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ANDROID BASED MOBILE UNLOCKING PATTERN FOR EMERGENCY SUPPORT SYSTEM

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Abstract

The smart phones introduction is redefining the mobile phone usage among entire communication way over the world; it has been equipped by several modern and enhanced features such as touch screen, GPS navigation, camera with high resolution, broadband, Wi-Fi and etc. these enhanced services are allowing the users to be in touch with modern changes and complete society on fingertip. Several features have been integrated primarily within the operating system of mobile that is not completely available for every particular user and public, so user or public won’t be completely able to use these all features.

The proposed system is introducing a hand wave pattern that repeating and recording the all above action for several times till the application is get registered within user’s pattern. The emergency pattern is being divided into three parts: voice recording, URL-GPS is being presented as the image format, and the application is being targeted for girls safety with wave pattern. For increasing the security management, the screen locking and screen unlocking has been used in the smart phones within safeguard for personal details. The smart phones are not completely efficient with the existing security pattern of unlocking and locking within fingerprints, password and pattern analysis because of the higher price and problem with usability. So, the proposed system is introducing the hand-wave-motion with biometric measurement, where android application is being developed within hand wave pattern of user’s hand pattern is recorded and repeating the action for several times till the application is get recognized for the user’s hand pattern.

The proposed algorithm Support Vector Machine (SVM) is being user for identifying the user. The SVM is supporting for the emergency service feature within hand wave pattern that could be for recognizing a face automatically in critical
condition. The service within the GPS has been initiated within the detail of location by sending SMS alert to specific user.

**Keywords:** Biometric Hand waving, Safe mobile Locking and Unlocking, Girls Safety, Support Vector Machine, Emergency Support System

1. **Introduction**

The PIN technique, the mainly suggested digital device, is forever adopted to unlock smart phones for open lock of smart phones. Therefore, because of pin it wants to be identified and if unlocking pattern is easy it can easily identified by interloper. For ex, mostly all mobile phones use four numbers locking and unlocking PIN [1]. Find the PIN is very easy for this type of lock. The user could use graphical type method by linking few dots and circle. This graphical type lock is also easy to guessed and picked, while difficult pattern might be forgotten simply and easily. To improve mobile phone security [2] any wave pattern of biometric can be utilized. This biometric wave pattern cannot be guessed and picked easily because it has high flexibility. The biometric events are collected into two important groups: behavior and physiological biometrics. Physiological biometrics utilizes features of physiological of human character to find the user’s voice, recognition, blood pressure, ear etc [3]. Therefore, these performances are subjective by outside factors. Recognition of face not works properly in night time because of illumination problem etc. The same way, it is very tough to differentiate the voice from high amount of nose places, which may interfere the it purpose. For example, going in subways and travelling bus or train could be provided more external noise. A function of authentication must be relevant to all circumstances and convince them. Unlocking technique is very common mechanism it has to consider carefully [4]. Cases similar to camera unlocking can consume the power within very short period of time. The fingerprint scanners very complex to execute in all smart phone ranges owing to its elevated hardware specification requirements. The biometric classification is based on gesture or behavior, movement tapping, tying behavior [5], gait patterns etc. These methods are complex mobile features unlocking moderately difficult to acclimatize. For example, the gait pattern, user walk first therefore mobile can authenticate the user, which not possible in several places like gatherings and meeting. Sometimes, it very peculiar to listen calls to ensure his/her email’s [6].

This paper observes that diverse users wave in their smart mobile produce diverse patterns. Various patterns might be worn to unlock mobile phone by added alleviate usage and advanced performance levels. This builds the waving
frequency and speed totally diverse among users. The waving ranges also diverse from user. These patterns obtain from the user’s habits and physical features. For example, users with lengthy arms wave quicker and wider than shorter arms. Various persons are habituated to stop their waving [7, 8] exploit with wrist slanting while a few others similar to begin through wrist twisting. Moreover, the age, occupation and gender also greatly influence the waving actions feature.

2. Related Work

In this section we have discussed about some previous work related about our application. Recent days many missing cases of children between 14 and 17 ages are statement. So Parents always feel about kidnapping possibility of children. In this paper they provide solution related on android device [9]. It helps to parents to monitor their children at real time. Now days, more mobile devices are set with location service capability helping us to obtain the geographic position of mobile device’s at real time. The suggested resolution obtains the location service benefit offered by mobile device because most kids keep mobile devices with them. The mobile device utilizes the SMS and GPS device established in android related phones. It helps parents to identify their children location in real time atlas. This system contains two way process, parent and child sides. The main responsibility of parent device is, it needs to forward request location SMS to child devices to obtain the child location. In child device the main duty is to respond with GPS location to parent device.

In [10] the author is explained important of “Emergency alarm button” application. This application helped to offer ability to user who undergoes the accident. We can execute this application by android OS. This is new application that helps to users to contact with their family and hospital in emergency case quickly as possible. This is the first practice who to executes such specialized work. Implementing such this application was really more exciting, a information wealth and good chance to learn system analysis, designing, and process. In this application they are utilizing manual process to work android phone as an alternative of that in upcoming it crates automatically. This application may use forwarding the accident image. In [11] the author proposed SOS related “Android related safety trigger application”, that is very much useful application for girl safety. Whenever people feel they are in emergency condition like travelling at night time alone, they can utilize this application. So that if one clicks emergency button will sent message to police station or family members. This application works related on GPS technique for monitor the user correct location. In mobile devices conventional protections gives only one-time system of verification upon turn-on; if not locked, the mobile device is open always; and locking the device by automatic is normally not default setup on top 5 vendor’s phones [12].
unlocking/locking is significant for new type of smart phones to reduce the unplanned operations and protect the private stuff [13]. If once phone is locked, the user has to take particular action or give some private information to undo the phone. The previous unlocking methods can be split into four groups: password, motion, fingerprint, and pattern. In this system, they suggest open schemes that work waving patterns of users for unlocking/locking. The main advantage of this system lies in utilizing four statistic and fine grained of hand waving to check users. Furthermore, they use SVM (support vector machine) for correct and fast categorization. This technique is more helpful across various products of smart phones without any particular hardware.

3. **Architecture**

![Diagram showing unlocking and locking process]

4. **Proposed Work Overview**

In proposed android application is created in which hand waving pattern of user’s is stored & repetitive the above mentioned action for additional no of times until pattern of application registers. Here we are suggesting SVM algorithm to identify the user. The main aim of our application is for girl’s safety. If any emergency or misbehavior happens to girls, they can send the emergency message to guardian and authorities by their hand signal pattern. Once this pattern is identified then GPS is activated and place details are forward as URL Links to police and Guardia with recorded voice and send SMS to those.

4.1 **Pattern Registration and Lock and Unlock Phone**

This paper predilection for user registers his diverse pattern, in order that we can train the system. So that user demonstrates any one pattern that will validate by server. Through this we create unlocking and locking concept in the phone. In this scheme woman will store helpline numbers, like police guardian, station number or friend’s numbers etc. The Women can alter the helpline numbers whenever they needed.
4.2 Pattern Emergency Matching

The emergency matching scheme proposed in this paper. When user in emergency situation he/she show pattern to recovers from difficulties. This emergency matching scheme is mostly developed for girl’s protection. When in emergency situation the audio, video and image will send to the registered receiver from the user. We proposed SVM algorithm to get accuracy result and classification the diverse process emergency.

4.3 GPS Is Initiated-URL Converted

Through GPS device the location of the user will find. The GPS enable in cell phones from different positioning technologies and mobile operators with WIFI. Location tracking is most important and promising stage in proposed scheme to formulate the system further enhanced and valuable. Using GPS mobile device will repeatedly track the user location from Google Map. Mobile device will track user location in the type of latitude and longitude along with that address of the area where the user present. The user location tracking system is proficient to track guardian and police station or friends therefore system will forward the messages and make calls to make contact with the guardians and police station. Many schemes fail to discover exact user location but proposed method had worked toward improve this part. This proposed scheme track person locations that who are in emergency situation. After enabling the GPS in mobile device automatically track the user location and send the URL into registered receiver through SMS. By clicking the URL the receiver can view the location through google map.

4.4 Camera and Recorder Initiated

When the hand waving patterns is in anti clockwise the emergency service will be ON. When the pattern is in antilock vice at the time when user press volume down it will trigger then audio as well as video will be record and automatically send to the register receiver. The audio and video send in the form of URL link to receiver. By clicking URL the user can view the audio as well video. Same as the camera will capture the image and send to the particular receiver like police or guardian.

4.5 SVM Algorithm:

1. Recuperate dataset values from the user database
2. Train Normal data in to process data
3. Surpass values into libsvm code
4. Discern hyper plane that enlarge the distance through SVM formulae:

\[ \min \frac{1}{2} ||w||^2 + C \sum \xi_i \]

subject to \( y_i(w^T \Phi(x_i) + b) \geq 1 - \xi_i \)

\[ \xi_i \geq 0, i = 1, \ldots, l \]

5. If data can’t be normalized find assail margin value

6. Where \( \Phi(x_i) \) maps \( x_i \) into a higher-dimensional gap and \( C > 0 \) is regularization parameter. Because of possible high dimensionality of vector variable \( w \), usually we resolve following dual predicament. \( \min_{\alpha} Q = \frac{1}{2} \alpha^T Q \alpha - e^T \alpha \) Subject to \( Y^T \alpha = 0 \) Find regular attack margin value of every dataset

7. Pass to Radial base function to gain predicted value of attacker and normal dataset.

5. Result and Discussion

5.1 Performance Evaluation

Our proposed Approach is experimented in this paper by configuring the following requirements like win android Operating System and also it’s require 2GB RAM and 500GB hard disk drive to implement this paper in Java. The proposed biometrics system is implemented in Java.

In figure 2 shows Emergency services. In proposed system, the Unlock pattern, voice message, SMS and GPS location tacking has better performance.
Figure-3: Performance Analyses.

In figure 3 shows Performance analyses. When compare to existing classification algorithm the proposed technique support vector machine has better performance. The SVM used in motion pattern performance.

Figure-4: Sensing Performance

In figure 4 shows Sensing Performance. The MEMS technology has better sensing performance when compare to existing technology.

Figure-5: Messaging
In figure 4 shows Messaging. The location will send through URL link to the registered receiver by SMS.

In figure 4 shows Map. By clicking URL link the location of the Map will display to the receiver.

6. Conclusion

In this paper android based unlocking pattern is proposed for emergency pattern support. By using Open Sesame approach we can use patterns method in smart phone. In this paper we use two hand waving patterns. One for unlock pattern another one for emergency service. We proposed SVM classifier in this paper to get accurate classification. By using MEMS technology it senses the hand waving patterns. Using hand waving patterns the image, audio, video and location will send to the registered receiver.

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