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ACCIDENT REPORT SYSTEM

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Abstract--*Architecture for the fall accident and corresponding wide area rescue system based on a smart phone and the third generation (3G) network. To realize the fall detection algorithm, the angles acquired by the electronic compass and the waveform sequence of triaxial accelerometer on the smart phone are used as the system inputs. The acquired signals are then used to generate an ordered feature sequence then examined in a sequential manner by the proposed cascade classifier for recognition purpose. With the proposed cascaded classification architecture, the computational burden and power consumption issue on the smart phone system can be alleviated. In this project starts section for detecting fall accident. The body posture is derived from change of acceleration in the three axes, which is measured using three axis accelerometer. After accelerometer variation, the device starts to vibrate. Ping Message sent to save mobile numbers with the current GPS location to find accident location.*

I. INTRODUCTION

Fall accident has been the major cause of injury to the elderly in recent years. To protect the elderly from the injury of fall accident events or to give an immediate assistance to the elderly after the occurrence of a fall accident event, many researchers have been devoted to the design of a fall detection algorithm and system. Among all the currently proposed algorithms, the fall detection system can be roughly divided into two categories, namely, environmental monitoring based, and wearable sensor-based systems. Color versions of one or more of the figures in this paper are available online at Digital Object Identifier 10.1109/JBHI.201402328593, pressure sensors, or accelerometer, for vibration detection is placed in a predefined space or environment to monitor the activities of the elderly as well as the occurrence of a fall accident event. Compared to the type of wearable sensor-based system, the environmental monitoring-based fall detection system is more comfortable for the elderly since there is no need of wearing any module. However, the environmental monitoring-based system can only function in a predefined environment where it is installed. Moreover, the protection of the private matters for the elderly is another problem and contention is usually discussed by the environmental monitoring-based system.

II. MATERIAL AND METHODS

Since 1998 falls are a serious public health problem and possibly life threatening for people in fall risk groups. We develop an automated fall detection system with wearable motion sensor units fitted to the subjects' body at six different positions. Each unit comprises three tri-axial devices (accelerometer, gyroscope, and magnetometer/compass). Fourteen volunteers perform a standardized set of movements including 20 voluntary falls and 16 activities of daily living (ADLs), resulting in a large dataset with 2520 trials. To reduce the computational complexity of training and testing the classifiers, we focus on the raw data for each sensor in a 4 s time window around the point of peak total acceleration of the waist sensor, and then perform feature extraction and reduction.

Threshold-based fall detection has been widely adopted in conventional fall detection systems. In this paper, we argue that a fixed threshold is not flexible enough for different people. By exploiting the personalized and adaptive threshold, we propose a novel threshold extraction model, which meets being adapted to detect a fall, while only taking consideration of data from activity of daily living (ADL). We believe this is a solid step toward improving the performance of the threshold-based fall detection solution.

Furthermore, we incorporate the proposed idea into Chameleon. To evaluate the performance of this threshold extraction model, we compared Chameleon with advanced magnitude detection (AMD) and fixed and tracking fall detection (FTFD). The results show Chameleon has an accuracy of 96.83% when detecting falls, which is 1.67% higher than FTFD and 2.67% higher than AMD. Meanwhile, the sensitivity and the specificity of Chameleon are also higher than the other two algorithms.

EXISTING SYSTEM:

Design and development of a prototype of an electronic gadget which is used to detect fall among elderly and the patients who are prone to it. In this article, the body posture is derived from change of acceleration in three axes, which is measured using a triaxial accelerometer. Algorithm used is State-of-the-art wearable fall detection algorithm.

ALGORITHM DEFINITION:

Detection algorithm depends mainly on body posture and tilt, then torso is more suitable place. Stefano Abate et al. Listed different possible anatomical positions to derive various Postures.

Drawbacks in Existing system are: It is separate device difficult to use every day and less accuracy.

PROPOSED SYSTEM:

To protect the elderly from the injury of fall accident events or to give an immediate assistance to the elderly after the occurrence Of a fall accident event. Proposed algorithm is Fall detection algorithm.

ALGORITHM DEFINITION:

The angles acquired by the electronic compass (a compass) and the waveform sequence of the triaxial accelerometer on the smart phone are used as the system inputs.

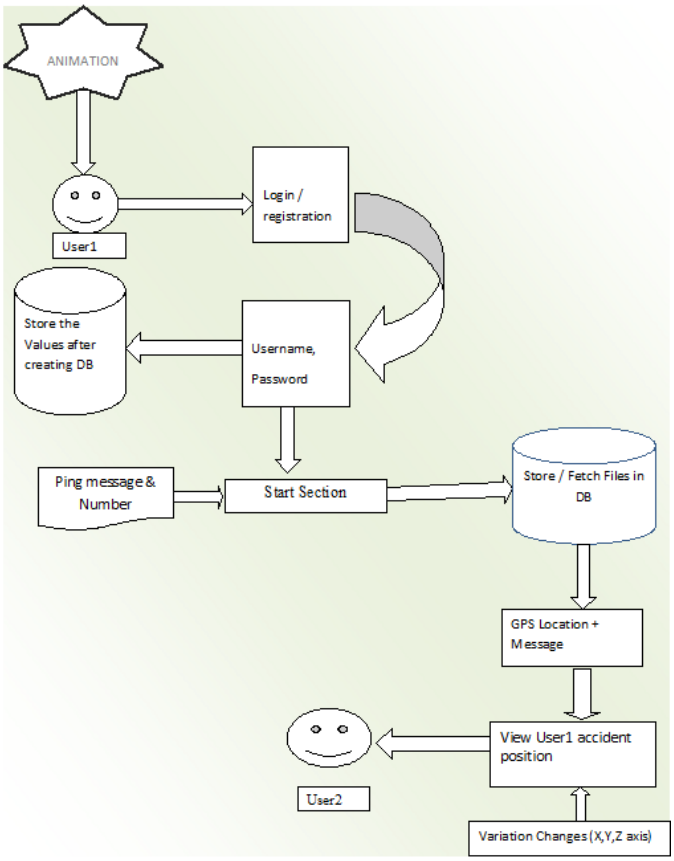
ADVANTAGES IN PROPOSED SYSTEM:

Every day using a handheld device (mobile).

More comfortable.

Better accuracy compares from existing.

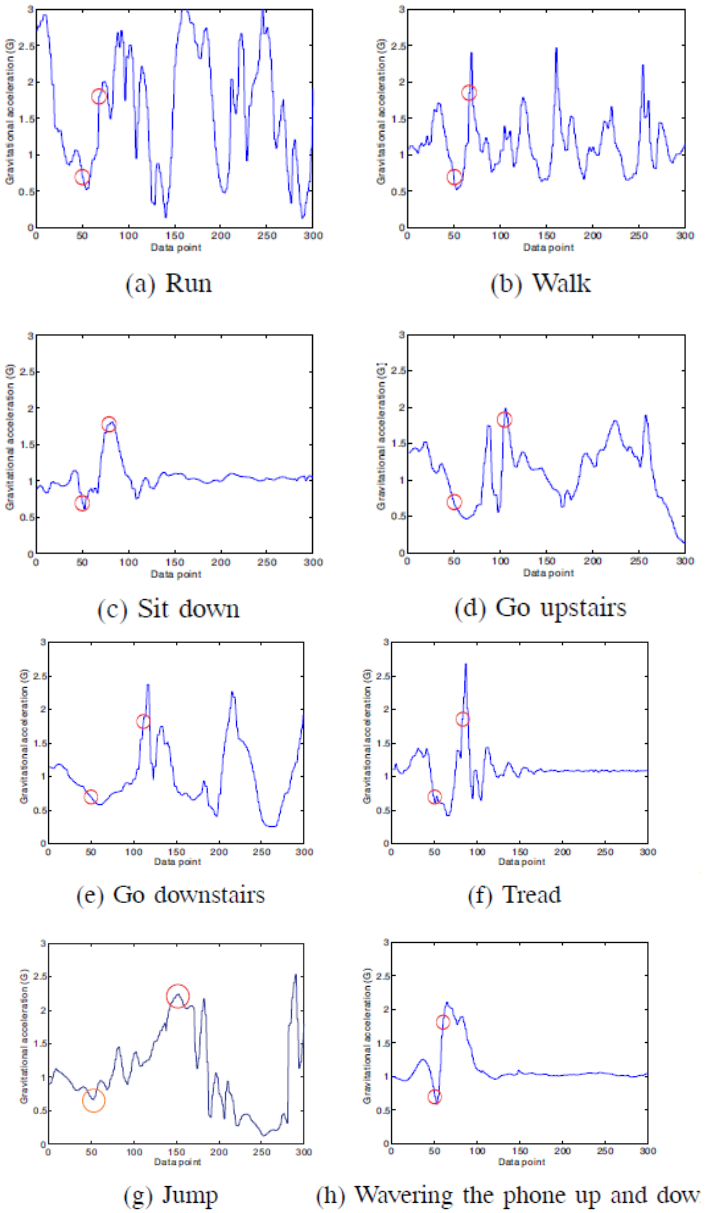
ARCHITECTURE DIAGRAM:



RESULTS

In this module, we design to develop login and Signup screen. Android used xml to develop classical screens in our application. The modules describe Signup page contains an email id or user name, password and confirm password those kind of details should be stored in a database. Login screen contains email id or username and password when the user to login the app it should be retrieved the data to the database and combine based on user input if its match user name and password to allow in the app otherwise alert and show a message to the user.

We further show in Fig. the sequences of $S[n]$ when the smart phone is placed in the pocket for eight kinds of normal activities, including run, walk, sit down, going upstairs, going downstairs, tread, jump, and wavering the smart phone up and down, so that we can know the waveform difference of the $S[n]$ between different kinds of activities.



(a) Run (b) Walk

(c) Sit down (d) Go upstairs

(e) Go downstairs (f) Tread

(g) Jump (h) Wavering the phone up and dow

As can be seen in Fig., the first two features that are used for the fall accident event detection, i.e., S[n] ≤ 0.6G and S[n] ≥1.8G can also be easily satisfied in all the eight kinds of normal activities, as indicated by the circles in Fig.. In other words, the first two conditions for the fall event recognition can be regarded as necessary conditions, but not sufficient. Therefore, we have to find more features to distinguish a fall event from normal activities. We notice that the S[n] sequence still varies frequently and the amplitude variance of S[n] is large after the appearance of the second feature (the instant that S[n] ≥1.8G) in most of the continuous motion activities, e.g., run, walk, jump, go upstairs, go downstairs. However, the amplitude variation of S[n] is much smaller in the case of a fall event than that in continuous motion activities after the appearance of the second feature.

This observation is very helpful and will be used as the third feature of the proposed system so that normal activities with continuous motion can be excluded from being regarded as possible candidate of fall events.

III. DISCUSSION

Well-designed smart sensor system to detect falls can be both medically and economically helpful. This research introduces a portable terrain adaptable fall detection system, by placing accelerometers and gyroscopes in parts of the body and transmits data through wireless transmitter modules to mobile devices to get the related information

Architecture for the fall accident detection and corresponding wide area rescue system based on a smart phone and the third generation (3G) networks. To realize the fall detection algorithm, the angles acquired by the electronic compass and the waveform sequence of the triaxle accelerometer on the smart phone are used as the system inputs. The acquired signals are then used to generate an ordered feature sequence and then examined in a sequential manner by the proposed cascade classifier for recognition purpose. With the proposed cascaded classification architecture, the computational burden and power consumption issue on the smart phone system.

IV. CONCLUSION

In this paper a smart phone-based pocket fall accident detection system is proposed. 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, it can proceeded to next state; otherwise, the system resets to the initial state and waiting for the appearance of the another feature sequence. To speed up the efficiency of the classification process, the early states are composed of simple and important features that allow a large number of negative samples to be quickly excluded from being regarded as a fall event. Those with complex features are then placed in later states. With the proposed algorithm, the computer and power consumption burden of the system can be alleviated. Moreover, a distinguished performance up to 92% on the sensitivity and 99.75% on the specificity can be obtained when a set of 450 test activities in nine different kinds of activities is estimated by using the proposed cascaded classifier with SVM, which demonstrates the superiority of the proposed approach.

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