

ABSTRACT

In this modern era, technology has been developed very rapidly, especially in early tsunami detection. This tool can detect ocean wave patterns that indicate if a tsunami will occur. Indonesia already has 22 units of tsunami early detection tools called buoys, but the government does not adequately maintain these tools due to the high maintenance cost. As a result, irresponsible parties have taken even the buoys. Therefore, we make these tools that can detect early tsunami waves at a relatively low price and are easy to implement for the community.

This tool uses an Arduino Uno microcontroller as the center. It uses the primary sensors, called MPU6050 and HC SR-04, to detect the wave speed and height, and we add earthquake vibrations that will indicate the occurrence of a tsunami. The data that has been obtained from the sensor will be processed using the Mamdani Fuzzy Algorithm to determine if the seawater waves can cause a tsunami or not. In addition, this tool will produce a sound from the buzzer and light from the led as a warning if the device detects a tsunami is about to occur. To test the tool in this study, testing will be carried out using artificial waves and comparing the results of the tool data with general measuring instruments related to the data results. This research will determine if the sea waves are safe, alert, or dangerous.

Keywords: *Tsunami, Earthquake, Fuzzy, IoT, MPU6050, HC SR-04*