Accident Detection through Mobile Phones

Arshdeep[1], Mrs.S.P.Gaikwad[2], Mrs.S.P.Tondare[3]

[1]UG Student, Department of Electronics, BVDU-COEP
[2]Assistant Professor, Department of Electronics, BVDU-COEP
[3]Associate Professor, Department of Electronics, BVDU-COEP

Abstract- **This paper depicts an ORIGINAL IDEA to help PDA clients got in a mishap. The thought has been created remembering the contemplations of expense and similarity with the existing framework. The Short Message Service or SMS as it is prominently alluded to is utilized for this reason. The arrangement offered is the Force-Transducer strategy. The unfortunate casualty is thought to be oblivious and the mishap is recognized consequently. Point by point reenactment results at a downsized dimension have accommodated this arrangement. The edge level is set dependent on information gathered from the examinations.**

One noteworthy issue in such a plan is the method to discover the unfortunate casualty's position. The Global Positioning System (GPS) is observed to be exorbitant. Thus, a strange structure utilizing Radio Direction Finders (RDF) and guide sign are portrayed. The Goniometer or Crossed Loop Antenna is utilized for this reason. This decreases cost viably when contrasted and the GPS framework. The paper continues to recommend a conceptual perspective on the product robot required to play out the Save Our Souls (SOS) message directing errand. It utilizes an uncommon various leveled message dispatch framework wherein individuals adjacent and bound to help are reached. The robot additionally goes about as an intermediary to the person in question and screens reactions for him.

This paper overall gives a financially savvy, elite framework which can be presented in the market if any of the cell organizations are happy to support it.

INTRODUCTION

PDAs are ending up being a threat out and about. This is a noteworthy issue for mobile phone makers. This paper gives an answer which transmits an SOS sign to spare the mishap unfortunate casualty. It portrays in detail a financially savvy idiot proof arrangement. There are numerous components to be viewed as when structuring such a framework. In the vast majority of the mishaps, the unfortunate casualty ends up oblivious. How is an SOS transmitted at that point?

Here, numerous thoughts can be executed. One such arrangement is depicted here. The mobile phone is fitted with a transducer, which distinguishes stuns. The mobile phone consequently transmits the SOS if the stun level goes past a specific rate. The mobile phone must not trigger a unintentional SOS. To guarantee this, the stun level that triggers the SOS must be sufficiently high. Because of the primary condition, if the stun level is made extremely high, at that point a mishap probably won't be recognized by any means. Fig: Antenna utilized in RDF to recognize the situation of the unfortunate casualty Having hence distinguished the circumstances in the mishap, one needs to comprehend the genuine necessities for each situation. They are given beneath. The arrangement requires a product robot inhabitant in the wireless supplier's server, which can transmit the SOS signal in a shrewd way and screen reactions for the person in question.

1. SimiIarIy, the arrangement needs a Positioning System to transmit the injured individual's whereabouts to other people. This must be a modest framework and ought not expand the mobile phone collector's expense incredibly.
2. The arrangement requires a high devotion stun transducer and translating circuit to distinguish the stun greatness.
3. The SOS must be transmitted at the earliest opportunity. So all frameworks must have an extremely little time
4. Above all, the new framework must fit in with the present framework (i.e.,) there must be no distinction in the data got between a client who demands this alternative and one who does not. The nitty gritty depiction of the arrangement will be introduced now.

THE TOY CAR EXPERIMENT

On the off chance that the unfortunate casualty ends up oblivious, the framework must most likely naturally recognize a mishap and transm it the SOS consequently. So as to accomplish this, a stun transducer is utilized to quantify the twitch experienced through the mishap and trigger the SOS circuit if the power level is extremely high. This framework needs factual information procurement to discover the precise limit dimension of the power in a mishap. It is profoundly costly to recreate the mishap continuously. Along these lines, a downsized examination is utilized. Here, a couple of toy autos of mass 200g is made to slam into one another. The power brought about by them is estimated by straightforward piezoelectric transducers. The consequences of this investigation are classified beneath.

Sample no.	Measured volt.(mV)	Actual Force(N)
1	113.2	997
2	112.7	972
3	114.3	985
4	114.5	987
5	113.3	978
Mean	113.6	980

As observed from the examination, the normal power following up on a toy vehicle in the event of a mishap roughly IN. For a vehicle estimating 960kg and moving at 70kmph speed, the power will be scaled multiple times or 18kN. These handy outcomes can be confirmed by a basic hypothetical computation. A vehicle gauging 960kg decelerates from roughly 70kmph to O kmph in 2 sec if there should be an occurrence of a mishap. Subsequently, the power is given by $F = ma$ which is, 960*70*1000/3600 or 18.6 around. This affirms with the downsized trial results. Be that as it may, in a four-wheeler, the majority of the complete power does not act inside the vehicle. According to data got from Mercedes Benz, just 10% of the absolute power acts inside the vehicle.

Consequently, the limit can be set to roughly at 1kN. The downsized trial utilized a less expensive transducer that does not gauge high powers. The transducer required for the genuine framework costs Rs. 1000 a Based on the measurable information gathered over, the surmised limit level is resolved. precise outcomes can be resolved if the investigations are conveyed progressively to the definite detail In

request to guarantee that the power determined above follows up on the mobile phone, it is basic to place telephone in the stand that typically comes as a standard piece of vehicles. This stand requires a slight change to give the PDA a little moving space with the goal that it is jolted when a mishap happens. The other and better arrangement is append the transducer to some piece of the vehicle itself and interface the wireless to it at whatever point the client is driving hello there/her vehicle. This arrangement would necessitate that the transducer be appropriately secured. The issue of finding the position's is presently managed.

IDENTIFYING THE POSITION OF THE VICTIM
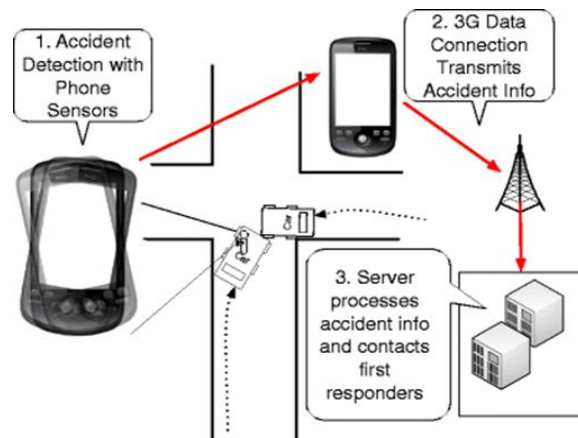
The issue of knowing where we are has been a fascinating and troublesome issue through the ages. Long stretches of research have brought about the Global Positioning System (GPS). This strategy utilizes three satellites and stick focuses the area by the triangulation procedure, wherein the client': position is situated as the purpose of crossing point of the three circles comparing to the satellite: Installing such a framework is very straightforward. In any case, the significant requirement here is the expense. A typical har held GPS costs around $100 and weighs very substantial. Limiting the above mechanical assembly will build the cost further. This would mean an additional expense of Rs.10000 to Rs.15000 for the Indie client.

This being the situation, one could utilize certain undeniable realities to Identify the person in question. They are,

1. The cell inside which the unfortunate casualty is available can be recognized effectively by the base station. Be that as it may, this goals isn't sufficient in light of the fact that the cell can be of a gigantic size.
2. Accidents are uncommon cases. They happen seldom. Further, the likelihood of two clients in a similar cell getting into a mishap is profoundly implausible.

The framework recommended by this paper utilizes a guide or search sign transmitted by the base station. This is a consistent adequacy. signal that fits in the gatekeeper band of the individual cell. The sign has a similar recurrence for all clients as is unacceptable for synchronous multi-client taking care of. Nonetheless, that will be an exceptionally doubtful case as contemplated previously.

This hunt sign is sent just if a SOS is recognized. In this way, when an unfortunate casualty conveys his SOS, the base station promptly sends the pursuit signal. The PDA is fitted with a little reflector which mirrors this sign all things considered. This is effectively accomplished by developing a confused end in the phone for that recurrence. Presently, the forward and backward travel of the sign presents a period delay. In this way, from the sign mirrored, the client's separation can be distinguished.

The data got now gives just the sweep of the hover inside which the client may be available This may be too enormous a region to distinguish the client even inside as far as possible as there is no most extreme farthest point on the cell zone. Since we have the range all that is required is to discover the ate or bearing inside which the client may be available. To do this, we utilize the Radio Direction Finder RDF) reception apparatus framework. This utilizes a very directional circle receiving wire to distinguish the sign source which for this situation is the mobile phone. So as to do this, the mobile phone needs to transmit a microwave sign to the base station. This can be of any recurrence that has not been distributed for the current control frequencies. The base station is then fitted with the CROSSED LOOP or BELLINI TOSI or GONIOMETER sort of heading discoverer. It has been demonstrated numerically that the meter focuses to the bearing of the sign source .The client in trouble conveys a microwave sign to the base station similarly as the base station sends its guide

signal. From the reflected guide signal the span of the injured individual's position is found. From the goniometer, the heading is found too. This framework as expected above presents a plan for just a single client. To do this a little electronic framework, ideally a microcontroller based framework perhaps utilized. Such frameworks are accessible broadly in the market thus there is no reason for attempting to plan one. In this manner, the issue of recognizing the injured individual is survived. When the unfortunate casualty's area is recognized, the base station transmits the SOS sent by the PDA alongside his directions to the fundamental server. The mobile phone subsequently starts the procedure and the base station engenders it.

BLOCK DIAGRAM OF THE SYSTEM

The below diagram depicts the working of the complete system. As seen, the jerk caused by the accident is detected by the shock transducer and the SMS sub-routine is triggered. Along with the message, control signals that inform the base station that an accident has occurred are transmitted. The triggering is achieved by using a high pass filter that detects abrupt changes in the transducer. Simultaneously, the microwave signal for the goniometer is also transmitted. The position is identified as described in the previous section. The user's id and his position in the polar coordinates are given to the software robot. This robot, then decodes the user's position to other subscribers based on a priority list.

So far, the hardware design of the system has been dealt with in detail. As mentioned at the start of the paper, a software robot that manages the whole show will have to be designed. This robot is made resident in the main server in the control tower of the cellular service provider. The functions that this robot will have to perform are complex.
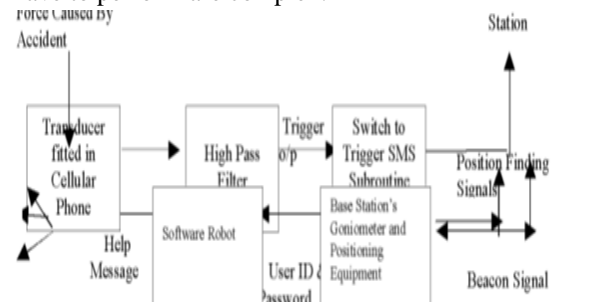
APPROXIMATE COST OF SYSTEM

1. Cost of introducing Goniometer for one base station: RS 20,000
2. Number of Base Stations in Mumbai City: 50
3. Cost of introducing Goniometer for the City: RS 10, 00,000
4. Cost of other equipment and programming (for all out city): RS 1, 00,000
5. Number of supporters in Pune city: 10,000 (Assumed Value)
6. Cost per Subscriber: RS 110
7. Cost of Transducer fitted in the Cell Phone: RS 1,000
8. Cost of other equipment in the Cell Phone: RS 1,000

All out expense per supporter: RS 2,100

It is in this way observed taking into account the greatest conceivable cost; the complete increment is just Rs.2110 which is a decent cost when considering the way that the framework spares the life of the endorser.

CONCLUSION

The system though complete presents a few limitations. They are, the system requires the user to place the cellular phone in a stand or connect the transducer to the vehicle in case of four wheelers. Though this might seem as if taking choice from the user, the fact that the system deals with a question of life or death is more important. The system needs detailed surveying to decode the position of the user in polar coordinates to actual localities. This however is a one time job. This can be reduced by ringing the cellular phone every time an SOS is sent and thereby warning the user. The data collected are approximate. However, accurate data can be collected if the system is tested in real time as a commercial venture. Thus, if implemented this system would prove to be a boon to all the people out there driving with hands-free earphone in their ears.

FUTURE SCOPE

The proposed system deals with the detection of the accidents. But this can be extended by providing medication to the victims at the accident spot. By increasing the technology we can also avoid accidents by providing alerts systems that can stop the vehicle to overcome the accidents.

REFERENCES

[1] https://getdocumentation.info/t-sos-tran
[2] https://www.technicalsymposium.com/SOSTR
[3] http://www.123seminarsonly.com/Seminar-R
[4] http://www.iosrjournals.org/iosr-jce/pag
[5] https://www.ijitee.org/wp-content/upload