages including the PID controller requires tuning to determine the constant parameters on the controller. Constant values that are increasingly sensitive to the response can make the movement of the robot more unstable because it is vulnerable to disturbances. However, if the constant value is less sensitive to the response the system becomes less responsive. In order to overcome these problems, a combined controller is applied in a hybrid manner between PID and Fuzzy Logic. The hybrid PID-Fuzzy logic controller system tends to provide better transient response compared to the PID controller system. Based on the rise time value of 64.65 ms, the settling time of 979.26 ms shows that the hybrid PID-Fuzzy logic controller system tends to have a shorter time to reach an equilibrium state. In addition, the Settling Min to Settling Max parameters have a constant range of 12 to 26. The overshoot value of 52.9412% is smaller than the PID controller system. In addition, the line follower robot with a hybrid PID-Fuzzy logic control system can pass all trajectories well and thus has a success percentage of 100%, while the PID control system can only pass two of the three trajectories and thus has a success percentage of 66.67%.

Keywords**:** *PID, Fuzzy Logic, Line follower, Hybrid PID-Fuzzy, Robot.*