

# SMART PHONE BASED ACCIDENT DETECTION AND RESCUE SYSTEM

B.Shyam Sundar<sup>1</sup>, C.Velmurugan<sup>2</sup>, Anitha SelvaKumar<sup>3</sup>

<sup>1</sup>Student, Computer Science and Engineering, New Prince Shri Bhavani College of Engineering and Technology, Tamil Nadu, India.

<sup>2</sup>Student, Computer Science and Engineering, New Prince Shri Bhavani College of Engineering and Technology, Tamil Nadu, India.

<sup>3</sup>Assistant Professor, Computer Science and Engineering, New Prince Shri Bhavani College of Engineering and Technology, Tamil Nadu, Chennai.

## ABSTRACT

The usage of technology has ended up being a value asset in the prosperity office. Nowadays, from PCs to mobile phones, advancement society in their activities, being these eventually or cooperatively. Because of these ideal circumstances, new research has make to make structures and applications to help with usage of mobile phones. This paper acquaints a route with manage recognize falls using unmistakable proposed computations with the target of peopling with their prosperity and security. The system is made out of three one of a kind fragments: data gathering, range decision, and fall ID. It utilizes the wireless intrinsic sensors (accelerometer, whirligig) to recognize the region of the mobile phone in the customer's body (mid-segment, pocket, holster, et cetera) and once a zone is perceived, the fall distinguishing proof portion happens. A general depiction on fall area system is given, including the differing sorts of sensors used nowadays. The proposed course of action is presented and depicted in wonderful unobtrusive component. A total accuracy of 81.3% was found out from the fall distinguishing proof proposed computation. The primary three regions to recognize a fall were: informing with a 95.8% fall area accuracy, pants side pocket with a 87.5% precision, and shirt mid-segment pocket with a 83.3%precision. In like manner an extra study was done using only the holster territory making an awesome 100% region decision accuracy.

**Keyword:** -Electronic compass, fall detection, global positioning system (GPS) system, smart phone, tri axial accelerometer.

## 1.INTRODUCTION

Current search engine fail to utilize the important aspect of the relevance location of the user because of two main reasons. firstly, the location of user was not as widely available nowadays due to GPS phones as less frequent. Secondly, the information in web is rarely attached with the location based search engine based on the ideas in with the following practical solutions. For a given location (e.g. Form GPS), We perform location-restricted web query, analyse the web-pages found (relevant by keyword), extract potential address information and compare them to the entries in a gazetteer. Positive results are presented according to their distance relative to the user location, plotting the target location on map or giving navigational information to the location.

## 2.SCOPE OF THE PROJECT

To find human fall detection using smart phone. According to the CDC (Centers for Disease Control and Prevention), one in 3 people over the age of 65 are likely to experience a fall. Twenty to thirty percent of these people sustain injuries such as fractures, loss of independence, and even death. Fall detection is an active research area to improve people's lives through the use of pervasive computing. This paper presents an approach to detect falls based data gathered from a smartphone. It utilizes the smartphone's built-in sensors to identify the location of the cell phone in user's body (chest, pocket,etc), and to find patterns associated with falls. A general description on fall detection systems, includes different types of sensors used nowadays. The proposed solution is described in great detail. Then the system is assessed using known performance indicators. A total accuracy is 81.3% is been calculated from the fall detection algorithm. The top three locations to detect a fall were texting

with a 95.8% fall detection accuracy, pants pocket with an 87.5% accuracy, and shirt pocket with an 83.3% accuracy.

### 3 EXISTING SYSTEM

Design and development of a prototype of electronic gadget are used to detect fall among elderly and the patients. The body posture is derived from change of acceleration in three axes, which is measured using triaxial accelerometer.

#### 3.1 OVER ALL DIAGRAM

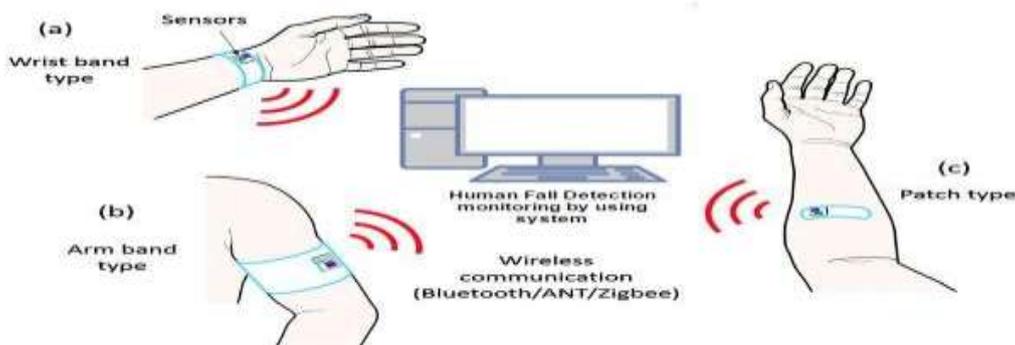


Fig.1. Wearable fall detection

#### 3.2 EXISTING SYSTEM METHOD

State of art wearable fall detection algorithm. It depends mainly on the body posture and tilt, then torso is more suitable place. And different possible anatomical positions to derive various postures.

### 4 PROPOSED SYSTEM

To protect the from the injury of fall accident events or to give an immediate assistance to the elderly after the occurrence of a fall accident event.

#### 4.1 OVER ALL DIAGRAM



Fig.2. Smart fall detection

#### 4.2 PROPOSED SYSTEM METHOD

Fall detection algorithm. The angle acquired by the electronic compass and the waveform sequence of the tri axial accelerometer on the smart phone are used as an inputs.

### 5 SYSTEM ARCHITECTURE

The architecture of the proposed fall accident detection and rescue system. The proposed system is mainly composed of three blocks: the smart phone based pocket fall accident detector, the coordination center, and the rescue center which is the hospitals nearby or the first aid stations.

The part of smart phone based pocket fall accident detector the triaxial accelerometer and the electronic compass will be used to acquire the posture of motion position and personal information of the elderly. The received longitude and latitude can be displayed with an electronic map, e.g., Google map.

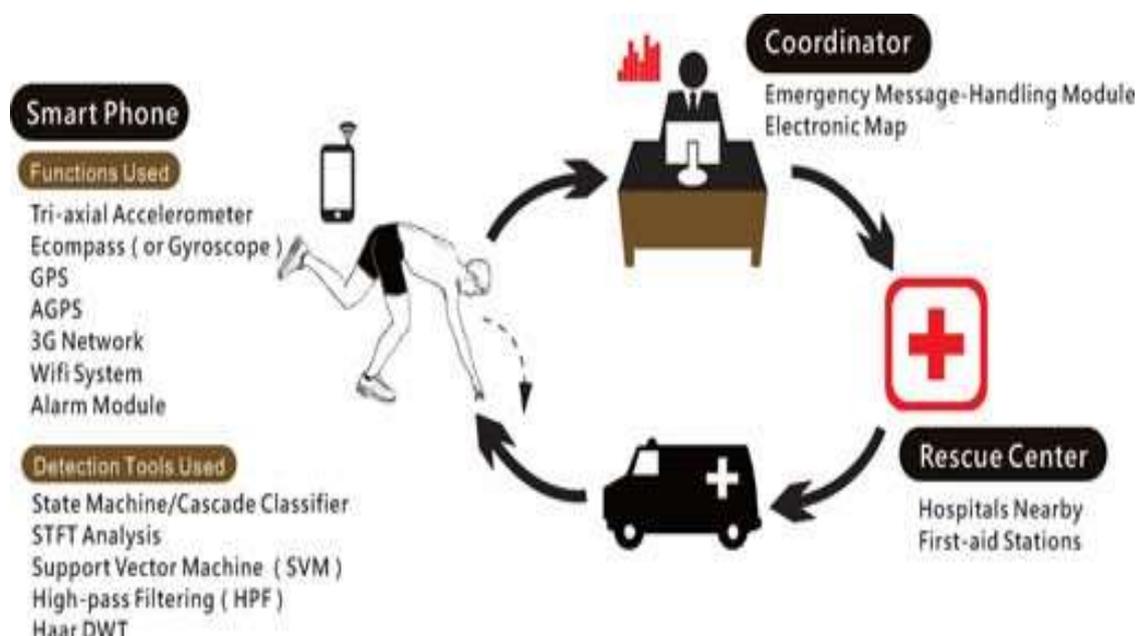


Fig.3. Architecture of the proposed fall accident detection and rescue system.

## 6 LITERATURE SURVEY

P. Rashidi and A. Mihailidis, [1] we have witnessed a rapid surge in assisted living technologies due to rapidly aging society. The population, increasing cost of health care, the caregiver burden, and the importance that the individual places on living independently, all motivate development of innovative-assisted living technologies are used for safe and independent aging. In this survey, we will summarize the emergence of ambient assisted living tools for older adults based on ambient intelligence. We will summarize the state of technologies, tools and techniques, and we will look at current and future challenges.

C. Rougier, J. Meunier, A. St-Amaud, and J. Rousseau [2] Computer vision provides a promising solution to analyse personal behaviour and detect certain unusual events such as falls. A new method is proposed to detect falls by analysing human shape deformation during a video sequence. The shape deformation is to be quantified from these silhouettes based on the shape analysis methods. Finally, falls are detected from normal activities using a Gaussian mixture model. It has been conducted on a realistic data set of daily activities and simulated falls, and gives very good results (as low 0% error with a multi camera setup) compared with other common methods.

M. Yu, A. Rhum, S.M. Naquvi, L Wang, and J. Chambers [3] we introduce a video based fall detection system for an elderly person in a real home environment. We global (ellipse) and local (shape context) features from static postures and an improved directed acyclic graphic support vector machine is applied for posture classification. After that different postures certain rules are set to detect falls. This fall detection system is evaluation on real datasets to achieve a good fall detection performance.

G. Acampora, D. J. Cook, P. Rashidi, and A. V. Vailakos [4] Fall of patients and aged people is a serious issue. These kinds of falls may become fatal in time. The concept is to have a fall detection system which is used send alarm to the concerned people or to the doctor, at the time of eventuality and helps to attend the patient in time. To minimize the fall is necessary. Thus the requirement of a fall detector is increasing. We have reviewed history of fall detection system, different algorithms used to detect fall, different sensors are used like wearable

sensor, combined sensors and the application of each sensors is studied in detail. Image processing methods to detect fall are also studied.

## 7 CONCLUSION

We propose a smart phone based pocket fall accident detection system. The fall detection algorithm is realized with the proposed state machine that investigates the features in a sequential manner. Once the corresponding feature is verified by the current state and waiting for the appearance of another feature. To speed up the efficiency of classifications of process the early states are composed of simple and important features are that allow a large number of negative samples are to be quickly excluded from the being regarded as a fall event. These complex features are placed in later states. With the proposed algorithm, the computational and power consumptions are burden of the system can be alleviated. Moreover, the distinguished performance up to 92% on the sensitivity and 99.75% on the specificity, that can be obtained when a set of 450 test activities in nine different of activities are estimated by using the proposed cascaded classifier with SVM, which demonstrates the superiority of the proposed approach.

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