Abstract

Emergency services are essential in our day-to-day life and there is an unfilled need for an Emergency Service Tool in mobile platform that can handle various emergency scenarios. The sole objective of our system is to cater to this need and provide an automated and adaptive monitoring and response tool that is capable of providing 24/7 security to the device user. The existing applications are not fully adaptive and are limited to a very narrow set of scenarios. This arises the need to have multiple such applications installed in the user's device and they also require a lot of manual operation which might prove costly in times of an absolute emergency. Our proposed system aims to eliminate these drawbacks by providing a highly adaptive and automated application that greatly minimizes manual operation. The flexible nature of our system along with its automated features makes it an excellent personal digital guardian. Various Scenarios such as Medical help, Police assistance and Fire / Hazard emergencies are covered in our proposed system.

1. Introduction

There is a severe lack of awareness and preparedness for several emergency scenarios that plague the society today. This leads to a low success rate for the treatment of such scenarios. Introducing a system that is highly efficient in transforming the manual processes into an automated procedure is greatly successful in eliminating the lack of preparedness to tackle such emergency scenarios.

The output given by the system is used for solving the emergency situation in hand and can also be detrimental towards ensuring the safety of the subject. Several modules such as Fire Accidents, Medical Emergencies, Police Assistance, Hazardous Situations, Offline Guide to Safety and Aid are included in our system.

Several sensors are included such as HeartBeat sensor, Temperature sensor and Panic Button. The proposed system implements a highly adaptive method of constant monitoring of conditions and initiation of appropriate responses.
The necessity of manual operation is nil due to the automated nature of the application. To further reduce the effort on the user’s side, the application is designed in such a way that it covers a wide range of scenarios and eliminates the need to have multiple such applications to be installed in the user’s mobile android device.

2. Existing System

Existing systems make use of manual operations. These systems require the user to do all the actions which is greatly time consuming and require a lot of effort. Manual cellular communication is the basic idea that is implemented in the various existing systems. The monitoring done in existing systems is manual and effort taking. It is not implemented 24 hours as it is not possible for a person to keep track of his situation and be aware of the consequences. The existing emergency services applications are not fully adaptive due to the fact that they require manual operation by an user for optimal functioning. They are designed in such a way that they are limited to a very narrow set of scenarios. Multiple applications are required to be installed in the user’s mobile device to cover each of the emergency scenarios that might present themselves. They require a lot of manual operation and this is disadvantageous in times of an absolute emergency. Emergencies can be tackled only with efficient management of time and quick response system.

3. Proposed System

Figure 1: Architecture of the Proposed System.
The proposed system is highly adaptive as it constantly monitors the conditions and initiates appropriate response. Its highly automated nature greatly reduces the need for manual operation. It covers a wide range of scenarios which eliminates the need to have multiple security applications. Medical Help, Police Assistance and Fire/Hazard Emergencies are the several scenarios that are included in our proposed system.

4. Module

Figure 4.1 List of options.

4.1. Fire Accidents

The input for fire accidents is either from manual panic button or from the temperature sensor. As soon as the input is received the emergency protocol is activated and the application starts to send data such as GPS URL to the fire department and also to the Guardian contacts that have been registered prior. The following are the steps followed.

- Temperature sensor detects spike in temperature.
- Message alert sent to 5 contacts.
- GPS location sent as URL included in message.

Figure 4.2 Screenshot of fire accident module.
4.2. Medical Emergencies

There are several instances in our life when medical assistance is of utmost importance for us. The input required to trigger medical assistance is either an abnormality in heartbeat sensor readings or a manually operated panic button. The following are the steps followed.

- Heart Beat sensor detects abnormality in pulse.
- Message alert sent to 5 contacts.
- GPS location sent as URL included in message.
- Manual operation functionality is included.

![Figure 4.3: Screenshot of medical emergencies module.](image)

4.3. Police Assistance

The crimes that happen around us in day to day life often go unsolved due the lack of proper response or the inability to gather proper evidence. To avoid situations like this, the application is designed to handle the crime scenario in an intelligent manner. Pictures are taken from the front cam of the mobile while simultaneously the mic records audio input. The GPS URL of the victim is also sent to the police department and also the registered guardians. The following are the steps followed.

- Manual panic button trigger emergency response scenario
- Video and audio are recorded.
- Emergency alert sent to registered contacts.
- GPS URL sent in message.
4.4. Hazardous Situations
The lack of awareness in hazardous situations leads to increased casualties in such situations. To prevent such unfortunate outcomes, our app is loaded with a guide that explains the various safety precautions that need to be taken after a calamity strikes.

4.5 Offline Guide to First Aid
The First Aid procedures are clearly explained in an offline guide so that the user can help a person in need or himself. The following are the steps followed.

- Manual guide is available during times where there’s lack of network access.
- Detailed guide for survival and first aid given for all scenarios.
- Section wise search facility available.
5. Conclusion

The integration of all the above mentioned scenarios into a single applications greatly reduces the need for manual operation in times of emergency. The adaptive mechanism has been effective in providing appropriate and timely response to the users and thereby assisting in their aid. The various sensors and the intuitive ways of detecting a scenario open up a lot of new possibilities in how crime and emergency is tracked and solved.

6. References


3. Sandeep Chatterjee, and James Webber, Developing Enterprise Web Services, Prentice Hall PTR. 2004


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