ABSTRACT

Tsunamis and earthquakes cause many casualties and damage to buildings. The highest priority after the disaster is to find and save survivors under the ruins. Human vital signs can be detected from the heartbeat or breathing. Vital signs detection has become a research concern in recent years especially non-contact measurement. Vital sign detection using drones is also a concern.

Radar Frequency Modulated Continuous Wave (FMCW) is an example of a radar system that functions to detect distances and information from a target. FMCW is a type of radar with a continuous signal with a sinusoidal signal modulated by frequency. The effect of attenuation, phase shift of the radar signal, and the beat frequency of the target can arise due to the presence of obstructions when detecting vital signs.

In this research, the radar will be placed on the drone so that it can reach areas with extreme terrain. This drone will be hovering to detect the specified area for data collection. At the processing stage, in addition to the method for detecting the doppler effect from the target respiration vital sign, a method will be added to reduce the doppler effect caused by drone fluctuations. The drone fluctuation and respiration vital sign from radar data can be filtered using HPF and LPF.

The results demonstrate that this method effectively corrects the detection output, leading to more accurate detection of the target's respiration vital sign.

Keywords: Radar, Drone, Ruins, Vital Sign, FMCW