ABSTRACT

Nowadays mobilization and transportation system in an industry complex or in an office building in general using manually operated system, which has weaknesses in time precision and operator authorization. There's a need to make complementary system to reduce those weaknesses. One of the available solution is build an AGV (Automated Guided Vehicle) robot system, one of the example of this system is line-follower robot.

In this study, the line-follower robot is designed to detect different color lines, and restrict the operator authorization. This system is using microcontroller system with fuzzy logic implementation using inference Mamdani model method. The device is equipped with LED and LDR-based color sensor, and RFID-based identification system. Output from this system is robot movement, so the robot can follow the guide lines.

From the test results, the completed system shows the system is capable to detect different color lines with 100% accuracy, capable to restrict operator authorization in pair with the stated RFID cards with 100% success result, and capable to move according to the predetermined guide lines from RFID card input with the maximum speed at $0.083^{m}/_{s}$.

Keywords*—Line-Follower; Arduino UNO; Fuzzy Logic; Mamdani; RFID; LED; LDR;*