SMART TRACKING SECURITY DEVICE FOR WOMEN SAFETY USING RASPBERRY PIE HARDWARE

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Abstract.

Nowadays, women and youths' prosperity is an incredible issue of our overall population. The check of the loss is extending bit by bit. In this endeavor, a proposing system will help with ensuring the prosperity of women and children wherever around the world. These used different sensors like the Accelerometer sensor, Sound sensor, far off furor switch close by the camera, these sensors constantly development the customer. We have similarly used GPS which will help with perceiving region and following the contraption. Wi-Fi used in the structure is used to send prepared notification close by the got scene of the event to guards, relatives, and police central command. potential gains of different GPS kind used in device.

Keywords. Camera, GPS, Heart Beat Sensor, Panic Button, Raspberry pi 3 models, women safety device etc.

1. INTRODUCTION

In recent years, women's are continuously facing various threats such as abusing and brutal problems and being treated as victims. We are in need to ensure the safety of women. The ideal system was a portable device. This project is concentrating on the security system of the women's by means of providing a secured environment to them. The objective of this project is to create a portable safety device for women's. We are mainly creating a ideal model for the device that can be easy to carry anywhere. Safety of women in world has become a major issue in the world. Nowadays women's are undergoing various immoral activities. The devices which is used for the safety of the women's will be enhanced as mobile apps for their convenience. Our project gives solution to one such issue. Alerts family and friends by sending emergency message and captures the images of the Scene attack to maintain proof for legal actions. It consists of wireless Pushbutton, accelerometer sensor, sound sensor when any of the sensor is triggered, the device will get activated automatically within a fraction of seconds. Immediately the location of the injured person and images of scene will be sent to an emergency contact

2. LITERATURE REVIEW

In this paper [1] such gadget is planned which is a compact one that can be actuated according to the necessity of the person will find casualty utilizing GPS and with the assistance of crisis messages be shipped off individual areas according to the plan. The device gives a caution framework, call for help, and electric stun to dispose of the aggressor.

This paper [2] proposes another perspective to use advancement to get women. The structure contains an ordinary which when gets, tracks the space of the setback using and sends emergency messages assist to the three emergency contacts and the police of the control room.

This paper [3] portrays a vehicle following and delegate security system that gives the blend of GPS contraptions and specific programming to follow the space of the similarly as outfit messages and alerts with an emergency button. The information of vehicle position given by the device can be seen on the google maps application.

This paper [4] In this paper, the author discussed how the gadget is designed to make certain ladies safety. This system is used to locate ladies based totally on GPS technology. In this way, the signals that have been created are despatched to the board, manipulate the signals and offer SMS services, so emergency calls can be shared with the region of the coordinates to keep ladies from harassment.

This paper [5] Today in this global the women are being molested, kidnapped, and harassed with the aid of bodily strong people. So to make sure the safety and protection of ladies the concept of a clever device is constructed that is comfortable and really clean as compared to every other cumbersome system that already exists [6-10]. This paper proposes the dangerous problems faced via girls and it's going to help in finding the culprit without difficulty with help of high technology. And it is going to be easy to enforce in exclusive areas for security and surveillance of women [11-14]. MEMS sensor used for phase shifter applications [15-17].

3. PROPOSED SYSTEM

In the previous devices the main problem is difficulty in initiation so that the person cannot react for the situation in time. The devices are very big in size and very weighted to carry & more expensive to buy it. It is observed that these techniques addressed only some problems such as tracking the location of victim, alerting the police, alerting the local people for immediate help by using the buzzer. The previous safety devices address only a few problems. They are used for only some works like sending location, asking for help, or sending photos etc. So, our devices are used in which many of the problems are addressed using this device.

4. HARDWARE IMPLEMENTATION

4.1 RASPBERRY PI Hardware layout:

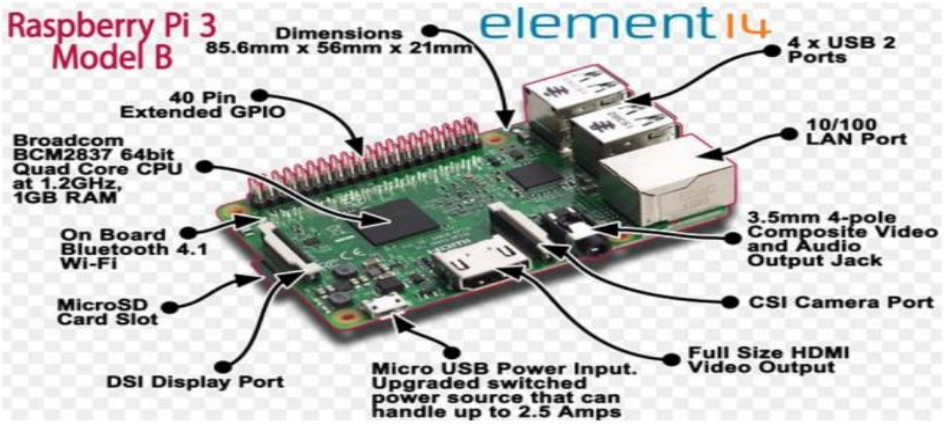


Figure 1. Hardware layout

5. METHODOLOGY

In present day scenario we encounter numerous kidnapping or eve teasing cases. And it is a major issue that needs a special solution. So, focusing on this issue the main objective of our project is to design a gadget which provide a safety and security in any time at anywhere.

5.1 System Design

In this we introduced the block diagram the project TRACKING SECURITY DEVICE FOR WOMEN SAFETY. Here we also gave brief description about the operation and components used in the system.

5.2 Block Diagram

The Functional square of the lady's wellbeing gadget task SMART TRACKING SECURITY FOR SAFETY. In this the mems sensor, camera, sound recorder, RF transmitter, and a GPS, gsm is interfaced with raspberry pi.

5.3 Diagram of the safety device

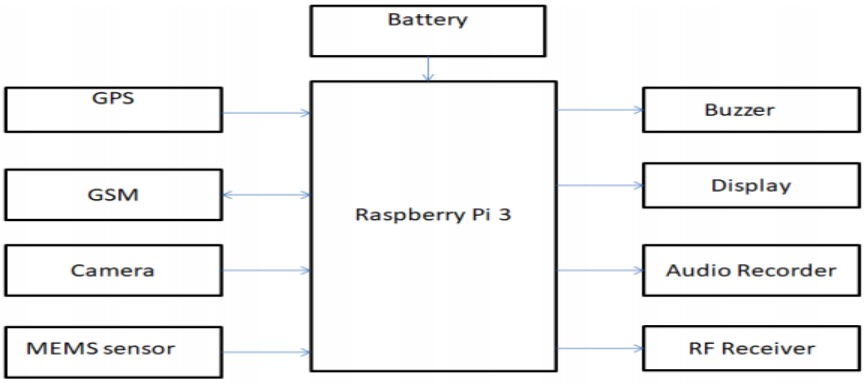


Figure 2. A concise depiction of the parts on the Pi.

Processor/SoC (System on Chip): SoC came as a Supervised Learning because we training to the machine by using algorithm. We can use this algorithm as a classification Problem.Where the whole data in a training Random Forest Classifier get only 2/3 data that enter into one Decision tree and again get the different another 2/3 data that enter into another Decison tree. If 10 Decision Tree mentioned in a algorithm, Random Forest classifier get Different 2/3 data. Here out of 10 decision tree some decision tree only predict as a wrong that is a variance so that variance in the minority voting but we take only majority voting. Majority voting is not a variance. Finally Random Forest Classifier remove this variance by using this simple methode and after removing the minority of variance and getting the majority that is a correct output.

Power sources: It is a device that consumes 700mA or 3W or powers. It is GPIO header. Any extraordinary mobile phone charger will achieve created by filling the Pi.

GPIO: GPIO – In GPIO using the 1st row to calculate the eculidean distance for all other rows so we got distance values for all rows then knn take the top three minimum values. And determine which target came as a majarity with respect to values that is output. If first row target output and eculidean distance output both are same the acuuracy increase. This is one row process. Similarly knn do every row by same process. If every row is predicted as same methode, our accuracy is increasing step by step in a training process. If all predict good we got a full accuracy in a training. Finally, we got a good model and check the test. If both are came as good accuracy we can use this our model as a future. Supervised Learning because we training to the machine by using algorithm. We can use this algorithm as a have one root node and two leaf node. It is help to split the data sheet based on the conditions. Let's consider output as a Two target. Based on condition, If Decision Tree splited with classify one target in one leaf side and second target in second leaf side perfectly for one feature. Our feature column is good this is known as Minimum Gini index. In a column feature, If Decision Tree split with classify atleast one target come as one leaf node that is also a good Feature this is also know as minimum Gini Index. Suppose, Two target come as both leaf node that is a worst feature. Finally, Which feature column enter as minimum Gini index, Decision Tree Take a only that feature for training model.

Preprocessing the data steps is very important. Our accuracy is increases based on preprocessing steps. Preprocessing data means removing unwanted datas like Empty rows, duplicates rows, Extreme value. If we donot preprocessing this, our prediction go to wrong so this only reason the preprocessing steps is very important. This steps is very important because this steps will decide to Train the our datas or not. Here, we use the statistics methode to check our input and ouput are any relationship are not. x-axis is house square feet and y-axis is Price of house square feet. If square feet of the house is increase the price also increase this is called the relation ship of input and output so we must detect this relationship by using correlation, t-test, anova test, chi-square test then only we move to next steps.

Suppose one column contains both integer and float. We must change one Datatype. Same rows exist on another row place. If we donot remove this dulpicate rows our machine mugup. This mugup is called overfitting. If our machine mugup the training data, It predict well in training but It doesnot predict correctly in test datas so must remove this duplicate records. We also remove this empty record. If we donot remove this Empty record our machine assume this Empty record is also one data. If i want to Remove this empty record i go to remove that row very less and if we remove this empty records my accuracy of prediction is gone to decrease so that time we use to fill the mean or median in empty records. Take the mean or median in a column and fill it in empty records in a column. Similarly we can do this same process by every column.

Outlier is a extreme value that means it is not a particular range. This datas 100 is a extreme value and 1-10 is a particular range. So we must remove this 100. If we donot remove this, our prediction goes to wrong. When column feature is a categorical variable. We must convert categorical to binary digits numerical because

machine learn only 0 & 1. Voting Algorithm is one of the technique of Ensemble Learning and it is Supervised Learning. We can use this as regression and classification also. Our data is enter into many machine learing models like decisiontree, Knearestneighbors, RandomForestClassifier, Finally Voting algorithm is check Which models are predict a majority of same target that is a output, If that repetative output and dataset output same the accuracy is increase.

Bagging Algorithm is one of the technique of Ensemble Learning and is is a Supervised Learning. Bagging is a same method for Random forest Classifier Algorithm. Here random forest we use only base learner is a Decision Tree But Bagging we can use any algorithm as a base learner such as KNearestneighbors, Logistic Regression, Support vector machine.

5.4 Block Diagram of the variable switch

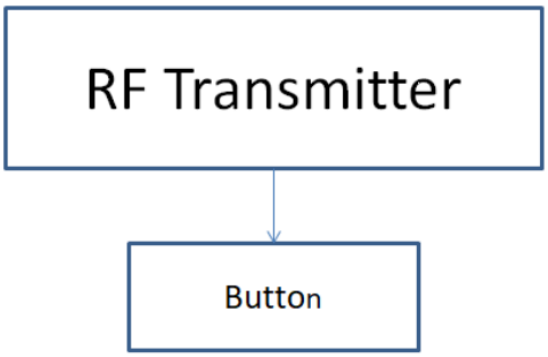
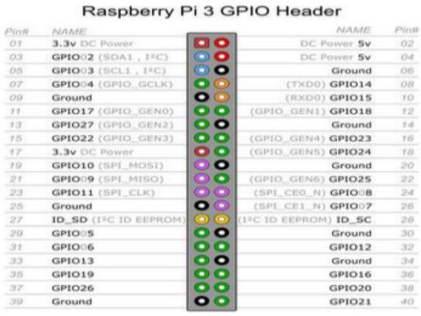
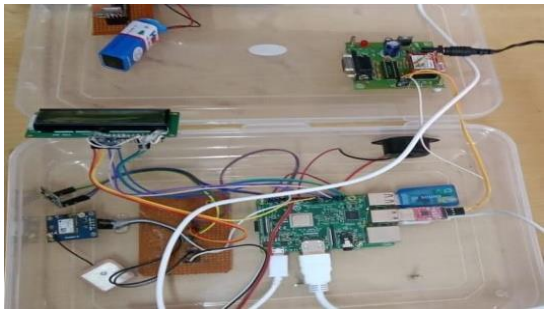


Figure 3. Block diagram of the variable switch

Practical square of the variable catch venture . In this Rf transmitter is associated with the gadget, Rf collector is associated with button, are interfaced with Raspberry pi.

5.5 Ouptut:





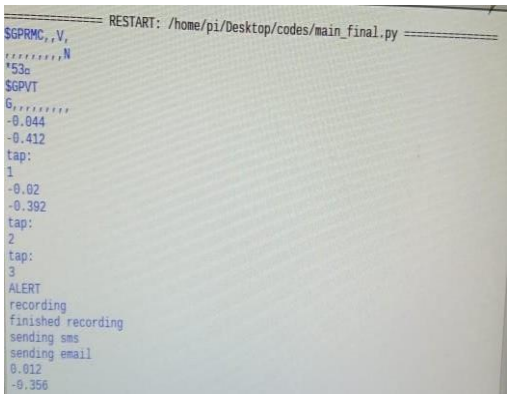
(a) Raspberry Pi Header (b) Hardware Implementation

(c) Output Display

Figure 4. Output of proposed work

6. RESULTS

9. Message Received by Family members/Police



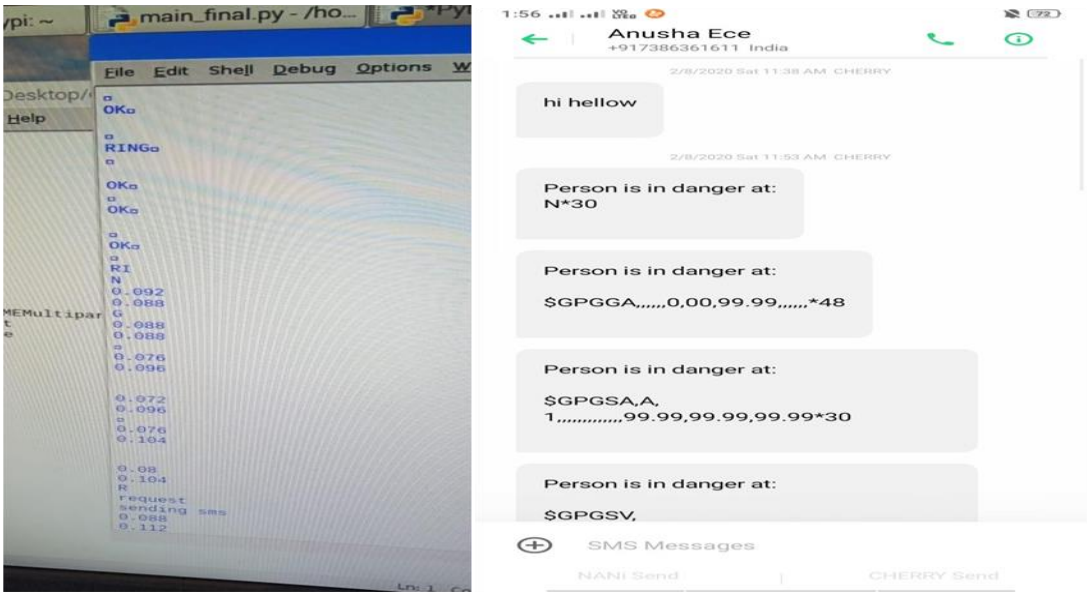


Figure 5. Results of Message received from parents or police using Raspberry Pi

7. CONCLUSION

By seeing those numerous advantages and another factor we reached the resolution that it is the best substitute to lessen the number of episodes that are occurring against ladies. This being an exceptionally imaginative thought ought to be grown further for enhancements. In this way, the objective of the Smart following security gadget project is to fundamentally build wellbeing for women.

In this project we have added a MEMS sensor to increase the chance of easily initiating the device and also included gps and gsm module for communication purpose when any harm occurred to the women. In this project we also provided a switch which is also used as another type of initiation of the device.

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