ABSTRACT

Disaster is one of the inevitable tragedies in our lives in this world. One of the most devastating disasters was fires, which caused enormous material losses and took human lives. Fire can devastate buildings and threaten the lives of creatures trapped in them. Locations that are often hit by fires are areas with many factories around them, but not the exception are urban areas such as restaurants and office buildings.

Therefore, our research aims to reduce the impact of fires. We have developed fire detection devices that use human voices as early warnings, which can be monitored in real time by those responsible for controlling our devices. When a fire occurs, our devices will process the human voice to 0 as an indication of the occurrence of a disaster and 1 as a sign of the absence of fire. Data from the FPGA will be sent to the MCU Node to be monitored in real time through the database. The MCU node will record the location coordinates of our device to facilitate the determination of the location of the fire. Every 5 seconds, the MCU nodes send voice data as 0 or 1 as well as coordinate points to the database. In the final phase, the Mobile App will display a final notification informing the occurrence of a fire at a specified coordinate point, as well as showing the route through Google Maps.

The equipment we made produced good results. Voice processing in FPGA can be read optimally when humans pronounce the word "zero". Subsequently, the transmission and reception of voice and coordinate point data from the MCU Node to the database is set at intervals of 5 seconds. The mobile app will display travel notifications and routes through Google Maps.

Keyword: *FPGA, NodeMCU, Mobile Application*