ABSTRACT

Aliyah Dzatil Himmah, Uci Zatilla Furqani. Evacuation Ladder User Sensitivity Sensor in Schools Based on Infrared Distance Sensor with Arduino. SMP Negeri 1 Palu, Central Sulawesi. Supervisor (1) Try Seksa W Hidayat, S.Pd., (2) Isnawati Nurdin, S.Pd.,M.Pd.

Central Sulawesi with its natural conditions is referred to as a multi-disaster area which because of its position is located on several active earth plate faults that have caused a high frequency of earthquakes has made several schools as a pilot project of Disaster Preparedness Schools (SSB) to optimize Disaster Risk Reduction (DRR) when natural disasters occur. From various disaster mitigation simulations carried out in several schools, especially SMP Negeri 1 Palu, several disaster risks were found during the emergency evacuation process, when students on the second floor scrambled to the evacuation stairs. Although the number of stairs is actually adequate, the panic condition due to the disaster causes mass concentration on several stairs that are often passed by students, causing many casualties that should not have happened. The purpose of creating this tool is to optimize the Disaster Risk Reduction (DRR) program by optimizing the use of evacuation route stairs as well as possible. So that it can reduce the risk of increasing victims of natural disasters, earthquakes, and building fires during the initial evacuation process in a two-story school building. This system works based on distance measurement information in the environment around the stairs. The sensor used for this system is an infrared proximity sensor. This sensor works by measuring all the objects in front of the sensor. During the measurement process, the sensor with the help of a servo motor rotates in a reciprocating direction at an angle of 5 degrees. Measurements are taken at several angles of rotation. The way the sensor detects the density of ladder users is based on the assumption that if the ladder is filled with users, the sum of the distance measurement results from the several angles measured will be obtained a relatively small number.

Keywords: Earthquake, Infrared Distance Sensor, Arduino