

Chain Snatching Preventive and Tracking System using IoT

Prof. Latha D U(Assistant professor)¹, Harshitha SK (student)², Monica S(student)³, Nagajyothi R(student)⁴, Pooja B N (student)⁵

¹⁻⁵Department of Computer Science and Engineering, vidya vikas Engineering and Technology, Mysore.

Abstract: — Chain snatching is a serious threat scaring the public and a challenging issue for the police department to trace the offenders and recover the gold. To resolve this issue, the city police installed CCTV cameras and organized awareness program in crowded places. These initiatives reduced the crime to certain extent. However, things remain the same and chain snatching has considerably increased. As offenders usually target the women in the society, it is very difficult to recover emotionally the affected women by such incidents. In this paper, it is proposed to design a small electronic gadget to track continuously when the chain is snatched. This gadget uses power from the battery which is designed withstand long working days, wearable sensors to track the location, and wireless transmission technology with long range radio communication over long distances. This innovative design will reduce the anti-social activities in public places. It can also be used as a life saver during accidents in remote areas.

Arduino Nano; Global Positioning System (GPS Receiver), Sensors;

I. INTRODUCTION

There is many sensational news about chain snatching in day today life. The Snatchers target women by making sudden attacks at the crowded places like shopping malls, residential areas, markets etc. After the chain has been snatched, it is not an easy way to identify the snatcher (burglar). Often it is read in the newspapers about the chain snatching incidents and it creates a negative impact in the society. To Resolve the problem of chain snatching, the

police department monitors the activities of robbers on a daily basis and make the city under surveillance intensively. Moreover, undetected chain snatching instances are resolved with the help of CCTV footages available on public places, malls, super market business areas etc. Despite the efforts made by the cops, the instances of chain snatching had not come down. With these issues, this project fixes its goal to have an innovative design for developing a smart electronic gadget with a combined technology of tracking the offender by transmitting signals through wireless transmission to the police department.

A. Aim

The aim of this project is to develop a low power smart electronic gadget that is capable of tracking the chain snatcher in such a way that whenever an alert signal it has been received by the receiver.

It finds the location of crime the identified location will be shared to the police control room. this helps the police in tracking the ready within a short span of time. Therefore, real time problems which completely decreases crime rate.

II. Implementation

Implementation is the stage of the project when the theoretical design is turned out into a working system. Thus it can be considered to be the most critical stage. In achieving a successful new system and in giving the user, the confidence that the new system will work and be effective.

The implementation stage involves careful planning, investigation of the existing system and its constraints on implementation, designing of methods to achieve changeover and evolution of changeover methods.

III. Implementation of proposed methodology

The proposed Methodology involves the design and development of an electronic gadget that records the criminal offence of chain snatching automatically and the recorded scenario gets transmitted to the nearby police station to alert them and have an immediate action.

A. Arduino IDE

The Arduino integrated development environment (IDE) is a cross-platform application (for Windows, macOS, Linux) that is written in the programming language Java. It is used to write and upload programs to Arduino board. The Arduino IDE supports the languages C and C++ using special rules of code structuring. The Arduino IDE supplies a software library from the Wiring project, which provides many common input and output procedures. User-written code only requires two basic functions, for starting the sketch and the main program loop, that are compiled and linked with a program stub `main()` into an executable cyclic executive program with the GNU toolchain, also included with the IDE distribution. Arduino IDE is a lightweight, cross-platform application that introduces programming to novices. It has both an online editor and an on-premise application, for users to have the option whether they want to save their sketches on the cloud or locally on their own computers. While Arduino IDE is highly-rated by users according to ease of use, it is also capable of performing complex processes without taxing computing resources. With Arduino IDE, users can easily access contributed libraries and receive up-to-date support for the latest Arduino boards, so they can create

sketches that are backed by the newest version of the IDE.

B. Blynk Server

There is need to control the processor board like Arduino Raspberry Pi using apps. Blynk is an app with IOS and Android platforms which will make this possible. Here by simply dropping widgets on mobile screen we can establish graphic interface for other project using Blynk digital dash board and it is very simple to use. This app will not true to some specific board instead it is a supporting hardware of our choice. Whenever the processor board are used linked to internet through Wi-Fi or Ethernet, Blynk will get is online and ready for "internet of your things".

C. Google API

Google APIs is a set of application programming interfaces (APIs) developed by Google which allow communication with Google Services and their integration to other services. Examples of these include Search, Gmail, Translate or Google Maps. Third-party apps can use these APIs to take advantage of or extend the functionality of the existing services.

The APIs provide functionality like analytics, machine learning as a service (the Prediction API) or access to user data (when permission to read the data is given). Another important example is an embedded Google map on a website, which can be achieved using the Static maps API, Places API or Google Earth API.

D. Authentication and Authorization

Usage of some of the APIs requires authentication and authorization using the OAuth 2.0 protocol. OAuth 2.0 is a simple protocol. To start, it is necessary to obtain credentials from the Developers Console. Then the client app can request an access token from the Google Authorization Server, and uses that

token for authorization when accessing a Google API service.

E. Arduino Nano

The Arduino Nano is a microcontroller board based on the ATmega328. Arduino is an open-source, prototyping platform and its simplicity makes it ideal for hobbyists to use as well as professionals. The Arduino Nano has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 Analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.

F. GPS Receiver

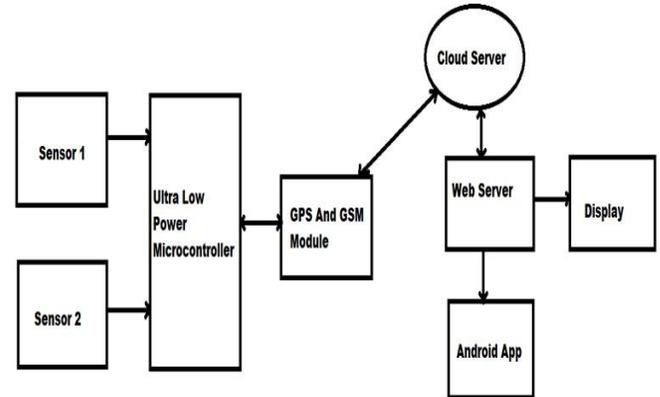
It is a global navigation satellite system that provides geolocation and time information to a GPS receiver anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites. The GPS does not require the user to transmit any data, and it operates independently of any telephonic or internet reception, though these technologies can enhance the usefulness of the GPS positioning information.

G. SIM 800c Module

is a complete Quad-band GSM/GPRS solution in a SMT type, which can be embedded in the customer applications? These modules are sub-system of the Internet-of-everything hardware. SIM800C supports, Quad-band 850/900/1800/1900MHz, it can transmit Voice, SMS and data information with low power consumption. With tiny size of 17.6*15.7*2.3mm, it can smoothly fit into slim and compact demands of customer design.

IV. Work flow of Proposed System

The project is implemented in prototype based.



As an initial step, a sensor has to be attached to joint of the chain. Another sensor is placed by attaching the sensor to cloth near the neck. The sensor that is more apt with fast responsive ability is force sensor. This gets activated when external force is applied to the chain. This external force generates a vibration. The vibration is transmitted to the ultra-low powered microcontrollers. The microcontroller processes the signal and sends the acknowledgement to GSM Module to transfer the signal to the nearest police station. Here the wearable sensors and microcontrollers not have ability to transfer data for long distances. Hence GSM is used to receive the signals from the Microcontroller and transmits the data to the cloud server using a low-power microcontroller. The GSM transmitters sends the data to nearest police station using cloud based android app. The received data in the receiver side contains the GPS location and details of the crime events. These data are displayed on the monitors display to take further actions and if the authorized person not able to analyze the situation they can open the android app and can track activities on google map. In the proposed system, transmitter section related sensors and microcontrollers are low power consuming devices hence a wearable and smart tiny system can be achieved. The

android app is synchronized with google Map API in order to track the locations.

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V. CONCLUSION

A framework that uses electronic gadget with less power utilization containing sensors is designed to capture the instance of chain snatching. The captured information along with geographical information gathered from the GPS enable GSM is transmitted using wireless technology to the nearest police station through encrypted data format. This innovative design will reduce the anti-social issues like chain snatching to certain extent. In future, alarm buzzers can be connected to this gadget to alert the entire surrounding immediately.

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