1. Introduction

There are always going to be some risks of building collapse wherever we are in this world, e.g., earthquake, explosion. Once a building collapses, rescue teams have to immediately search for survivors. Currently, there are several ways that rescue team can operate, such as using thermographic camera or snake camera to detect under rubble; using rescue dogs to detect human scent. However, these methods have some limitations, for example the equipment is very expensive and scarce.

We proposed a system which aims to assist rescue team to locate victims by utilizing their smartphones. Rescue worker's smartphones send trigger signal to victim' smartphones to enable them to generate sounds. Thus, we can be able to locate them. The system is able to work under a situation when communications infrastructure failure. Moreover, it is able to work when the victims are unconscious.

2. System Summary

A user (victim) is required to fill in all their personal information in a mobile application e.g. name, blood type, date of birth, emergency contact. The application will be automatically running in a background service after we activate it. Hence, it is ready to be triggered at all time—only when the user is in the Wi-Fi signal range. User interface is shown in Figure 1.

When there is in a stage of emergency, the rescue team generates a unique Service Set Identifier (SSID) or Wi-Fi network name—which is for rescue team member identification purpose—from a mobile application. The SSID contains a string command which can trigger victim's smartphone to generate sounds or stop generating sounds. We can also send a command which is for a specific group of survivors based on group of age, and sex. It can operate

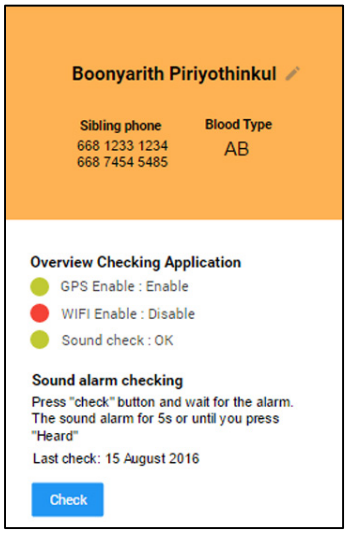

Figure 1: User Interface

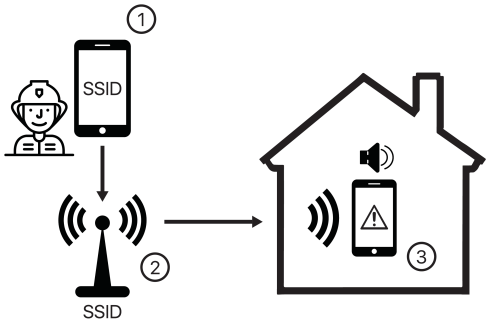

Figure 2: Wifi-based Survivor Detection System

even though there is no communication infrastructure (the Internet, electricity, cellular network). The proposed system is shown in Figure 2. It requires smartphones with Android OS (4.0 or higher).

It should be noted that a victim's smartphone is not required to connect to the given hotspot—rescue team's smartphone—but only able to detect an existing of valid SSID. One access point can trigger a number of victim's smartphone as far as they can see the generated SSID.

3. Conclusion

The proposed systems assist rescue team to locate victim even when all communication infrastructure is failure by utilizing user' smartphones.