

ABSTRACT

The emergency exit door is the most important thing in the building, the role is to create an evacuation route when bad things happen. Some emergency exit door is using a manual key to open the door. The writer designing a system for an emergency exit door that can open automatically when detecting smoke fire or earthquake. The system is using four sensors such as vibration sensor, accelerometer sensor, smoke detection sensor, and temperature sensor. The classification is using Fuzzy Logic. The fuzzy Logic algorithm has a character that can cultivate information quickly also increasing the accuracy of the system. After that, the earthquake vibration acceleration values are converted into units of the Richter Scale, the amount of smoke content in PPM units and the temperature in units of Celsius degrees. The comparison of values is then processed with fuzzy logic rules. To test the system, the writer creates a building prototype. The system output will determine the action on the actuator (emergency exit) according to the rules of the fuzzy logic algorithm. If a dangerous situation is detected, the emergency exit will open but if the system shows a normal condition then the emergency exit will not open. The test results from 10 trials, the average response time needed by the system for ± 2.23 seconds with an accuracy rate of 100%.

Keywords : *accelerometer*, earthquake detector , emergency door, *fuzzy logic*, smoke detector