A Novel Tracker to Catch Chain Snatchers - Mems Technology

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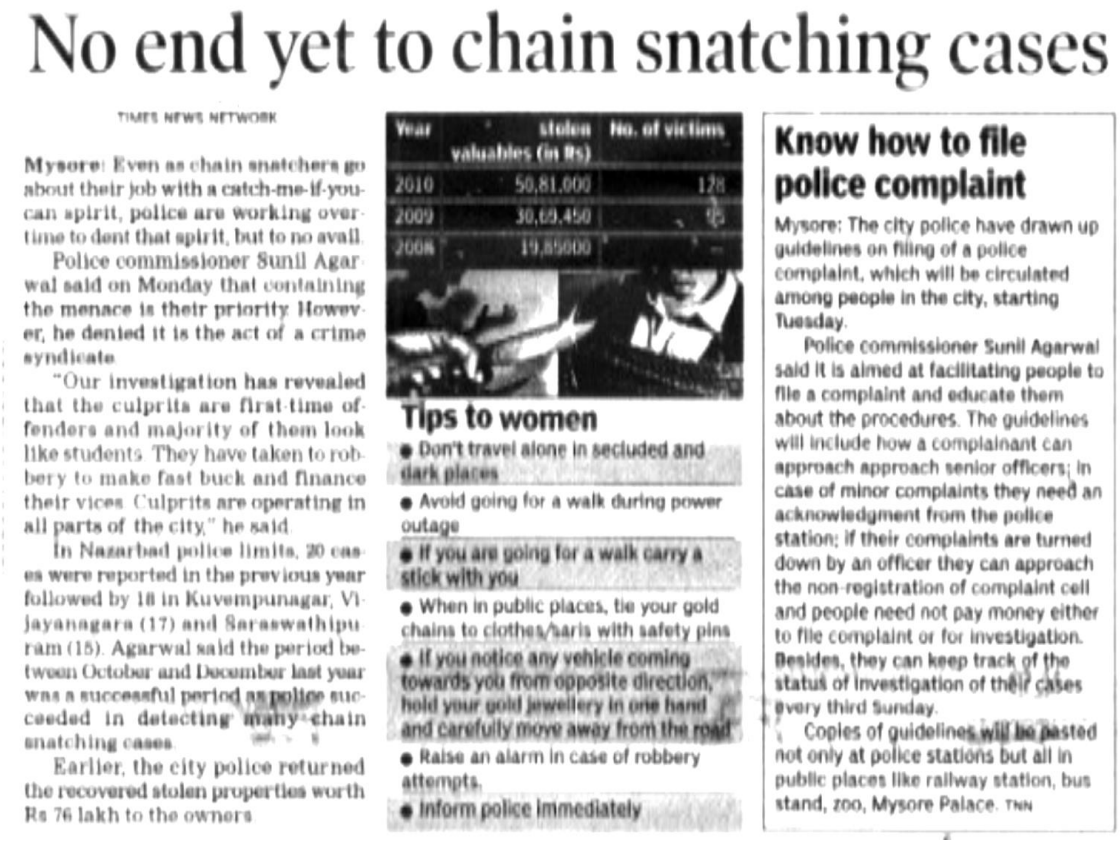
Abstract: Chain snatching is a common phenomenon in daily public urban city , to provide ultimate solution for controlling chain snatching . Keeping this as a challenge I propose my research paper with integration of gold chain into GPS customized PSoC to update on real-time the location whenever the chain is snatched. The Global Positioning System (GPS) offers the capability to accurately determine location anywhere on earth in addition to speed, altitude, heading, and a host of other critical positioning data. GPS is widely used in consumer, and service markets with applications ranging from container shipping to weapons systems and handheld devices. The module triangulates its position with relation to three satellites, using a fourth satellite as a clock source. The GPS system is designed such that at any point, a GPS module on earth has a clear view of at least four satellites, barring any obstruction such as buildings, interiors of a canyon, dense foliage, or mountains. The main.c file contains all the sequential function calls that drive the program flow. The first call is made to the receive GPS Data () function, which receives data from GPS through the UART and stores it into an array. Each array depends on the maximum length of the GPS command.

Index Terms- Chain Snatcher, Customized Gps, Soc.

Introduction

The idea of our project is based on the news related to chain snatching which we often read in the newspapers as shown below.



No end yet to chain snatching cases

TIMES NEWS NETWORK

Mysore: Even as chain snatchers go about their job with a catch-me-if-you-can spirit, police are working overtime to dent that spirit, but to no avail.

Police commissioner Sunil Agarwal said on Monday that containing the menace is their priority. However, he denied it is the act of a crime syndicate.

"Our investigation has revealed that the culprits are first-time offenders and majority of them look like students. They have taken to robbery to make fast buck and finance their vices. Culprits are operating in all parts of the city," he said.

In Nazarbad police limits, 20 cases were reported in the previous year followed by 18 in Kuvempunagar, Vijayanagara (17) and Saraswathipuram (15). Agarwal said the period between October and December last year was a successful period as police succeeded in detecting many chain snatching cases.

Earlier, the city police returned the recovered stolen properties worth Rs 76 lakh to the owners.

Year	stolen valuables (in Rs)	No. of victims
2010	50,81,000	128
2009	30,69,450	95
2008	19,85000	

Tips to women

- Don't travel alone in secluded and dark places
- Avoid going for a walk during power outage
- If you are going for a walk carry a stick with you
- When in public places, tie your gold chains to clothes/saris with safety pins
- If you notice any vehicle coming towards you from opposite direction, hold your gold jewellery in one hand and carefully move away from the road
- Raise an alarm in case of robbery attempts.
- Inform police immediately

Know how to file police complaint

Mysore: The city police have drawn up guidelines on filing of a police complaint, which will be circulated among people in the city, starting Tuesday.

Police commissioner Sunil Agarwal said it is aimed at facilitating people to file a complaint and educate them about the procedures. The guidelines will include how a complainant can approach approach senior officers; in case of minor complaints they need an acknowledgment from the police station; if their complaints are turned down by an officer they can approach the non-registration of complaint cell and people need not pay money either to file complaint or for investigation. Besides, they can keep track of the status of investigation of their cases every third Sunday.

Copies of guidelines will be pasted not only at police stations but all in public places like railway station, bus stand, zoo, Mysore Palace. TNN

'Beware of chain snatchers' signboards in city soon

MYSORE: Police Commissioner Sunil Agarwal said that a signboard with guidelines to inform the public about the procedure of filing a complaint will be displayed at all police stations in the city.

Speaking on the sidelines of the property parade here on Monday, Agarwal said that apart from police stations, the information signboards will be displayed at prominent public offices such as Taluk and Zilla Panchayats, Deputy Commissioner's Office and other government offices.

He said that if any police station failed to register a case, then the public can lodge their complaint with the Non Registration Complaint Cell launched last year. Observing that robberies have increased over the years, Agarwal said that there is also a rise in chain snatching incidents. However, he opined that chain snatching was not an organised racket. He said that 70 per cent of the chain snatchers were first timers and college students. He termed the rise as an urban phenomenon.

In order to tackle the issue, he said that similar to the signboard 'Beware of pickpockets', a signboard 'Beware of chain snatchers' will be put-up in areas where the incidents have increased. Mentioning about the explosion that took place in the scrap yard in the city recently, Agarwal said that the owner Jabeer Pasha was still at large.

He said that the Managing Director Kiran Ranga and Manager Ramesh of Ripple Fragrance Private Limited have been arrested for illegally storing expired air fresheners. He said that a case of culpable homicide not amounting to murder has been booked against the duo.

Agarwal said that suitable action will be taken against shops which had failed to obtain licenses from Mysore City Corporation, Pollution Board and Fire Force Department. DCP (Law and Order) Basavaraj Malagatti said that a meeting will be held with heads of security agencies in the city. Furthermore, basic training will be provided to security guards, he added. Commenting on the issue of CCTV cameras in lodges, Malagathi said that 90 per cent of the lodges have installed cameras. The licenses of the lodges without CCTV cameras will be cancelled, he added.

Police Commissioner Sunil Agarwal displays a chart meant for public awareness on lodging complaints at Non Registration Complaint Cell, in Mysore on Monday. DH PHOTO

Figure 1: News Paper Articles

This is one of the crimes which are increasing as the river flows downstream. Back -to- back chain snatching in the city put the cops on their toes. Even as chain snatchers go about their job with the catch-me-if-you-can spirit, police are working over-time to dent that spirit, but to no avail. Observing that the robberies have increased over the years, there is also a raise in chain snatching incidents. Thus chain snatching has become an urban phenomenon. Even though many cases have being lodged in the police station, but a very few cases have been solved, and many of the cases are still under investigation. In day today newspaper by default front page reads "again a chain snatcher strikes the city", a serious threat that scares the public to walk in and around city is "Chain snatching", and has become a challenge for the Police Department in capturing the culprits. The statics is as shown below. With the above discussed issue and to meet the challenge I produce a novel idea for tracking the Chain Snatcher on Real time This paper gives the demonstration on the same.

1. Harvesting power from Human Body for Powering Soc.

2. Working of Customized GPS-SoC.

Technology Development For Gps Powering

The heat flow carries electrons with it, thereby generating a current. Today's thermoelectric generators operate when a temperature difference of greater than 10oC exists and can provide sufficient energy to power a useful function (e.g. to feed a pulse oximeter). Digital circuits use more energy than optimised analog circuits to accomplish the same calculations and signal processing tasks, thus producing more heat. Thus, in the context of developing human powered devices, good analog electronic design is a key competence. Furthermore analog systems have reduced heat dissipation in the tissue surrounding them and manage the circuit noise better.

In design a highly-integrated GPS RF Antenna Module suitable for L1-band GPS systems. The device is based on the same SiRFstarIV GPS architecture as used in the design, combined with high-efficiency antenna technology, and is designed to provide an optimal radiation pattern for GPS reception. All front-end and receiver components are contained in a single package laminate base module, providing a complete GPS receiver for optimum performance. The module operates on power harvested from human body to a single 1.8 V positive supply with low power consumption and several low-power modes for further power savings, allowing it to be powered by a 3.7 V lithium battery that is supplied by the Energy harvesters.

Smart Power Harvester From Human Body (Sphh)

The module includes a 'SPHH power' mode that reduces the power and makes energy-harvesting sources viable. The device enters a duty-cycle mode to reduce the average current consumption, but retains high accuracy and Performance so that it can track weak signals. Typically, under normal conditions in full power for 100- 900 ms provides a fix of location, followed by a 1-10 second interval of a low-power standby state. Once in a while (typically every 1800 seconds) the module will return to Full-power mode to update the ephemeris data.

If the signal conditions are harsh (below 30 dB-Hz) the module will automatically switch to full-power mode to improve the navigation performance. When conditions return to normal, the module will return to normal mode. This results in variable power savings but, for a fixed output rate, much more reliable performance. Applications using Mode perform similarly to applications using full power, but with significant power savings in strong-signal conditions.

For designs where the antenna has to be added separately, GPS receiver module is a self-contained high-performance GPS receiver with an on-board LNA and SAW filter. Based on the SiRFstar III chipset, it provides high sensitivity and the very-low power consumption helps maximize runtimes in energy-harvesting applications. With over 200,000 effective correlates, the receiver can acquire and track up to twenty satellites simultaneously in just seconds, even at the lowest signal levels. Housed in a compact reflow-compatible SMD package, the receiver requires programming and additional RF components (except an antenna) to form a complete GPS solution. Five GPIOs are easily configured through simple serial commands, which, along with the module's standard NMEA data output, make it easy to integrate, even by engineers without previous RF or GPS experience. The GPS core handles all of the necessary initialization, tracking, and calculations autonomously, with programming is required. The RF section is optimized for low-level signals, and requires no production tuning of any type. Technological, Miniaturization and developments in nanotechnology will play a significant role in wearable medical devices making possible the use of harvested energy sources that are not currently viable. Power management techniques combined with new fabrication and device technologies are steadily decreasing the energy needed for electronics to perform useful functions, providing an increasingly relevant niche for energy harvesting in wearable systems.

Software Implementation

Once chain snatched NMEA PROTOCOL activates programs that provide real time location of the chain, there by the precise location of the snatcher. This control signal is taken into processor by UART. Its a single line ASCII text data.

Results:

Tracking the Snatcher

- Real Time Location of the Chain Snatcher
- Route taken by the Snatcher.
- Exact location of the Snatcher can be viewed any time on real time basis
- Speed of the vehicle can be viewed as per GPS
- Plan can be generated by police to snatch the chain
- Snatcher as per requirement with multiple options of Locations (Perimeter), Speed (High/Low).
- Alerts can be set to predefined Mobile numbers or
- predefined E-mail Id's of the victim.

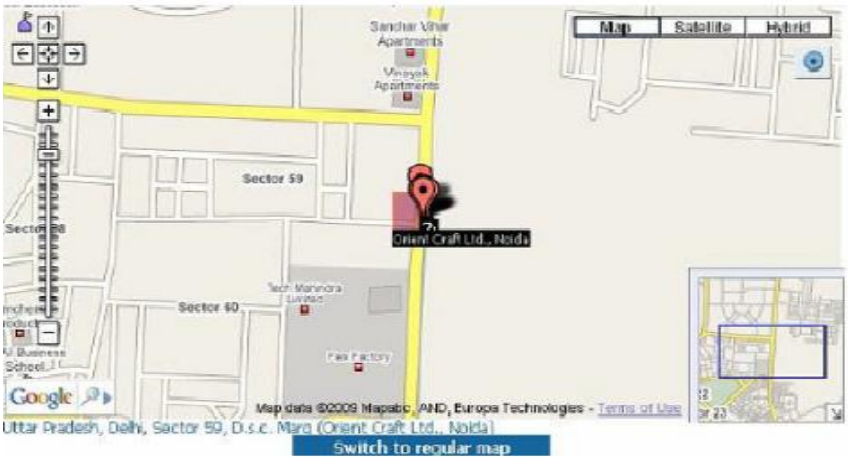


Figure 2: GPS Location tracking

Conclusion

With the latest GPS and power management ICs, modules and antenna designs, it is increasingly possible to develop ultra-small form-factor devices that are self- powered from the human body environment, allows GPS receivers to be used in many more places, opening up exciting new applications. Wearable electronic systems include any autonomous device that is powered by a battery. The battery can be augmented by energy harvesting with secondary batteries being recharged from energy harvested outside the human body. As these devices are mainly at the research stage, many improvements will be needed concerning all their parameters.

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