ABSTRAK

This research develops a victim detection system designed to improve the effectiveness of search and rescue (SAR) operations. Volcanic eruption victim search poses significant challenges for SAR teams, particularly in the hot environment caused by volcanic ash.

This system utilizes a Raspberry Pi and a webcam to process images in real time and enable monitoring of victims' conditions in hard-to-reach areas. The webcam captures images of the surrounding environment and provides a direct visual representation. The victim recognition process is performed using the Local Binary Pattern Histogram (LBPH) algorithm based on multi-sample images.

Testing was conducted through a post-volcanic eruption environment simulation using 558 image data sets. Of these, 405 samples (72.6%) were successfully extracted and recognized using the LBPH method. The system also successfully sent detection data to the Firebase Realtime Database in real time, with a facial recognition similarity rate of 84%.

Keywords: detection system, victim search, Firebase, Raspberry Pi, webcam, local binary pattern histogram algorithm, multi-sample lbph