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Android Based Women Tracking System Using GPS and GSM

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Abstract: ***In recent times, role of women in all industries have increased. Simultaneously, crime against women is also increasing day by day and this is the high time to provide safety for all working women. This paper focuses on women tracking system for all working women. There is no powerful existing system to prevent the crime rates against women. This system gives information about a woman or a victim who has low assurance about their safety to their respective family and the place where they work, which have to be more concerned about their women workers. This system includes the victim module and two receiver modules for getting information about the missed women. This arrangement includes Microcontroller, Global Positioning System (GPS), and Global Arrangement for Mobile communication (GSM), and the receiver module that includes a Android mobile mechanism of the victim's relations and a monitoring database in the manipulation room of the corresponding association or workplace. Finally, implementation aftermath for the counseled arrangement are endowed in this paper. Keywords— GPS (global positioning system), Microcontroller PIC16F877A, GSM (global system for mobile communication) and Emergency switch.***

I. INTRODUCTION

There is a rising needs for pursuing mechanisms, that can be a existence saving devices. Across eras of low assurance, people can use these arrangements to retain trail of victims [2]. Pursuing provides countless services such as discovering their locale, retain trail of employers to monitor whereas they are at all periods across the workday, teenagers to manipulation their movements, tinier children, pets and elders after they go missing and for countless supplementary purposes[5]. The progress to location-dependent services and requests in wireless arrangements endures to need the progress of extra precise and reliable positioning and pursuing systems. This paper goes across an effectual pursuing arrangement lacking periodic intervals [11].

II. RELATED WORKS

A. Global Positioning System(GPS)

GPS exploration arrangement is extensively adopted for pursuing nowadays. It is chiefly utilized to assist the caretakers to trail the locale of the victim's alongside turn-by-turn instructions. It can additionally be utilized in pursuing a person and how long the she stayed at every single location. These purposes permit users to monitor the victim's locale and intimate the caretaker's in case of emergency.

B. Global System For Mobile Communication

GPS is a real-time satellite discovery arrangement for three dimensional locale determinations. It was industrialized by countless U.S manipulation associations,

GPS module has three main components; they are satellite collection, ground-control or monitoring web, and a user accessible device (i.e.) an android mobile. The satellite Collection is the group of satellites in path that accomplish the fluctuating signals and data messages to the user equipment.

The Global Arrangement for Mobile Contact (GSM) is the second-generation digital cellular mobile network. It is extensively used concerning the world. Even though improvements to GSM such as the subsequent creation arrangements have been rolled out to cater for faster data centric traffic, retrograde compatibility to GSM is yet maintained. Due to its expansive potential, it is selected as the medium for transfer of locale information. The easy and inexpensive Short Memo Service (SMS) permits users to dispatch up to 160 characters. This SMS is being consented by the android request and it helps in pursuing the locale by the link endowed in the message. The main constituents of the vehicle pursuing arrangement are the GPS module that is utilized to attain the victim's co-ordinate and the GSM modem that is utilized to send the locale to the user's phone across the mobile network.

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C. Microcontroller

A microcontroller is a tiny computer (SoC) on a solitary consolidated route encompassing a processor core, recollection, and programmable input/output peripherals. Plan recollection in the form of Ferroelectric RAM, NOR flash or OTP ROM is additionally frequently encompassed on chip, as well as a normally tiny number of RAM.

D. Android Device

The Anroid arrangement is a kind of free and open basis program working arrangement established on Linux, encompassing working arrangement, middleware, and key requests. The level of the Android arrangement can be plainly delineated as: the underlying is Linux, the middle is a Java adjacent contraption shouted Dalvik, and the above is the Android runtime library. The Android demands are Java strategies running in the eclipse. In finish, Android demands encompass of four constituents, as are the Activity, Service,

Broadcast receiver and Content provider. The Attention is constituent accountable for Android demands link alongside users, bestowing discernible user interface for the application; Service owns the comparable locale as the Activity, but it has no discernible interface, no link alongside the user, running in the background.

Broadcast Receiver is accountable for monitoring the display news of Android supplementary components;

Content Provider provides a data deals average for Android across application. Because the Android arrangement is instituted on Linux kernel and has the characteristics of open basis and free, it quickly come to be the large crowd of fans and the prop of countless vendors.

III. PROPOSED WORK

The progress of the working women pursuing arrangement will be described in detail in this section. The block diagram of this pursuing arrangement is as shown in Fig. 1. The three main components of the arrangements are the GPS receiver module, GSM module and microcontroller. The receiver module's main purpose is to attain the victim's coordinates. These coordinates are periodically (user selectable) dispatched to the microcontroller. The microprocessor procedures this information and will next dispatch the locale data to the GSM to be sent across the mobile network to the user after demanded on a non- periodic basis[5].

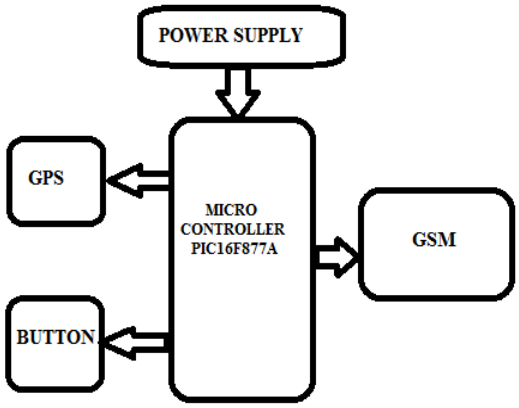


Figure 1: Block diagram for the components of tracking system

The microcontroller transmits/triggers the message through the Universal Asynchronous Receiver/Transmitter (UART) interface [5]. The progress of the working women pursuing arrangement will be delineated in detail in this section. The three main components of the women tracking system are the GPS (receiver module), GSM module and PIC16F877A microcontroller. The Ultimate aim of GPS module is to locate the victim's coordinates. These coordinates are periodically (user selectable) dispatched to the microcontroller. The microprocessor procedures this data and will subsequent dispatch the locale data to the GSM to be dispatched across the mobile web to the user afterward commanded on a non- periodic basis. The modules and microcontroller communicates across the Universal Asynchronous Receiver/Transmitter (UART) interface [2].

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Figure 2: System Architecture of Women tracking system

A. Microcontroller

Early models of PIC had read-only recollection (ROM) or field-programmable EPROM for plan storage, a little alongside ability for removing memory. All present models use Flash recollection for plan storage, and newer models permit the PIC to reprogram itself. Plan recollection and data recollection are separated. Data recollection is 8-bit, 16-bit and in latest models, 32-bit wide. Plan orders vary in bit-count by relations of PIC, and could be 12, 14, 16, or 24 bits long. The education set additionally varies by ideal, alongside extra influential chips adding orders for digital gesture processing functions.

The hardware skills of PIC mechanisms scope from 8-pin DIP chips up to 100-pin SMD chips, alongside discrete I/O pins, ADC and DAC modules, and contact seaports .The producer supplies computer multimedia for progress .Third party and a little open-source instruments are additionally available. A little portions have in-circuit software design capability; low-cost progress programmers are obtainable as well has high-production programmers.

The following Pin diagram Figure 3 explains the features of PIC16F877A Microcontroller in which the GSM module and GPS devices are connected across UART pin. The UART pins of microcontroller are the Transmitter (Tx) and Receiver (Rx) pins which are at 25 and 26 locations.

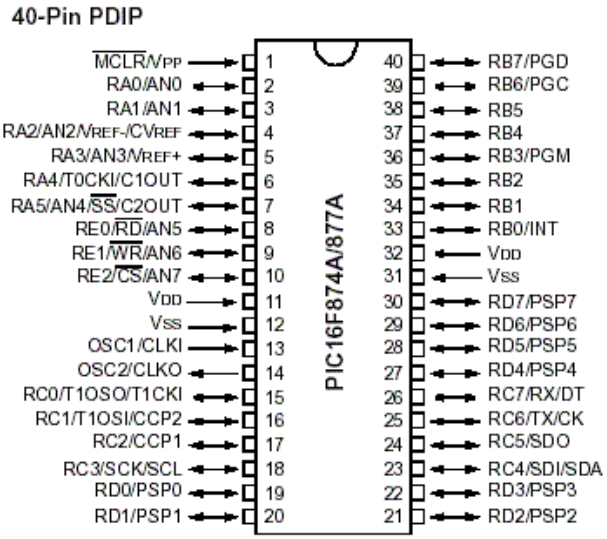


Figure 3: Pin diagram of PIC16F877A Microcontroller

PIC mechanisms are accepted alongside both manufacturing developers and hobbyists due to their low price, expansive potential, colossal user center, comprehensive collection of request notes, and potential of low price or free progress instruments. The UART

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pins (i.e.) the transmitter (Tx) and receiver (Rx) .Pins are connected to the GSM and GPS module. The receiver pin RC7 is connected to the transmitter of the GPS module. The transmitter pin RC6 is connected to the receiver of the GSM module.

B. GPS

The Globe Positioning Arrangement (GPS) is a discovery and precise positioning instrument Industrialized by the Department of Defense. Tear into six clusters of four, every single solitary cluster is allocated a disparate orbital trail to make sure that they can be noticed from anywhere on the Earth's surface [1]. The GPS arrangement is utilized to trail the stable vehicle.

C. Emergency Switch

The emergency button is portion of the vehicle unit. Emergency button is extremely vital ability endowed to operatives at emergency conditions. The emergency button is related to the digital pin of the microcontroller device. Emergency button is attached at a locale that it ought to be facilely obtainable to employees in an emergency situation. Operative can admission it easily. On pressing an emergency button an alert memo and the data regarding the precise locale span of the victim is dispatch to the caretaker's mobile via application.

D. GSM

GSM stands for Globe Arrangement for Mobile communication. It is digital mobile telephony system. The GSM technology sends the triggered memo from the ID-CARD of the victim to the caretakers mobile as a notification.

E. Android Application

The android mechanism is utilized to enhance the reliability of the system. The android mechanism is allocated as an application in caretaker's mobile. In reply to the deed of pressing an emergency button by the operative the android mechanism receives the message as offline notification and locates the exact location of the victim.

IV. RESULTS

This android request is industrialized in eclipse instrument below java platform. The pursuing are given aftermath of the eclipse emulator in Figure 4 displays the tracer request that has been developed.



Figure 4: emulator result showing ID-TRACKER application

When the victim presses the switch or the emergency button in the ID-CARD the memo gets activated continuously from the microcontroller and reaches the caretakers mobile. The screenshot of the consented alert memos are display below in Figure 4, that consists of latitude & longitude benefits and a link that links the person's locale alongside Google map via application.
When the caretaker of the particular victim receives the memos from the corresponding ID-CARD, it automatically opens the request and displays the locale of the victim. The following screenshot shows the alert message received from the GPS of the ID-CARD in the caretakers mobile.

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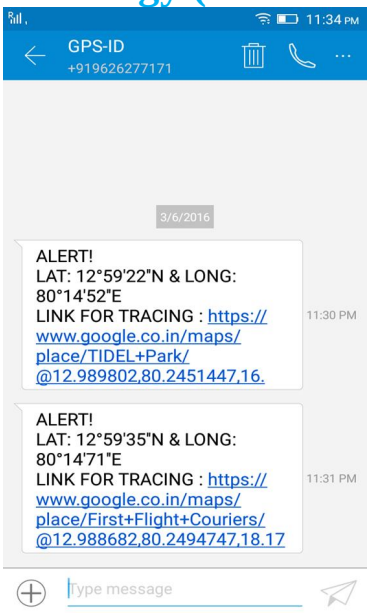


Figure 5:screenshot of the received ALERT Memo's in caretakers mobile

The following screenshot Figure 6 shows the location of the victim when the notification is received by the application

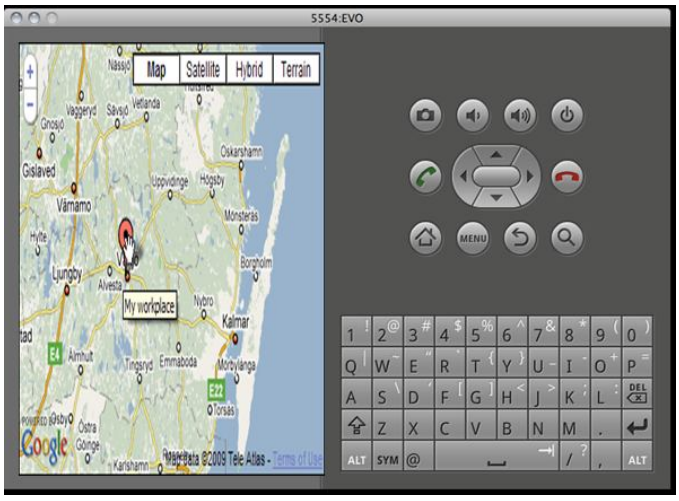


Figure 6:screenshot of the victims location in caretakers mobile

V. CONCLUSION

With the constant progress of intelligent mobile phone hardware and multimedia technologies, it becomes more and extra facilely for mobile phones and supplementary mobile terminals accessing to the web and becoming information. This paper proposes a monitoring arrangement established on Android mobile terminals, alongside SMS as the medium. Our proposed work has been developed as a project but it could be enhanced further using nanotechnology concepts.

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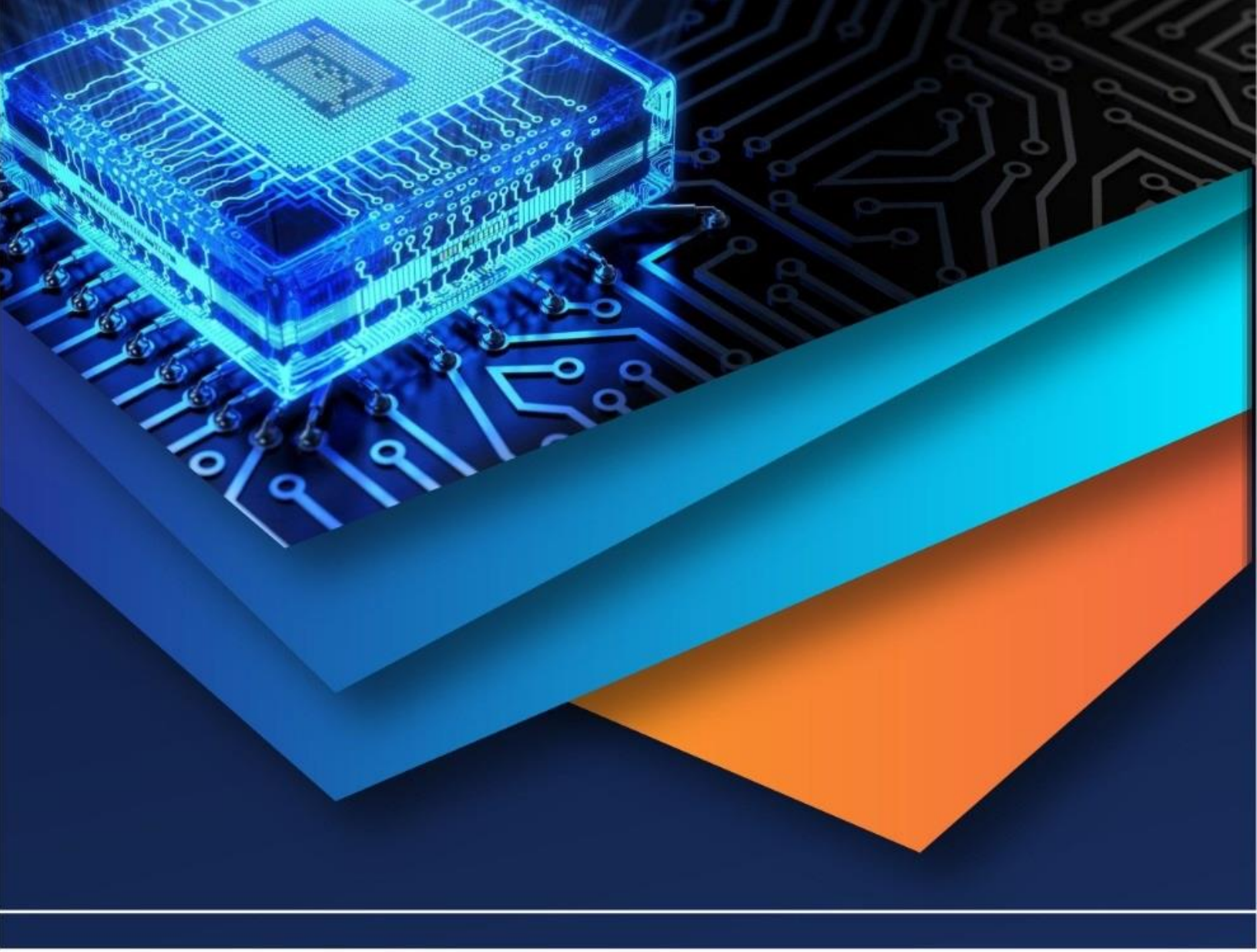
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