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Smart Bike

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***Abstract*—As the usage of vehicles is increasing drastically, the hazards due to vehicles is also increased. In present days the rate of accidents can be increased rapidly. Due to employment, the usage of vehicles like bikes can be increased, because of this reason the accidents can be happened due to over speed. People are going under risk because of their over speed, due to unavailability of advanced techniques, the rate of accidents cant be decreased. Most of the teenagers are exposed to the thrills of speed which sometimes results in lethal accidents, as teenagers tend to be impulsive and fearless. They are much more adapt to speed and show off. Parents are always concerned about them. To increase the vehicle safety in the country this project introduces a optimum solution. This project is proposed to monitor the Speed of the vehicle and Detect accident by using the Microcontroller , Black Box and Helmet Detection using OpenCV. We design a web application using Django which is connected to the Firebase. The web application include Login and Sign up page and the Detail page which contains the real time data from the sensors as well as the helmet data.**

***Index Terms*—Over Speeding, Accident, Injuries, Show Off, Always Concerned, vehicle safety.**

I. Introduction

Our former generations had come through plenty of difficulties in travelling to places but later have omitted those with personally owned vehicles. One of them is a bikes, In this project we proposed ways by which we can increase the two wheelers driver safety by making the two wheeler secure and safe for the vehicle driver.

This project is proposed to monitor the Speed of the vehicle and Detect accident by using the Microcontroller [1] , Black Box and Helmet Detection using OpenCV [9]. If Accident happens it send location of the place where it happens in the form of an SMS to the nearest Hospital and the family members so that the life of the person can be safe. We are using Firebase Real time Database for collecting useful data and saving the video in case of an accident. We design a web application using Django [16] which is connected with Firebase [13]. The web application include Login and Sign up page and the Detail page which contains the real time data from the sensors, the helmet data. Figure 1 shows The Flow Diagram of Smart Vehicle (Two-Wheeler).

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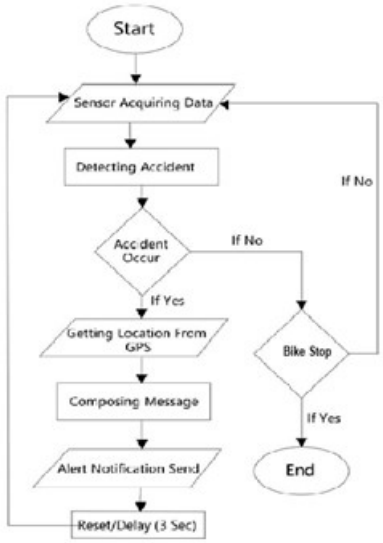

Fig. 1. The Flow Diagram of Smart Vehicle (Two-Wheeler)

II. Speed Detection

Over speeding has been identified as a major cause for traffic accidents. The accidents due to high speed result in crashes, dangerous injuries and death. Most of the teenagers are exposed to the thrills of speed which sometimes results in lethal accidents, as teenagers tend to be impulsive and fearless. They are much more adapt to speed and show off. In this module we proposed to monitor the speed of the Vehicle by using the IR sensor and Microcontroller. The IR sensor is used to calculate the RPM of the wheel and then calculate the speed in km/hr. The IR sensor is connected to Microcontroller [5]. Figure 2 shows the circuit diagram of speed detection for two wheeler [4].

The Microcontroller transfers the detected speed through Wi-Fi to the online Firebase Real Time database . The speed of the vehicle can be seen on the web application [15] created for the purpose to display the data on the any system.

III. Accident Detection (Black-Box)

As the name, Smart Vehicle Accident Detection and Tracking, suggests before sending the alert, there are two primary

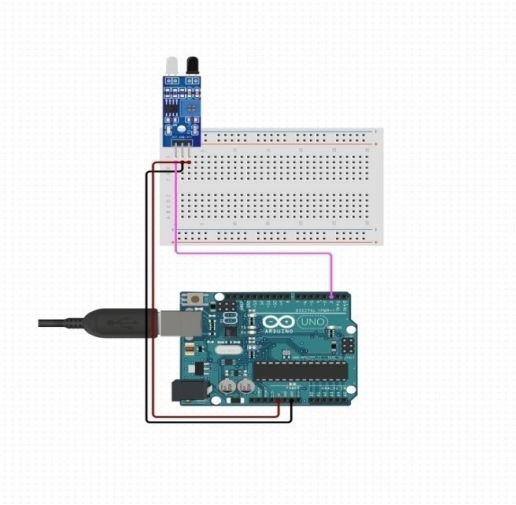

Fig. 2. The Circuit Diagram of Speed Detection

operations: accident detection and tracking the spot. The former is conducted under the assistance of sensors and microcontroller and the later is dealt with the help of GPS. For detection various sensors like Gyroscope-Accelerometer (MPU 6050) , Vibration , Tilt are used which continuously keeps a track. Figure 3 shows the circuit diagram of accident detection for two wheeler. This data is collected in the micro-controller; the microcontroller is in a loop of collecting the set of values and checking whether the consolidated values depict an accident. If the value of the Tilt and Vibration is high and the value of the MPU 6050 in the x-axis is less than -1. If accident is detected then the other phases, like black box, tracking the spot and initiating response, comes into play and job of this phases is accomplished. Otherwise this loop is continued. The system goes into the loop since the ignition and remains in this unless the vehicle is parked and shut.

In Black Box we fix one camera at the front and one camera at the back so that we can determine the cause of the accident. The cameras stay open and record the front and the back view until the accident happens then it will save the recorded video in the Firebase Storage and send it to the relatives of that person [7]. When an accident happens the sensors for accident detection start acting we can configure our camera such that when sensors get active then we can save the recorded video in the Firebase Storage. This will help the authorities to determine the cause of the accident and find the Culprit.

IV. Accident Tracking

Tracking of the accident is based on resulting values that come from multiple sensors, which activate the overall circuit with the help of a microcontroller. Microcontroller is continuously fetches the data from the sensors. These all once reach their favorable conditions, probably when activated all together at that time of instant, system will trigger the Microcontroller to respond accordingly to GPS and GSM unit for delivering the alert message to the relative, Ambulance and Nearby police

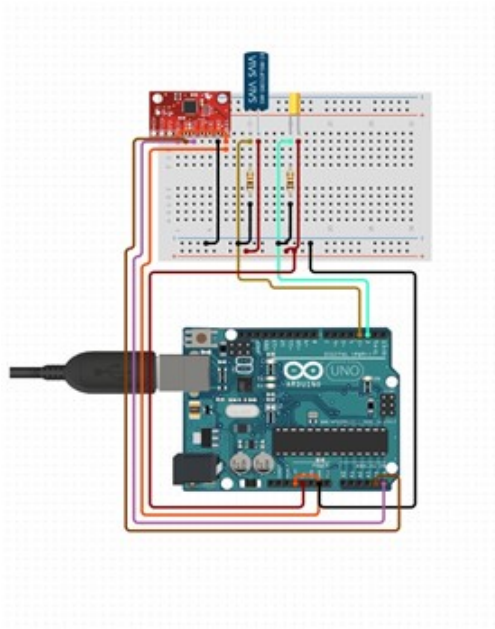

Fig. 3. The Circuit Diagram of Accident Detection

station. Message contain multiple information like user vehicle number, longitude-latitude by which location is traced easily by anyone and reduces the chances of Sevier causality. In this system Microcontroller transfer data [6] to the Firebase and represent these values of the different sensors also reflect on the web application for understanding and awareness of the system is on working mode, values from the sensor are continuously measured. If once the accident is reached the system will automatically reset after 30 sec and again work as it was working before. Figure 4 shows the circuit diagram of accident tracking for two wheeler and Figure 5 shows the total circuit diagram of accident detection and accident tracking for two wheeler [4][6].

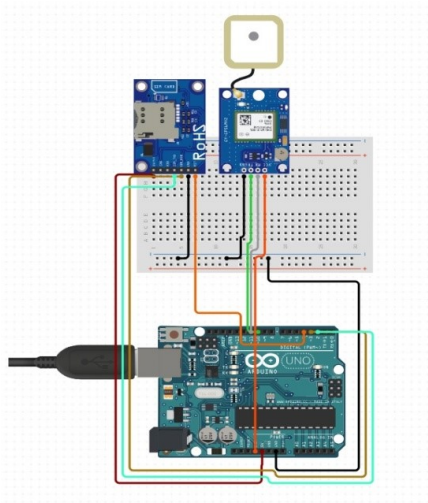

Fig. 4. The Circuit Diagram of Accident Tracking

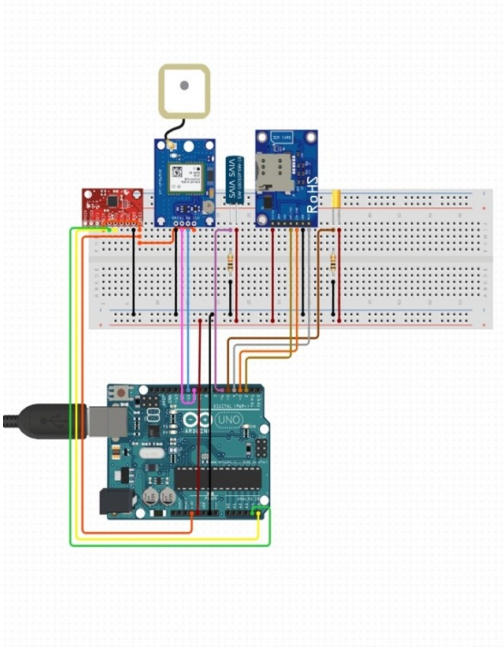

Fig. 5. The Circuit Diagram of Accident Detection and Accident Tracking

V. Helmet Detection

This project also include Helmet Detection system [3] and alert the driver of the vehicle in the form of an voice notification . Two-Wheeler accidents have been rapidly growing through the year in India.

This problem can be avoided if we can notify the driver. This not only ensures road safety, but also allows the driver to be a little more ease while driving on tricky or new roads. The main objective of this is to develop a system to enforce helmet wearing.

To detect the Helmet we will fix one camera above the speedometer of the Two Wheeler such that the face of the person is visible in the camera [8]. We use already train dataset to detect if the individual is wearing the helmet or not. If the person is not wearing the Helmet then a value in terms of 0 and 1 is saved in the Firebase Real time database . 1 is use to define that the person is wearing the helmet and 0 is use to define that the person is not wearing the helmet. After detection it sends a message to their family members and rider also. Message warn the rider that you are not wearing a helmet and if rider ignores the message then after 8 minutes a message is send to the Traffic Police in the form of an SMS and rest of the work is done by Traffic Police.

Figure 6 shows the Real Time Database and the layout by which the data is displayed in the Database [12].

VI. Helmet Detection Method & Analysis

We are using YOLO object detection algorithm with OpenCV to detect if the person is wearing the helmet or not. YOLO is a state-of-the-art object detection algorithm that is incredibly fast and accurate [10]. YOLO algorithm is an algorithm based on regression , instead of selecting

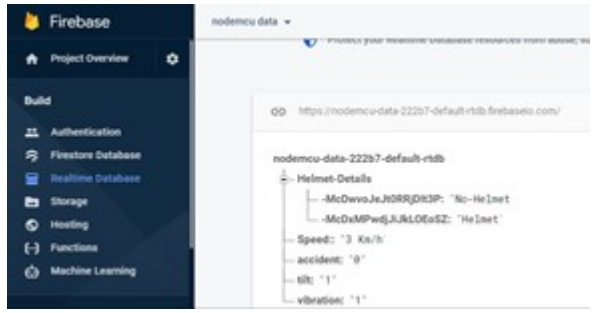

Fig. 6. Firebase Real Time Database

the interesting part of the image , it predicts the classes and bounding boxes for the whole image in one run of the algorithm. First of all we use YOLO labelling tool to create the dataset by labelling the helmet in the images. Now we take our trained model and make inference on test images. After training has completed, model weights will save in weights. For inference we invoke those weights along with a conf specifying model confidence and a inference source. Source can accept a dictionary of images, individual images, video files, also a devices web cam. We are giving a person 8 min to wear the Helmet. After 4 min a message is send to the family members. If the person doesnt wear the Helmet in 8 min then after 8 min the message will be send to the authorities which contain s the person details along with his photo click at that time.

VII. Conclusion

This project include the ways to reduce the accidents that happen due to High speed driving and not wearing any protective gears such as Helmet and also detect the accident if happens and send the details to the authorities these details include the information such as the location of the accident and the recording saved in the database at the time of the accident to find the cause of the accident. This projects main motive is to make a Smart Vehicle Two -Wheeler that reduces accident. This project proposed a way by which we can make Helmet compulsory for Two-Wheeler users. As we are fixing a camera in such a way that can detect the Helmet after detecting the helmet it sends a message to their family members and rider also, Message warn the rider that you are not wearing a helmet. In India where the number of accidents is large this system can very useful to save hundreds of live. This system has some limitations which need to be removed if want to implement this in real world. There are large number of bikes and scooty manufacturers which are making their bikes and scooty safe from any mishappening this is very useful product for them.

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VOICE BASED EMAIL SYSTEM FOR BLIND PEOPLE

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***Abstract*—: E-mail stays the maximum go-to shape of the numerous verbal exchange technology withinside the commercial enterprise world. However, some of these technologies may be of little need to the folks who are visually impaired as all sports that may be accomplished at the pc is primarily based totally on visible perception. As almost 285milllion human beings global are envisioned to be visually impaired it will become important to render net centres for verbal exchange beneficial for them also. This paper ambitions at growing an e mail gadget which enables them to apply it without difficulty. The structures employ speech reputation, gtts, Playsound, Pyaudio, speech reputation, as a further safety aspect, the gadget uses voice reputation for person verification.**

***Index Terms*—Speech-to-Text, Text-to-Speech, Speech Recognition**

I. Introduction

Worldwide e mail use maintains to develop at a wholesome pace. In 2015, the wide variety of world e mail customers became almost 2.6 billion. By the give up of 2019, the wide variety of world e mail consumer will boom to over 2.9 billion. Over one-third of the global populace can be the use of e mail via way of means of yearend 2019. One of the foremost drawbacks that units is that having access to emails or on an entire any web page at the web page at the net calls for someone to have visible capabilities. This way that the advantages of the centres supplied via way of means of the net for this reason rendering the generation useless.[6] The present technology like display screen readers, computerized speech recognizers, speech-to-textual content and textual content-to-speech which got here into picture, made it simpler for the visually impaired, eleven though best partially. Voice primarily totally based e mail gadget with those technology on my own poses privateness and protection issues for a visually impaired person. So, there emerged a want to create a whole voice-primarily totally based software with which emails may be despatched or obtained presenting protection and privateness.[1] Therefore, we got here up with this gadget voice-based e mail for blind which aids visually impaired human beings to apply e mail centres with ease. The maximum critical component we are thinking about at the same time as growing this gadget is presenting protection for the consumer via way of means of incorporating speaker verification in the course of sign-in. The customers of this gadget want now no longer have any simple statistics approximately the keyboard shortcuts used or in which the keys are located. All features utilized in our gadget are primarily based totally on easy mouse click on operations making the gadget very consumer friendly[5]

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II. PROPOSED SYSTEM

The proposed machine is primarily based totally on a totally novel concept and is nowhere just like the current mail structures. The maximum critical issue that has been stored in thoughts even as growing the proposed machine is accessibility. A machine is stated to be flawlessly reachable handiest if it could be used successfully through all styles of humans whether cap in a position or disable.[9] The contemporary structures do now no longer offer this accessibility. Thus, the machine we are growing is unique from the contemporary machine. Unlike contemporary machine which emphasizes extra on consumer friendliness of ordinary customers, our machine focuses extra on consumer friendliness of all styles of humans such as ordinary humans visually impaired humans in addition to illiterate humans.

The whole machine is primarily based totally on voice activate and clicks events. When the usage of this machine, the pc may be prompting the consumer to carry out unique operations to avail respective offerings and if the consumer wishes to get admission to the respective offerings, then he/she wishes to carry out that operation. One of the principal blessings of this machine is that for the maximum part, the consumer will now no longer require using keyboard. All operations may be primarily based totally on mouse click on events. Now the query that arises is that how the blind customers will discover vicinity of the mouse pointer.[3][4] As precise vicinity cannot be tracked through the blind consumer, consequently the consumer should traverse the mouse in the course of the display screen from pinnacle to backside after which left to right. This machine may be flawlessly reachable to all styles of customers as it's far simply primarily based totally on easy

mouse clicks and there's no want to keep in mind keyboard shortcuts. Also due to this facility folks who cannot study want now no longer fear as they are able to concentrate to the prompting completed through the machine and carry out respective actions.

III. RESULTS AND DISCUSSION

A. ARCHITECTURE

Fig.1 design Diagram the design of this project is split into 3 elements Hardware needs, software system needs and dealing. allow us to look concerning every section intimately. For implementing this project, we are going to need hardware merchandise sort of a desktop for running the appliance and a speaker mic for act with the appliance. The software system is being developed victimization secret writing languages like Python and can be victimization Django. Also, Google Speech APIs are going to be used for communication.[7] Also, Speech to text conversion is going to be done whereas taking inputs from the user.

Fig. 1.

B. DESIGN

[A]. computer program Design: Here the whole aim of computing machine is to focuses additional on cap potential to apprehend prompting of the device rather than the looks and influence of the device as a result of the device is specially advanced for the visually impaired folks, to whom the looks of the device won't be important as a result of the cap potential of knowledge the prompting might. be additional important.[2]

[B]. info Design: The appliance manages info for client authorization and accumulates mails of the patron. There ar a number of info tables that search statistics of Inbox, Sent Mail and Trash etc. those schemas can search all mails of the individual carrier that belongs to it client.

[C]. System Design: As higher than evidenced in figure, it is the level-2 records float diagram (DFD) that offers whole distinctive float of activities and therefore the procedures withinside the system. As we can we will we are able to see all operations are accomplished through voice and a number of road keys click on activities solely. At several locations voice enter is required.

C. Modules Description

1) Login: : This module can perform authentication take a look at whenever the patron would possibly need obtaining access to his/her account. it can it will take delivery of username and countersign in speech layout and convert it to matter content This matter content will then be accustomed evidence the users. Once the patron is set authentic, she/he's redirected to their individual homepage. This authentication is dead the utilization of speaker identity with the help of victimization characteristic extraction, identity, and matching. solely a registered client will login to the system.

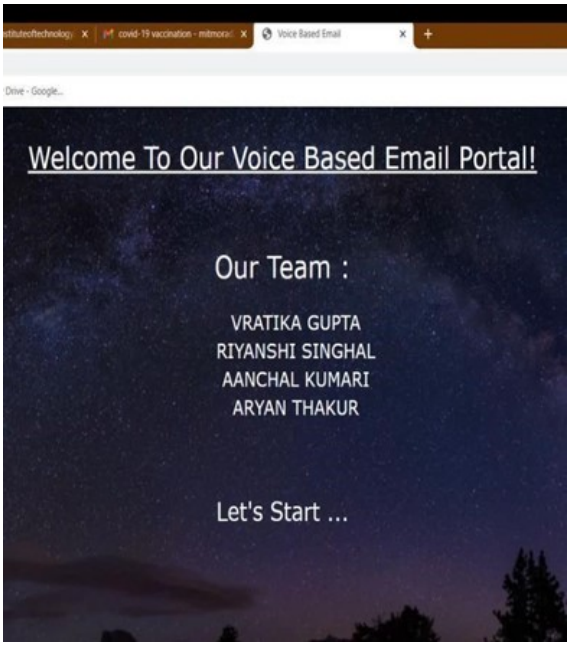

Fig. 2.

2) Compose: : This is often the most essential module of the whole device. Once on this module client will produce the mail, he/she wishes to send. The essential distinction among this device associates degreed our device is that in distinction to totally different standard device our device can kindle recording and therefore the recorded audio report may well be despatched to the other stop as an attachment. the patron may well be despatched to the other stop as associate degree attachment. the patron may well be led to perpetually or so the depression on operations that need to be disbursed to urge entry to the device.

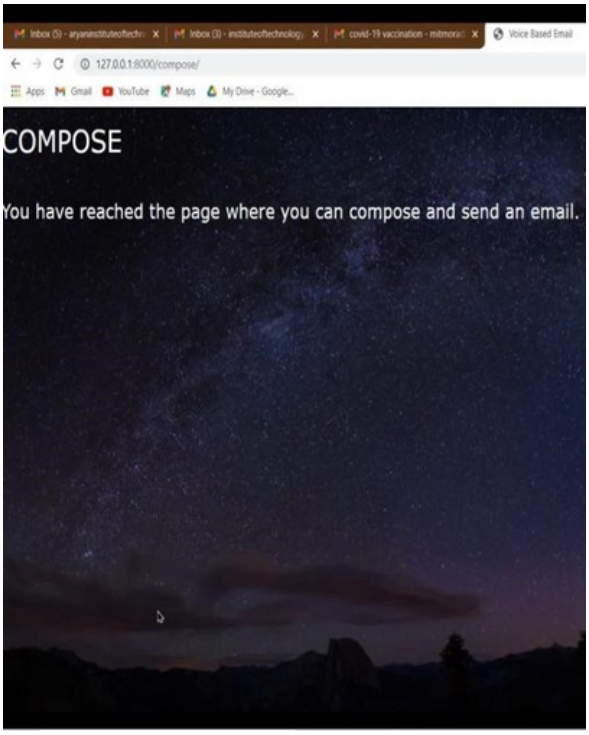

Fig. 3.

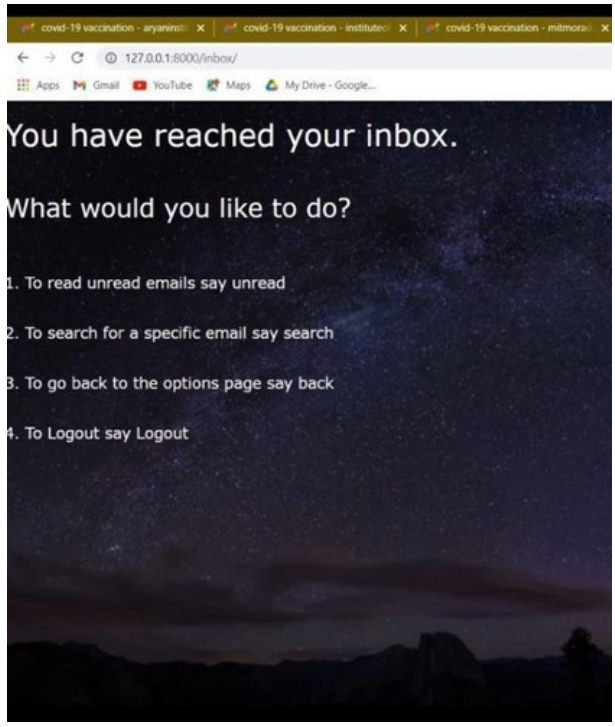

Fig. 4.

3) Inbox: : The patron will read all the mails obtained to the account via this feature. Once during this feature, the machine may well be perpetually prompting the patron or so that click on operation needs to be dead to navigate via the online page and perform operations at the obtained mail. the patron to boot has the selection to delete the mails obtained. The deleted mail may well be saved withinside the trash section.

4) Sent Mail: : The mails despatched through the patron is also saved on this feature. this may assist the patron get entry to mail that are despatched through him/her. User is also led to on that mouse operations are to be done to once more, get entry to specific operations. because the client navigates among mails, he/she is also led to or so the receiver and concern of that mail. this may supply simply get entry to users.

5) Trash: : The mails an honest thanks to be deleted through the patron is also hold on this section. User will delete mails from every inbox additionally to mail various. This various can assist the client the buyer the patron to retrieve mails that are deleted through consumer at that time but are need presently.

IV. FUTURE SCOPE

To cut down the above-stated problem, we have got give you an e mail provider wherein the consumer and the software speak with every different the usage of voice commands.[10] We have used features speech to textual content () and textual content to speech () for the same. Speech popularity makes it viable to retrieve the voice enter without difficulty and efficiently. Also, we have got used Django net framework to make the software. It is an open-supply net software framework, written in Python.

V. ADVANTAGES

Our project, voice-primarily based totally e mail carrier for the blind, allows visually impaired humans and illiterate humans to get entry to their Gmail money owed without difficulty and with comfort. The utility is a web-primarily totally based utility for visually impaired humans, which makes use of voice

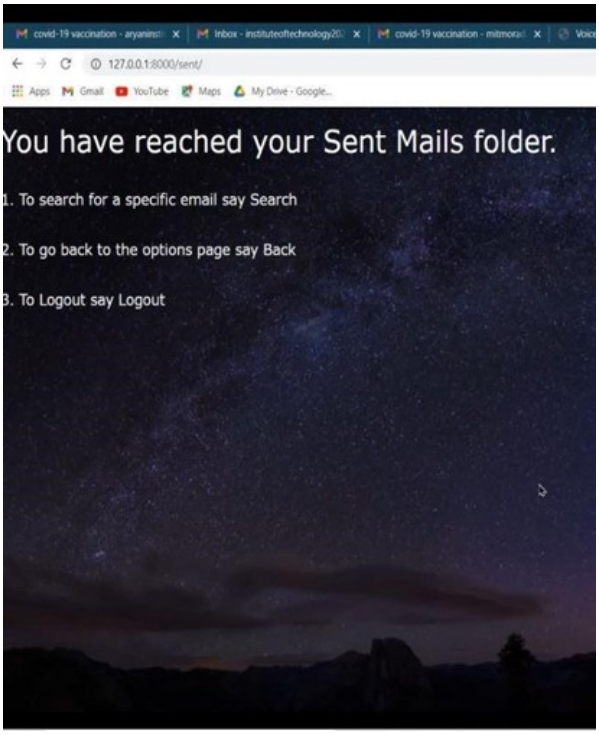

Fig. 5.

response, hence allowing the consumer to manipulate their e mail money owed the use of most effective their voice and on the way to read, send, and carry out all of the different beneficial tasks.[11][12] The carrier activates the consumer with voice instructions to carry out sure movements and the consumer responds to the same. The principal gain of this gadget is that using keyboard is eliminated, the consumer will must reply through voice and mouse clicks most effective.[8]

VI. CONCLUSION

The principal motive for developing this tool mentioned withinside the paper is to make ease for visually impaired kith and relatives to apply the maximum pervasive shape of write up in in recent times world, email. This mail tool can help overcoming all of the minor troubles which may be faced through technique of indicates that of visually impaired kith and relatives due to the tool works on vocal skills. this could lessen the bundle software load of the usage of display readers and automated speech recognizer and consequently the customers mental function load of simple cognitive manner keyboard shortcuts. The tool superior presently is probably walking great on desktops. As use of cell telecellsmartphone is growing as a style in recent times there may be a scope to cowl this facility as a bundle in cell phones conjointly. Also, safety talents to be region operative for the duration of login phase may also be revised to shape the tool larger secure.

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ACCIDENTAL BLACK SPOT

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***Abstract*—This research paper deals with the concept of black spot. The areas where most of the times accidents happen and proper medical facilities will not be reached there on time. For this we can make an android based application. The application uses the inbuilt software of the device (i.e. mobile or laptop or tab). When the user enters the accidental spot the alarm is ringing if the accidents happen then the android application send thee data to the cloud. Cloud server informs the hospital about the accidents and hospital send the ambulance to the accident spot for victim help. If accident did not happen user close the alarm within a specific time then no emergency call will be activated.**

***Index Terms*—Accelerometer, compass, GPS receiver, smart phones, android, black spot, GPS, API, firebase**

I. Introduction

In India we see around us that there are many accidents spot. Many people dont know about that and they drive very rashly and other than black spot area[2], if accidents happen person is not in that condition to call emergency services. When accidents occur there is no person available for calling emergency services (like calling ambulance or family).Thats why we declare that areas are the BLACK SPOT.

We create an android application. Users install the application in the mobile and whenever they travel they can activate the application. When they enter in the black spot an alarm is ringing [4]if the user close the alarm within specific time no emergency call will be activated. If the user not closes the alarm within specific time than automatically an emergency call will be activate to nearby emergency services and a alert message automatically send to victim family member with their location.

II. TECHNOLOGY USED

A. ACCELEROMETER AND GYROSCOPE

In todays time we see that every mobile phone or we say a smart phone having accelerometers which are used to detect the position of the phone. The gyroscope gives additional information related to dimension which is supplied by the accelerometer[5].

A gyroscope measures the angular rotational velocity, while accelerometer measures the linear acceleration of movement. Both accelerometer and gyroscope measure the same thing(i.e. rate of change).

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B. DIGITAL COMPASS

It is build on a sensor known as magnetometer and it deliver mobiles with a manageable location in association to the Earths magnetic field. This also provides consequence, the mobile phones recognize that in which direction south is present and digital maps can auto rotate by physical location.

C. APIS GOOGLE DIRECTION

It is a service that uses hyper text transfer protocol (http) request to find out the distance between locations [1]. When http find out the direction the API shows the minimum time taken route.

D. SMART PHONES

They are the mobile phones that have extensively many functions than regular phones. We say that they are mobile computers. Because of powerful processors, built in sensors, high amount of memory they are powerful and versatile.

E. ANDROID

It is an open-source mobile operating system which basically based on Linux Kernel. Google developed android for mobile phones, tablets, watches, etc for providing more accessibility with ease and functions to the user. Its alternative includes iOS by Apple, windows mobile phones.

F. JAVA

It is a object-oriented, class based general purpose, strongly typed and high level programming language and strictly typed language it contains concept from different languages C and C++. Classes, interfaces, and packages are basic building block of java application.

G. GOOGLE PLAY SERVICES

It provides application developers a broad set of useful features. It contains may features and application which developer or a simple user can use for their purpose. It also provides service client library, and the Android package kits. Some applications and APIs(application presentation interface) provided by google play services are google map, geolocation, geocoding and many more are also available as per the requirement such as for AI,ML etc.

H. BACKEND AS A SERVICE

Backend contains all the manipulations, accessing, deriving and storing part of the application. Developer do not have to write much code for it as it already provides necessary features for the developer.

I. FIREBASE

Firebase provides tools for tracking analytics, reporting and fixing app crashes. Firebase helps the developer to develop IOS, android and web apps.

Firebase is a back-end-as-a-service(BaaS).Google Cloud Platform work on it and make it as a application development platform it can be act as server, API and datastore.

J. GOOGLE LOCATION API

Google location api was provided by google cloud platform which enables the developer to use google location services such as live location in their application. It provides the location of the user and also tells about the activity of the user[6].

K. ANDROID GOOGLE MAP API

Google map api provides the accessibility to use google map in your application. Developers can access this api from google cloud platform.

L. FLUTTER

Flutter sdk is an google developed framework which is used to built applications for IOS, android and web applications. Flutter provides number of features which helps the developer to build various functions which collectively make an application for all the platforms with the help of few changes or no changes in the code thats why it is a cross platform application development sdk. It also provides features like hot reload which helps the developer to see the live changes made in the application within a click. It also contains many widgets which helps the developer to make the application more attractive and accessible. Developer can create a creative attractive GUI.

M. GEOLOCATION API

Geolocation api provided by google which can be access through google cloud platform. This api is used to fetch the live location of the user for the web application if the user wants to share. Geolocation api can be access by web applications. There is call made by web applications that asks the user that whether they want to share their location or not if the users allow the call, then live location will be access by the developer which can be used for further implementation.

N. ACCIDENT DETECTION

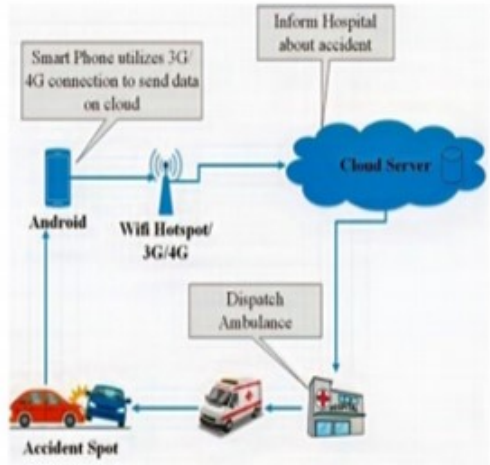
Accident detection is used to check whether the accident has been made or not. Accident can be detected with the help of the sensors available in the mobile phones such as gyroscope and accelerometer. Gyroscope tells about the orientation of the mobile which helps the application to guess that whether accident has taken place or not if the orientation of the mobile changes rapidly and frequently then it assumes that accident has been made while with the help of accelerometer application track that if the sudden drastic change in speed of the vehicle has noticed then it assumes that accident has been made.

III. WORKING

The process is first user install the application. After installation by giving email id and password user register itself. After registering application wants some inbuilt mobile software access (like GPS , contacts etc.). When user enters in the accidental prone area then the application notifies the user that you have entered in the black spot with the help of which user can safely drive out the accidental prone area[7]. If the application detects that accident has been made, then it will send an notification message to the user that contains two options i.e are you alright & call emergency contacts. If the user select you are alright option in 1 minute, then no emergency message has been sent to the contacts while if user select call emergency contacts, then an call has been made to the local authorities and the persons that they have selected in contacts. If no action taken by the user within 1 of notification, then application will automatically call the emergency contacts.

We are using GPS for chasing the position of vehicles and GSM used for sending messages. This system represents position of accidental vehicle and send alert messages to user predefined mobile numbers[10]. The whole working of the system immediately chases the location through GPS MODEM. If the injury is not serious then the alert alarm will be terminated by the driver by with the help of switch provided.

If the alert alarm will not be terminated within a specific time then a automatic call will be send to emergency teams and a message to victims family member.



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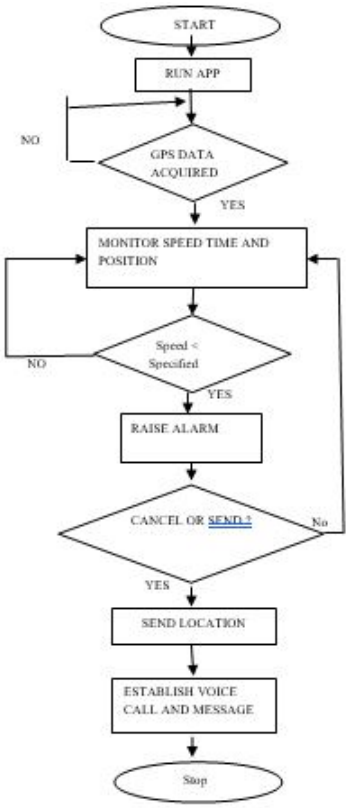

Fig. 2.

IV. CONCLUSION

In this research, we developed the Black spot project, which uses accelerometer sensor to determine accident area[3] and notifies the user that they entered in the accident prone and if it recognize(with the help of accelerometer and gyroscope) that accident has made then an pop up message has send which has two options i.e you are alright and call emergency contact if user chooses 2 option then it will send an emergency message to the user defined contact list with location of the user[9].
The possibility of false alarm in smart phones is possible. For that when they enter in the black spot an alarm is ringing if the users close the alarm within specific time no emergency call will be activated.

V. FUTURE WORK

More work is needed in arrangement to make black spot project more accurate and reliable which will help in decreasing false alarm. Adding voice recognition and some additional sensors to determine noises during a vehicle crash. For making these application more accurate and useful more mobile devices can be used such as microphone which will helps the applications to recognize the voice of the accident if the voice of collision matches the voice present in the database, then an alert message has been sent. More technologies like machine learning can be used to recognize the accidental situations. For example, unsupervised learning method can be used to train the model which describes about the accident detection part of the application[8]. The model will learn from the new incidents and enable the application to work more accurately and efficiently. Application can be made for the whole world which contains the information about all the accidental prone area which helps the visitors and the businessman who have to travel frequently while it also guide them with google maps and also provide secure way to travel. It helps them to travel through a secure path and if any accident has been made then it will immediately call the local authorities such as ambulance, police which makes more chances of survival.

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FAKE NEWS DETECTION SYSTEM

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***Abstract*—Fake news is a worldwide event these days, especially due to this explosive development in social sites, social web,social network, etc[6]. The aim of this lesson is to give a brief introduction to the concepts and characteristics of fake news and to properly differentiate them from other homogeneous concepts such as disinformation, false news, and wrong information. In this tutorial we learn how to detect fake news on social media. Some Fake news spread fastly on social media such as political, bollywood, Hollywood etc. Because of these reasons we build a website that detects fake news on social media. Firstly we find a dataset of fake news in this dataset there are fourteen thousand news[7]. We get dataset in kaggale website. This collaborative effort results are largely eligible and interpretable fake news detection. It presents a systematic fake news detection strategy from four characters (knowing, manner, publicity, reliability), and each approach uses datamining and machine-developed techniques[7]. Learning, NLP djngo framework, and information retrieval. And hopes to expand the outstanding issues in actual fake news research, Enjoy great prospective research event, and attract researchers from a wide range of disciplines working to detect fake news and promote its development[16]. Tutorial purpose needs to exhibition promotion,Well fine and secure online details and news distribution eco-system is expected to attract new investigator, engineers and students with diverse interests in fake news research.**

***Index Terms*—Fake News, Fake News Detection, News Verification, Fake News, disinformation; Propaganda, Social Media**

I. Introduction

Since so much of our living are finished inter-acting online through social media platforms, more and more people are seeking out and consuming news through social media, rather than traditional news organizations[16]. It is these social media platforms that account for this change in consumer behavior. Social media platforms are often more timely and cheaper than traditional news media like newspapers and television. There are people who discuss news with friends and others on social media. For instance, 62% of Americans reported that they found news on social media in 2016, whereas only 49% reported that they found news on social media in 2012. Social media and news on social media are of inferior quality to traditional news organizations [3].

As providing news online is cheap and easy, it can be disseminated quickly and easily via social media, so there is a large amount of fake news, that is, news articles that deliberately provide false information, financial, and political interests. Until the presidential election is over, there will be a pizza gate. As of increasing number of fake news, "Fake News" is named the Word of the Year by the Macquarie Dictionary in 2016[9]. Fakes has always been a problem, but the nations and groups have always used media to spread and influence their operations for centuries, but with the increase in webgenerated news on social media platforms. Fake news has become a stronger power. Norms. The problem has several characteristics that make automatic detection difficult. The first is that fake news is purposefully false and intended to mislead readers, so its content is difficult to detect. The subject matter of fake news is extremely vivid in points of issues, genres, social media platforms, and fake news not only distorts the truth but also mimics real news[6]. For instance, Fake news may turn out to be true in the wrong climate to help a false claim. Therefore, existing hand crafted data specific text chercterstics are mainly not enough to detect fake news. Other support information should also be implemented to improve traceability, such as knowledge bases and user social involvement. Second, leveraging this useful information leads to another important issue of data quality. Fake news is basically associated with latest important events[5]. It might not we properly validated by an existing knowledge base due to shortage of supporting proofs/claims. In addition, user social engagement with fake news produces large unstructured incomplete noisy data. An effective way to isolate trusted users, extract useful posting features, and take. Advantage of network interactions is an open area of research that needs further research.

II. Fake News Characteristics

Learn about the basic reasons and theories associated with fake news and the more developed model presented with social media[8]. Let us explain definitions of fake news and their individual idea[13]. It is generally considered fake news. Next, we will discuss about the various views of fake news in gradational media also found new model on social-media[14].

A. Definitions of Fake News

Since the innovation of the printing press in 1439AD, fake news has been around for around if news has been widely distributed. But, without doubt accepted description to fake

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news[11]. A news article that is intentional and verifiable falsehood. So, we are going to first explain and differentiate the generally applied fake news definition in current writing, and then come up with the definitions of fake news that are being used in the rest of this study. The limited definition of fake news holds is an article that is consciously wrong and Substantiate in that way. can be misleading to the reader. Two important characteristics in this regard are reliability also intention. In the first place, fake news contains wrong massage let it be Substantiate in that way. Moreover, fake news is designed with the intention of misleading consumers[11].

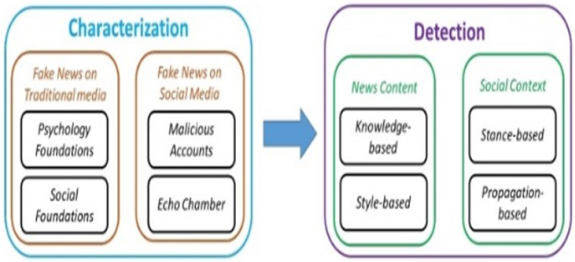

Fig. 1.

B. Fake News on Social Media

Many social media users are legitimate, there can also be malicious users and not real people[3].Many Hacker and other people create many wrong account on social sites and that spread wrong news and that missguid to other people. As you know, a hacker is a social media account are control by algorithms, which automatic posts fullfilled also cooperate for people (or other bot user) on social media platform[9].

III. Assessing Detection Efficacy

A. Datasets

We are collected news data set in Kaggle website[15]. And we collect news in other websites and create a dataset. We take our dataset and apply preprocessing on dataset and apply tiff vectorizer on dataset. Fake news and dataset are available on open sources. Statistics Contains fake and genuine news articles from many disciplines. In Google we see mostly articles based on political news and we collect political news in political.com, snip.com. we collect Bollywood news on Bollywood news[6].com and political news are spared mostly in google. We are collected some excited news on Google. Google gave me every news that is very useful for min our dataset. And we merge all news a dataset. this study, and they are briefly described as follows:

B. Classifier

1) SVM: : SVM is the support vector machines is supervised learning algorithms[1]. SVM is classification algorithms. it is a classification-based algorithm. This is very useful when the data set is small. This algorithm is not capable for big datasets. For big datasets, we use random forests and other algorithms[12]. Learning it is very useful because it helps build both models, but it is also the basis for other concepts. By learning about SVMs with machine learning, you can learn other algorithms such as steepest descent[12]. Let us look at a code sample to understand. algorithm. We also study the library with the help we can design SVM etc. SVM is conducting clustering research on aspects of unsupervised learning. Here, we will use unlabeled data in the SVM. Research on this topic is ongoing, so let us see what that means. In regression, the concept is called SVR or support vector regression. This is like SVM, but with some changes. However, it is more complicated than SVM. Next, let us talk about SVM. This is a robust data classifier. Support vector machines use two or more labeled sections of data[1]. The hyperplane separates two different classes of data. Data points are placed in different classes based on their position according to the hyperplane. Also, it is important to note that machine learning SVMs always use graphs to plot data[12].

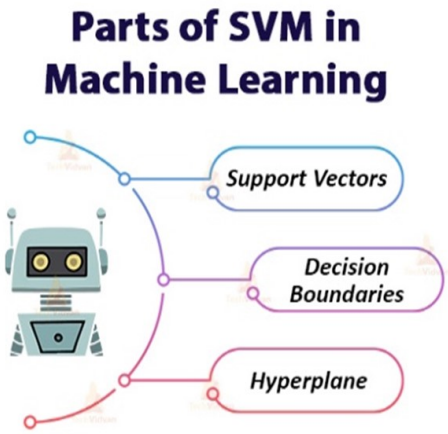

Fig. 2.

2) Naive Bayes: : Naive Bayes algorithm is supervised learning algorithms. It is used classification problems. It is based on Bayes' theorem. It is used in text classifications and predict the best result on training datasets[1]. The naive Bayes algorithm is simple and fastest algorithms that help a build fast machine learning models and give the better result form of percentage. This is a stochastic classifier and this is predection basses algorithm[3].

3) Bayes' Theorem: : Bayes' theorem or Bayes' law, is applied to find out the probability of a hypothesis with prior knowledge. It bassed on probabilities[12].

The formula of Bayes' theorem :

Where,

P [A — B] is the posterior probability. That is the probability of Hypothesis A

For the observed event B. P [B — A] is the probability.

P[A] is the probability of former.

P[B] is the marginal probability.

4) Random Forest: : Random forest is a classification technique in machine learning[1,12]. It is based on training

$$P(A|B) = \frac{P(B|A)P(A)}{P(B)}$$

Fig. 3.

data (knowledge of past experiments) (classifying experiments into categories) or regression (predicting the results of experiments). Random forests utilize the correlation between data points / experimental functions to handle non-linearity. Random forests are selected for tasks that generate and consider multiple decision trees during training[12]. The result of selecting these decision trees for experiments / data points in the form of predictions.

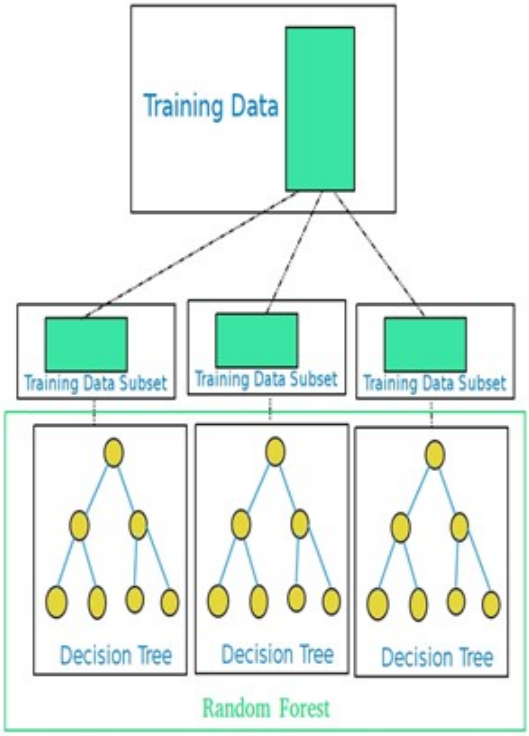

Fig. 4.

IV. Accuracy

Accuracy is the closeness of measurement result is true value. Accuracy means freedom from error[2]. Accuracy is correctness, reliability and sufficient. Accuracy gives the result in the form of percentage[2]. Accuracy gives accurate and true value. you can use the following formula

V. Results and Discussion:

Accident detection is used to check whether the accident has been made or The svm (support vector machine) accuracy

$$\text{Accuracy} = \frac{(TP + TN)}{(TP + FP + TN + FN)}$$

Fig. 5.

is 69.99%. Naive Bayes accuracy is 89.68%. Random forest algorithm accuracy is 73.45%. Then we will use Nave Bayes algorithm because nave Bayes accuracy is higher compared to random forest algorithm and svm (support vector machine).

VI. Conclusion: -

As social media grows in popularity, people are consuming more and more information via social sites alternately of established news outlets. However, social media can also be used to spread fake news, negatively affecting individuals and the wider community[5]. We examined fake news issues in this article by reviewing in two steps: features and detection. In features phase we learn basic concepts of fake news and how to find data ,dataset in social media. In detection phase firstly we remove stopwords in dataset with the help of tfidf vectorizer and then we applied 3 algorithm and find best accuracy.in last we work on djngo framework and create a UI[5] . Additionally, it describes the future direction of research on datasets, metrics, and fake news detection, expanding this field to other applications.

VII. Acknowledgement

In this research, we developed the Black spot project, which uses accelerometer sensor to determine accident area[3] and notifies the user that they entered in the accident prone and if it recognize(with the help of accelerometer and gyroscope) that accident has made then an pop up message has send which has two options i.e you are alright and call emergency contact if user chooses 2 option then it will send an emergency message to the user defined contact list with location of the user[9].
The possibility of false alarm in smart phones is possible. For that when they enter in the black spot an alarm is ringing if the users close the alarm within specific time no emergency call will be activated.

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[16] https://www.kaggle.com/
[17] https://www.section.io/engineeringeducation/automated-fake-news-detection

Real Time Hand Gesture Recognition

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***Abstract*—Introducing a real-time system for hand gesture recognition (HGR) in devices that detect a predefined static gesture set through a single RGB-Cam. This hand gesture recognition (HGR) system has two parts. One tracks the skeleton of the hand, and the other classifies the gesture. Use MediaPipe Hands as the ground for tracking the bones of the hand, improving keypoint accuracy and adding 3D evaluation of keypoints in topological space. It then runs a gesture classifier on key points to recognize hand gestures.**

***Index Terms*—Hand Gesture Recognition, Artificial Intelligence, Gesture Recognition using MediaPipe, Machine Learning, Applications of Gesture Recognition, Real Time Gesture Recognition[11], Palm Detection Model, Hand Landmark Model and MediaPipe Framework**

I. Introduction

Hand gesture recognition (HGR)[4][9] is being actively studied as a natural and intuitive method of human-computer interaction (HCI). Many input devices and methods have been studied, and skeleton-based HGRs are a popular choice due to their robustness to background and lighting changes. Many frame-based HGR systems rely on depth sensors such as RGBD cameras, which are not as common as RGB cameras on mobile devices. HGR, on the other hand, requires only one RGB camera. It does this by first predicting the key points of the 3D skeleton[10] from the camera image and then running a gesture classifier on the key points.
The capability of detecting the shape of the hand and its movement can be integral in enhancing the usability across multiple technology fields and multiple platforms. For instance, it can provide a framework for understanding sign language and controlling hand gestures, and augmented reality further provides digital content and information overlays on top of the real world. Although this is natural for humans, reliable real-time hand gesture recognition is clearly a challenge in computer vision because there is no high-contrast pattern as the hands often cover themselves or each other (e.g., finger/palm covering and handshake).

MediaPipe[5] Hands is a highly accurate solution for tracking hands and fingers. To infer 21 3D hand landmarks[10] in one frame using machine learning (ML). While current advanced approaches rely mostly on powerful desktop experiences for inference, our system delivers real-time performance on mobile and scales for multi-person use. We hope that introducing this kind of cognitive function into the wider R & D community will lead to new applications and creative use cases that will inspire new research directions.

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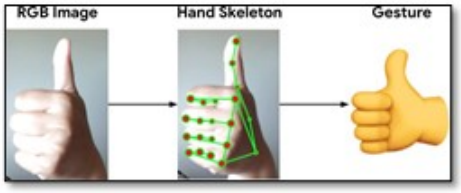

Fig. 1. Hand Gesture Recognition Model

II. Hand Gesture Recognition

Hand Gesture Recognition[4][7] is a vital topic in the world of computer science and technology. It aims at interpreting human hand gestures through which a user interacts with the system in spite of directly touching it. Hand Gesture Recognition[12]: The entire procedure for tracking a hand gesture and then converting it into some target command is known as hand gesture recognition. Hand gesture recognition aims to take input from explicit hand gestures and then process the representation of these gestures for devices through mapping as output.
It includes 3 phases:

A. The detection of gestures:

During this phase, the device detects the movements of the hand or body with the help of a camera. Then, the segmentation of that image is done to find the edges and positions of the hand using a machine learning algorithm.

B. The tracking of gestures:

During this phase, the device captures every movement and monitors it frame by frame to provide the correct input for the analysis of data.

C. *The recognition and matching of gestures:*

During this phase, the system searches for patterns based on the input data. When the system finds a match and recognizes the gesture, it performs the action mapped with it. Feature extraction and classification operate on recognition.

III. MEDIAPIPE

MediaPipe[5][1] Hands uses the ML pipeline, which consists of multiple models that work together:
A palm detection model: In the palm detection model, the work is done on a full image and, in return, it provides a bounding-box which is hand oriented.
A hand landmark model: In the hand landmark model, the work is done on a cropped image region that was previously defined by the palm detector, and it returns high-fidelity 3-D hand keypoints.
The working ideology is the same as the MediaPipe Face Mesh solution, which uses a ”face detector” along with the ”face landmark model”. The need for augmentation of data (i.e., rotations, scaling, and translation) is decreased by providing the correct cropped image of the hand to the hand landmark model. As a result, it permits the network to devote the bulk of its capacity to the coordination of predicting with accuracy. In this pipeline, the production of crops can be done by considering the principle of hand landmarks. When the landmark model cannot identify the presence of a hand, then only the palm detection model is triggered for re-localization of the hand. The MediaPipe graph is an implementation of the pipeline which uses a hand landmark tracking sub-graph from the hand landmark model. The hand landmark tracking sub-graph internally uses a palm detection sub-graph from the palm detection module and a hand landmark sub-graph from the same module.

A. *Palm Detection Model*

First, we have developed a detector model that has been optimized for real-world use, and it is much like the face recognition model in MediaPipe[6]. It determines the initial position of the hands. Hand detection is a very difficult task. Our simplified model is able to detect occluded and self-occluded hands as it works across hands of various sizes, which have a wide-scale span (approximately 22x) with respect to the image frame. The face has high-contrast patterns that can be around the eyes and mouth, but in the case of hands, it is relatively difficult to reliably detect from visual features alone as the hands do not have these features. Instead of the visual features, we provide additional context, such as hand, body, or person characteristics, which help in pinpointing the hand. Our approach addresses the above challenges by using different strategies.
Since it is much easier to estimate the bounding boxes of hard objects such as fists and palms than to detect the hand with knuckle fingers, we train a palm detector instead of a hand detector. Our non-decimal suppression algorithm works well even for two-handed self-occlusion cases (like handshakes) because the palms are a smaller object compared to the hands. Alternatively, palms can be modelled using square bounding boxes, which are known as anchors, ignoring the other aspect ratios. This results in the reduction of anchors by 5 to 6 times. After that, the encoder-decoder feature extractor is used for better context consideration, even for small objects. Finally, we minimize the loss of focus during training to support a large number of anchors due to high scale variance.
The above method achieved an average palm detection accuracy of up to 97.5%. With typical cross-entropy loss and no decoder, the baseline is only 84.35%.

B. *Hand Landmark Model*

Once our hand landmark model[3] has detected the palm in the image frame, then it performs accurate localization of the key points of the 21 coordinates (which are three-dimensional) of the knuckles that are inside the identified hand regions using regression. The model is firm even for hands that are partially visible and self-occlusive and continues learning to show a consistent internal depiction of the hand posture.
To gather some practical data, we manually elucidate 35K actual world images with 21 coordinates, which is shown in the figure below (the image depth map provides us the Z-value, if it actually exists in the corresponding coordinates). To further improve the performance of our model, so that it can predict hand postures more accurately and monitor the nature of the hand geometry more precisely, we can use the high-quality fabricated hand models on contrasting surroundings and map them to the analogous 3D coordinates.

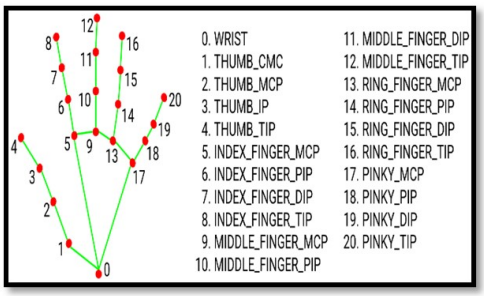

Fig. 2. Hand Landmark Points

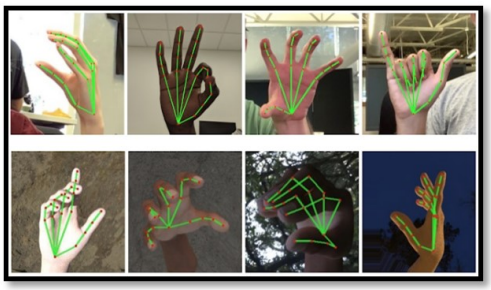

Fig. 3. Top: Aligned craft culture is propagated to the tracking network with a base truth annotation. Bottom: Composite hand image shown with basic truth captions.

IV. APPLICATIONS

HGR[2] technology has begun to permeate different sectors in recent years, thanks to advancements in computer vision. Systems that use gesture recognition technology can only identify certain gestures, such as a wave, a count of fingers, a rock sign, thumbs up, a peace sign, and many more. Hand tracking, monitor finger position, hand size, and other features allow for more variety in the HMI. Although there is no limit to the number of possible interactions with digital objects, overlapping, occlusion, and interpretation challenges do exist. Automotive, healthcare, virtual reality, and consumer electronics are the top four industries that are using hand tracking and gesture recognition.

A. Automotive

Hand gestures allow drivers and passengers to engage with the car, manipulating the infotainment system without touching any buttons or displays, inside the car industry. The fundamental technology for the principal gesture recognition device for automotive applications, which first appeared in the BMW 7 Series in 2015, was developed by Apt and can pick and choose hand movements to control tones or audio and answer calls. In addition to integrating with smart home systems, the popularity of gestures will surpass Destiny's infotainment systems, allowing drivers to manipulate different car systems such as heating and cooling. Don't forget being able to screen your home protection video at the same time as using domestic with the simplest of hand gestures.

B. Healthcare:

A reliable gesticulate reputation method can be used to identify the behavior of affected people, which in various ways is allowed to be monitored using a chained read mechanism. For instant gesture detection, the gesture pop system is hyperlinked to deter consumers (at a distance) and those affected. The gesticulate is identified through a series of lessons and evaluations of intermediate and structural factors. To increase convergence, the counselled gesture recognition system is capable of tracking the affected person's behaviors and distinguishing gestures from ordinary actions. Because of initial issues, gesture reputation through far-flung tracking is indistinguishable.

C. Virtual reality

Use the VR[6] header to transport the user to a virtual world of their choosing. Although not entirely effective, head orientation and joysticks are components utilized in virtual reality applications. Medical, automotive, and other sectors are among them. It aids in the merging of movement and turning activities in virtual reality by tracking the motions in the air. The researchers designed natural-looking hand movements, such as raising and closing their left hands, to propel the avatars forward, and it is more natural and easier to master than other VR navigation strategies.

D. Consumer electronics

From 2018 to 2022, the global industry will use gesture recognition, which may see growth increase by $700 million. Controllers are used as human interfaces in nearly all consumer electronic devices these days. However, the variety of bodily forms and practical commands that each far-flung manipulate has created has created a slew of problems, such as trouble figuring out the proper far-flung manage, button layout confusion, and replacement issues, to name a few.
Information will be gathered from various remote controllers via electronic control systems that employ hand gestures to operate residential devices. The master interface already contains established operating instructions based on a single unified set of hand gestures.

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GPS Location Display

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***Abstract*—Global Positioning System (GPS) is important for satellites circling round the universe. It sends the subtleties of their situation in space back to earth. The GPS has numerous applications in different regions. It is accessible to any client with a its beneficiary. It has its handiness in military, climate conditions, vehicle area, homesteads, planning and numerous different regions. This paper explored the sorts of GPS recipients, applications and the future. The primary parts of the GPS framework are the space portion, control fragment, and client section. These sections work together with one another and interaction the signs got from satellites and use them for additional data handling like following, security in financial applications, programmed cost administrations, area distinguishing proof, and its route.**

Fig. 1. Arduino Nano

I. Introduction

The Global Positioning System, also called Navstar GPS, is a satellite-based radio route framework developed by the US government and worked by the USSF (United States Space Force). The Global Positioning System (GPS) is a radio communication system which use satellites, a device and calculations to fetch area, speed and time related data for air, ocean and land travel. It is a constellation of 24 satellites in six Earth centered orbital planes, each plane have four satellites, fixed at distance of 20,000 km above Earth surface and revolving at a speed of 14,000 km/hr.
Here we need three satellites to create a hypothetical sphere on earth's surface, Fourth satellite is commonly used to validate the information from other three satellites. The fourth satellite moves similarly like other three satellites and plays an important role to calculate elevation of the GPS device from earth surface.

Fig. 2. GPS Module

Fig. 3. LCD Display

Fig. 4. Jumper Wires

II. COMPONENTS

Following components are used

Fig. 5. I2C Module

III. TECHNOLOGY

GPS operates on trilateration technique which has great utility in the calculation of speed, area and height. It collect signals from satellites to yield information.

Satellites moving around the earth convey the message signal to the GPS device situated somewhere on the surface. To calculate area, device should collect signals from four satellites. Since we are living in the 3D world technically a satellite generates a spherical area not a circular one. A single satellite transmits a microwave signal which can be receive by the device and can be use to calculate distance from the satellite. Since a GPS device makes a spherical region which provides the separation of device and satellite. Therefore a single satellite is not sufficient to provide a accurate location because it may be anywhere on the spherical surface.

On receiving signal from one more satellite, it makes an another sphere and area is reduced to one of two places where the spheres intersect. With the third satellite, there are three spheres and the device location is the closest point to the earth surface of the two intersection points formed by three satellites.

When the GPS device moves the distance to the satellite changes which forms new sphere, provides another location. We can use this information along with time to calculate the distance, speed to the object.

IV. CIRCUIT DIAGRAM

The circuit diagram is as following

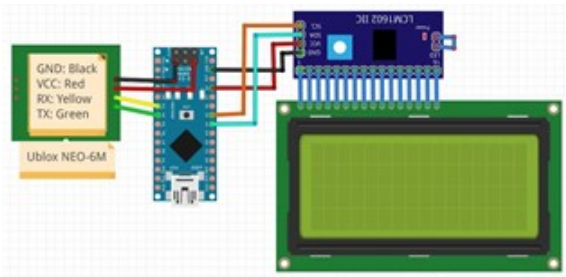

Fig. 6. Circuit Diagram

V. RESULT

A GPS location coordinates (i.e, longitude and latitude) has been displayed successfully on the display which is further capable to be implemented with other devices and will become a more powerful tool.

VI. CONCLUSION

GPS represents the Global Positioning System. The framework utilizes signals communicated by circling satellites to calculate gadget's area and to decide any development over the long run. All alone, GPS has impediments as it just gives fundamental data like directions and a couple of different insights, yet when joined with other innovation, like guides, and fused into navigational frameworks, it turns into an exceptionally incredible asset.

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Implementation of RADAR System

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***Abstract*—To get reach, height, heading of objecst, we use a system, called as RADAR system . It is used to recognize or point out space apparatus, rockets, weather developments, landscape etc. The radar receiving wire sends radio waves to determine objects in the way. The article gives back a small amount of the radio waves energy to receiving wire which is ordinarily found at a comparable site as the transmitter. The advanced occupation of radar are profoundly assorted, including aviation authority, radar space science, air-protection frameworks etc.**
The microcontrollers of the Arduino board can be modified utilizing C and C++ dialects.

I. Introduction

RADAR framework is an item identification or global positioning framework that uses radio waves to select or get the reach, tallness, heading, or speed of things or items. Radar structures or framework show up in a grouping of sizes and have particular execution specifics. For fight authority at air termibals, radars are used and others are used for long reach perception and early forewarning structures. There are a few methods for showing radar working information. There are additionally some changed radar frameworks which have advance innovation of taking care of the frameworks.
These altered framework are utilized at more significant levels to get or on the other hand remove the accommodating or significant information.

II. COMPONENTS USED

A. 1Arduino UNO

It is an open-source microcontroller board based on the Microchip ATmega328P microcontroller . The arduino board is consists of digital and analog input/output pins(I/O pins), that are used to connect with other circuits. It has 14 advanced pins(out of which 6 are used for PWM) and 6 analog pins.
Output voltage- 5V
Input voltage- 5-12V

B. Ultrasonic Sensor

A sensor that uses ultrasonic and sound waves to measure distance of a target is called as ultrasonic sensor.

Fig. 1. Ultrasonic Sensor

C. Micro Servo 9g

A GPS location coordinates (i.e, longitude and latitude) has been displayed The main working of this component is to rotate the ultrasonic sensor, so that sensor can capture everything in the surrounding. Servo motor can rotate at an angle of 90 ° or 180 °.

Fig. 2. Micro Servo 9g

D. Breadboard

A board to hold components like transistors, resistors etc.

Fig. 3. Breadboard

E. Jumper Wires

For connections

Fig. 4. Jumper Wires

III. 2 TECHNOLOGY

Fundamental working of the framework is that it need to distinguish objects in its characterized range. Since ultrasonic sensor and and servo motor are connected together, therefore when both will rotate from right to left, motor will rotate nearby it's axis, result will be seen on the software named as Processing IDE.Processing IDE is a a software that show graphical representation of our system and accordingly it gives position, distance or measure of the object. Our whole system is controlled by Arduino.
As the engine began to pivot, our screen began to show the result through processing IDE. Henceforth, when the sensor got over the item it showed a red section with the distance and point where the item is paced. We can observe the output on our Computer screen through programming, Processing Development Environment.

IV. CIRCUIT DIAGRAM

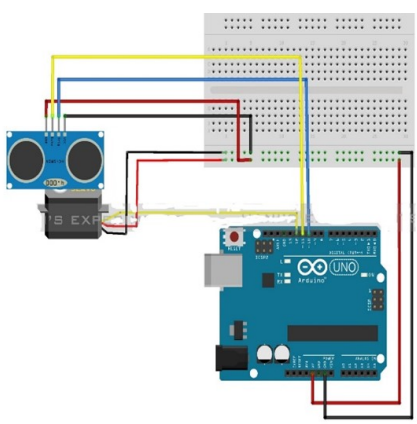

Fig. 5. Circuit Diagram

V. RESULT

The result can be shown as following

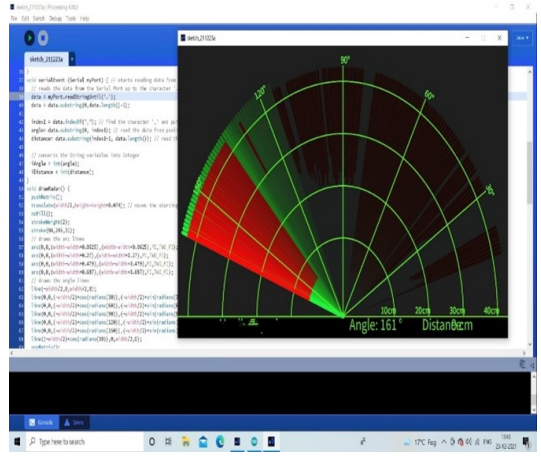

Fig. 6. Result

VI. CONCLUSION

Different progressed control strategies gave producers to have more control over various progressed applications. In this project, the recommended Arduino based radar structure arranging methodology for whole structure is reviewed on little norms or scale.The field that we have chosen for our arrangement Radar System is an amazingly huge field and future degree of this development is high. Our project serves as advantageous because of it's security limit. In general it will be used in various applications. This construction can in like manner be made or changed by the rising prerequisites and request. Our project structure can detect object from 0 to 180, in view of the fact that the servo motor that we have used can go just to this span. Along these lines, due to this obstacle our arrangement cant be applied to spots or locales for deterrent disclosure for a greater extension. Utilization of a 360 degrees turning servo motor can make the system more powerful. For good precision we can use 360 turning servo and a ultrasonic sensor of large range. We can add some features in our project work like by adding an alarm that turns on and warns us when any obstacle is detected.

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IOT & GSM BASED UNDER GROUND CABLE FAULT DETECTION SYSTEM

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***Abstract*—The main aim of this research paper is to determine the accurate distance of 3 phase underground power cable fault from the base section in KMs and display data on web page in graphical format with the help of IOT DEVICE, ARDUINO MEGACONTROLLER kit and also display sent message on the mobile phone with the help of GSM. The urban region uses an underground electrical cable wire rather than using overhead lines. But it hard to spot the fault location in underground cable accurately that lead to difficulty in repairing and wastage of time. Thus, it saves time, money, make process easy. The concept of OHMS LAW and POTENTIAL DIVIDER NETWORK is used here, The Prototype is modeled with a set of resistors representing cable length in KMs and fault detection is made by a set of switches at every known distance to cross check the accuracy of same. In Case of fault: - Short Circuit (Line to Ground). Voltage across the series resistors change accordingly, which is then fed to ADC to develop the precise data to programmed microcontroller that further display fault location in KMs.**

***Index Terms*—Underground Power Cable, Cable Fault, ADC, MICROCONTROLLER, WIFI ESP 8266, GSM (GLOBLE SYSTEM For MOBILE COMMUNICATION), 230 Volt power supply.**

I. Introduction

RADAR framework is an item identification or global positioning framework The objective of this research paper is to deal with method to locate faults in KMs and identify the phase line. The Electrical Energy is sent through the Electrical Transmission and Distribution System to the customers from the generation unit. Underground cable system is the common method is used in Major areas in Metro cities. When a line hit a fault, it is important to detect fault and to clear it as soon as possible, before the damage is increased. The underground cable system has an edge over the over headline but to find the fault is hard. The development of locating fault technique is on high demand for reliable service. The reactance in the cable gets affected by cable fault. So here we propose cable fault detection using IOT & GSM that detects the exact fault position in Kilometers which was occurred due to wear and tear, rodents etc.

Types of faults in 3 phase system can be classified in two parts:

A. Open Circuit Fault

It occurs due to breakage of one or more phase conductor wire and here current become zero.

B. Short Circuit Fault

when different phase conductor gets with each other and output voltage become zero but current is same then such type of fault occurs.

II. Literature Survey

A sensor that uses ultrasonic and sound waves to measure distance of a target is called as ultrasonic sensor.

A. UNDERGROUND CABLE FAUTL DETECTION USING IOT TECHNOLOGY

The system consists of IOT devices that are capable of performing, sensing, monitoring, actuating tasks. The aim of IOT is not only connecting things such as machines, device but also allow things to communicate and exchanging data while executing applications.

Fig. 1. WIFI MODULE

So here we have used IOT TECHNOLOGY to detect underground faults distance in Kilometers which is based on the principle of OHM Law. IOT system consists Of Microcontroller, Wi-Fi module and a real time clock. When the fault occurs then voltage varies which is used for finding fault distance. Power supply is given with the help of step-down transformer, rectifier, Magnitude of voltage drop across the resistors to microcontroller is provided using sensing circuit of cable. Based on this voltage distance is located.

B. UNDERGROUND CABLE FAUTL DETECTION USING GSM

It basically focuses on finding the fault distance using GSM. A GSM module is a special module which accept SIM CARD same as Mobile Phone and operates over a subscription to mobile operator. A GSM module looks like a mobile phone

according to mobile operator perspective, which weep to send the text message to user about the fault occurrences I kilometers.

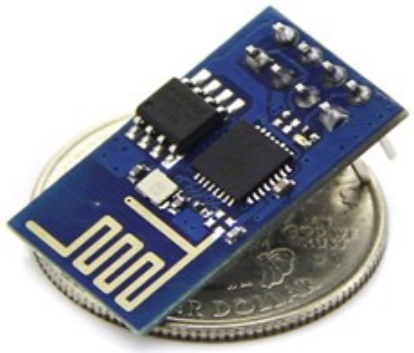

Fig. 2. GSM MODULE

III. DESIGNING AND WORKING OF IOT & GSM BASED UNDER -GROUND CABLE FAULT DETECTION SYSTEM

The designing and working of fault detection system is very important part of the research paper to get the complete knowledge of the project. So here the components required for designing:

A. COMPONENT REQUIRED

The system consists of the following Hardware and Software parts.

1) HARDWARE COMPONENTS:

1) Arduino- Uno Controller
2) Lcd (16*2)
3) Crystal 16 MHz
4) Relay - 12 V
5) Relay Driver IC
6) Transformer -12 V
7) Diode -In 4007
8) Voltage Regulator
9) Resistor
10) Capacitor
11) Leds
12) Gsm-Sim 800c
13) Slide Switches
14) Wifi Esp. 8266

2) SOFTWARE COMPONENTS :

1) Arduino Program
2) ThingsPeak

B. BLOCK DIAGRAM

Here is the explanation block diagram of project

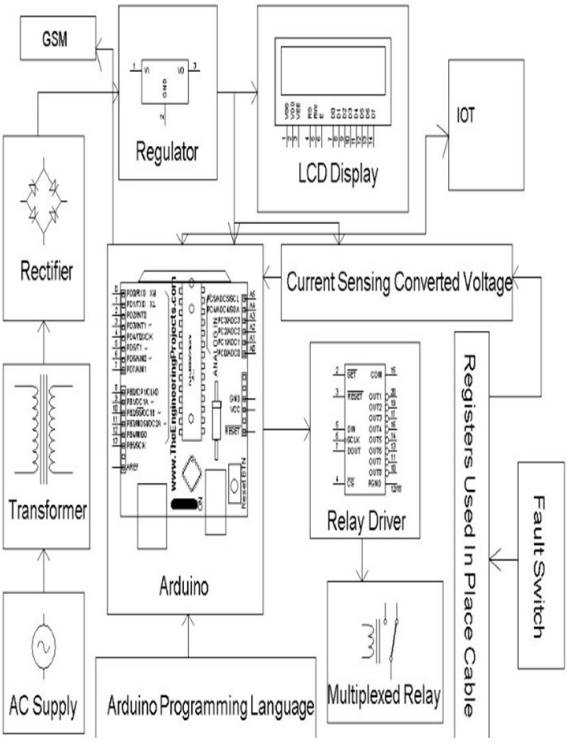

Fig. 3. BLOCK DIAGRAM OF PROJECT

C. WORKING

Now here is explanation of the working of the project

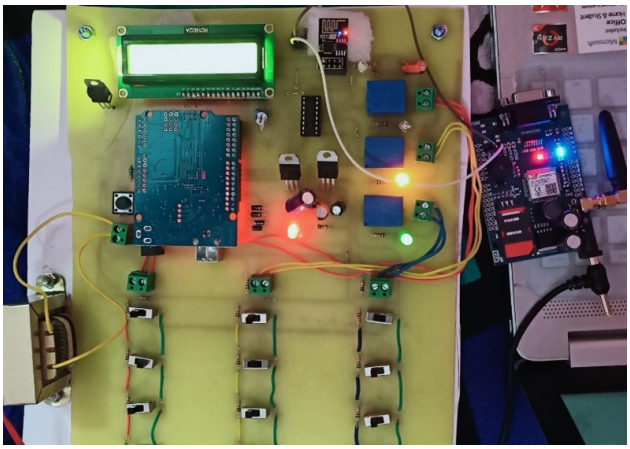

Fig. 4. EXPERIMENTAL SETUP OF PROJECT

- The circuit consists of power supply, resistance measurement circuit, Arduino, Wi-Fi- ESP8266, GSM MODULE. Total 18 switches are used such that 6 switches in each row and total 3 rows are arranged. Each Row represents each phase R-Y-B and fault switches have two positions NF (NO FAULT) and F (FAULT) position.
- Each switch represents the distance of 1-5 KM from the initial point and goes on accordingly. This project uses 3 sets of resistances in series and the value of each resistance is 1 kilo-ohm.

- Each phase, R-Y-B are connected to each relay and common point relay is grounded. 230-volt AC supply passes through transformer and stepped down to 12V AC and then connected to 12 DC when passes through bridges wave- rectifiers and 12V DC to 5V DC by voltage regulator. Voltage regulator also convert 5 DC. Variable DC to constant DC which is supplied to ARDUINO.
- LCD get power supply from regulator and GSM module and IOT get power supply from ARDUINO. Fault is created manually in any of 18 switches like short circuit fault (L-G) at the distance of 10 KM in R- Phase by S2 Switch in first raw then LCD will show R-10 KM. During NO- FAULT Switch will open and no current will flow and LCD Display NF (NO FAULT).
- S1 = 5KM, S2 = 10KM, S3 = 15, KM, S4 = 20KM, S5 = 25KM, S6 = 30KM in each phase. These ranges are fed to programming to be detected by the ADC of ARDUINO. When fault occurs the value of voltage is changed and then this value is measured across the resistance is inserted to ADC. From this value Arduino finally finds the distance of the fault from the station and is displayed in kilometers on the display as well as text message will come using GSM and a graphical form of the fault will be shown using IOT.

IV. FAUTL DETECTION OUTPUT

The output of the fault detection system can be seen in two forms:

A. GRAPHICAL FORM

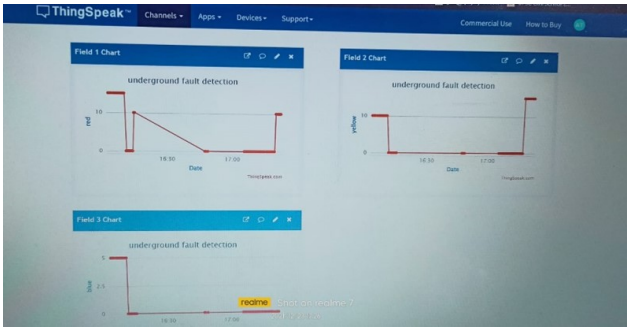

Fig. 5. GRAPH FORM OF OUTPUT USING IOT

In the above fig there are three charts are shown for R-Y-B phase respectively. The 3 different charts and the graphical curve shown in these three charts are drawn according to the distance of the fault in particular phase. The Graph is drawn between the distance of the fault occurs and the time of the occurrence of fault.

B. TEXT MESSAGE FORM

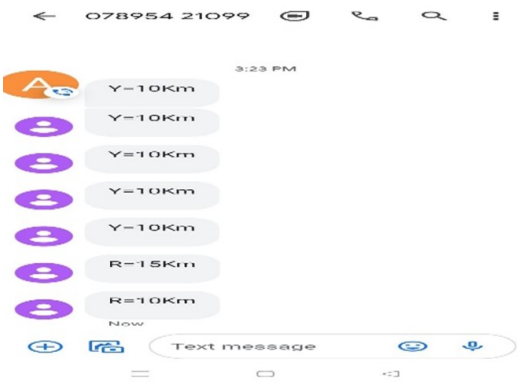

Fig. 6. TEXT FORM OF OUTPUT USING GSM

V. ADVANTAGES

1) Less maintenance and fast repair of faults to get back to power supply system.
2) It has higher efficiency
3) This method is applicable to all type of cable ranges from 1kv to 500kv.
4) Fault detection will be online process since it will be conceivable to find fault on empowered lines.

VI. FUTURE SCOPE

We can further develop a better user interface by which detection of open circuit fault is possible in near future. To find the fault in AC Circuit fluctuation in impedance with the help of capacitor. In this way we can find the fault detection.

VII. CONCLUSION

The L-G (SHORT CIRCUIT FAULTS) in the underground power cable can be detected for a particular distance (5km, 10km, 15km., 20km) efficiently using fault switch and the concept of voltage divider rule (V out = [R1/R1+R2] Vin) and OHMs LAW (V=IR) and display results on the LCD screen as well as send message to user to show its graphical form using IOT.

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Study of Thermal Properties of Chalcogenide Amorphous Glassy Bi-Se-Te Alloys

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***Abstract*—The glassy alloys of Bi-Se-Te chalcogenide composition have been studied by calorimetric measurement and DTA for a number of heating rates. Present work carries out relationships for the glass transition temperature (Tg), the difference of crystallization temperature and crystallization temperature (Tc-Tg) and glass forming ability (Kgl) for four prescribed heating rates between 10 to 20 K/min have been deduced with the variation in Tellurium concentration. The results, so obtained, have been interpreted by using CONM, for the studies of Tg with the average coordination number (Z). This analysis may help in developing an alloy, suitable for phase transition optical switches.**

***Index Terms*—Chalcogenide alloys, Glass Transition Temperature, Glass Forming Ability**

I. Introduction

During the last few years, there has been a growing interest in chalcogenide semiconductor systems for their applications in phase change optical recording systems. As far as chalcogenide alloys are concerned, the glasses with no exo-thermic crystallization reaction above Tg may be used in threshold switching alloys, while those exhibiting a crystalline endothermic reaction above Tg may be used in memory type of switching [1,2]. As far as studies of thermal properties are concerned, Tg may be observed with the help of a very careful analysis of DTA curves. The crystalline kinetics observations of glassy chalcogenide alloys upon heating may be performed in various well- tested ways. For thermal analysis, generally isothermal method and non-isothermal method are used. The desired sample used to be brought very quickly to a certain temperature above Tg, in isothermal method. While in case of non-isothermal method, the sample used to be very patiently heated at a particular fixed heating rate () and the evolved heat is to be recorded w.r.t. temperature. For developing materials for optical phase change devices, various parameters like Tg, Tc and Tm have to be optimized by varying alloy compositions and heating rates [3,4]. The dependence of Tg on the composition, the heating rate and average coordination number Z and glass forming ability Kgl with variation in Tellurium concentration have been reported in the present article.

II. EXPERIMENTAL PROCEDURES

High purity (99.999 %) bismuth, selenium and tellurium in quartz ampoules with an appropriate atomic percentage were sealed off in the range of 10-5 torr vacuum to prepare amorphous glassy Bi-Se-Te chalcogenide alloys. After sealing, ampoules were placed in a rotating furnace at 1200 °C for 20 hours at an increasing rate of 4-5oC/min. Then straight from the furnace, red hot ampoules were quenched rapidly in the ice-cold water mixture for the generation of amorphous alloys. Thereafter, to procure the desired material without any possible impurity, the quartz ampoules separately dissolved in a combination of HF+H2O2 for about 24 –30 hrs. The X-ray diffraction technique was used to doubly verify the amorphous nature of the alloys. DTA thermo grams of various compositions of samples in the temperature range of 100-800o C separately for all four heating rates i.e., @10 –20 K/min were obtained for further studies.

III. RESULT AND DISCUSSIONS

As per findings of earlier researchers glasses normally show a unique single endothermic peak for Tg and also a single visible exothermic peak for crystallization at a particular uniform heating rate [5]. Fig. (1), as obtained for Bi-Se-Te alloys for Te at 30%, justifies this tendency.

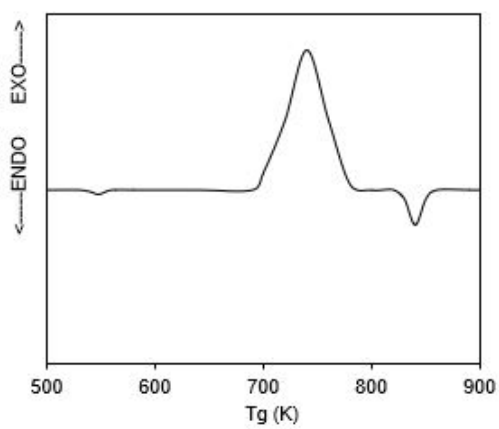

Fig. 1. DTA curve for Te30Bi28Se42 @ 10 K/min

Homogeneity of the glass can be confirmed from a single endothermic peak for glass transition. The "strength" or "rigidity of the glassy structure may be represented by Tg. In the present alloys, Tg was found to be decreasing with the increase

in Te concentration. This slight decrease in Tg observed is attributed to the decrease in mean molecular weight of the alloys with increasing Te concentration. It is clear from fig. (2) that Tg decreases by about 25 30K with variation in Te content from 10 atomic % to 50 atomic %, as well as for all heating rates. It indicates that the alloy doesn't get enough time for crystallization and nucleation when heating rate is high and the temperature also increases due to high heating rates by the time crystallization start-taking place.

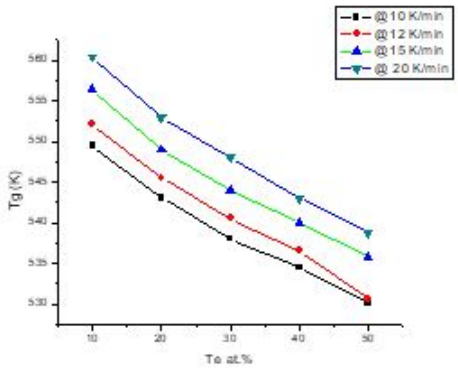

Fig. 2. Variation of Tg with Te at.%

Same thermo grams are used to find the experimental details of the initial as well as peak crystallization temperature (Tc and Tp) for all present compositions of amorphous Bi-Se-Te chalcogenide alloys at various heating rates . The larger values of differences between Tc and Tg indicates higher kinetic resistance to crystallization. (TcTg) indicates about the thermal stability of glassy alloys and this is increasing with the variation in Te concentration for the entire heating rate range (10K/min 20K/min). This variation is quite visible from fig. (3) as Tc-Tg values are increasing with the variation in heating rates in ascending order.

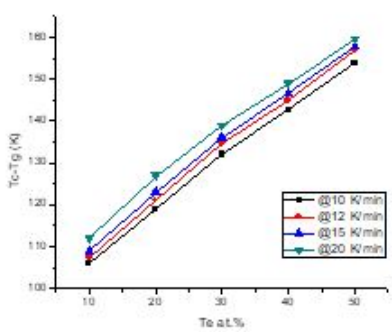

Fig. 3. Variation of Tc-Tg with Te at. %

The two most common models, reported to be consistent with the general bonding schemes (the 8-N rule) in chalcogenide alloys are CONM (Chemically Ordered Network Model) and RCNM (Random Covalent Network Model) . Various researchers have adopted CONM to understand the important features, observed in a very wide range of glassy alloys [6,7]. In CONM, the formation of hetropolar bonds is generally more authenticated over homopolar bonds. In Bi-Se-Te glassy alloys, a number of bonds are involved, viz., Bi-Se, Bi-Te, Te -Se, Te-Te, Se-Se, etc.

To understand the features for the property-composition dependence in these alloys, a number of topological models [6] are most widely used. As predicted by these models, at an average coordination number Z = 2.40 2.67, two topological thresholds are observed in various compositions [7]. The values of Z for various compositions of Bi-Se-Te alloys have been evaluated by commonly used standard procedure of adopting the (8-N) rule. For a composition Bia Seb Tec (a + b + c = 1), Z can be represented as

$$Z = 8 - 5a - 6b - 6c$$

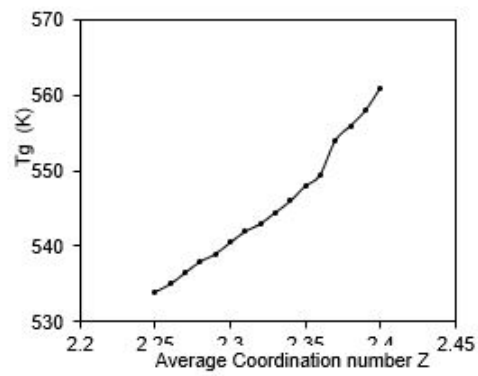

Fig. 4. Variation of Tg versus Z

The values of Z, as evaluated using the above relation, are found very much identical with those already obtained by earlier researchers [8,9] for a number of compositions. The values of Z are found to vary from Z = 2.25 to 2.40 with the variation of Tg from 534K to 561K (Fig. 4). This is similar to the correlation, for almost all chalcogenide glassy alloys, and indicates a good variation in Tg with Z. Here, a marginal increase in glass transition temperature Tg with decreasing Te concentration is seen as expected for the Te-rich glassy alloys of the Bi-Se-Te system. The thermal stability as well as the glass forming ability is of crucial importance for the materials engaged in optical memories. To calculate it, a difference of crystalline temperature (Tc) and glass transition temperature (Tg) has to be evaluated. Here, with an increase in Te concentration, the temperature difference (Tc-Tg) is also found to be increasing. This increase also attributes an increase in the thermal stability of these glassy alloys in the Bi-Se-Te based amorphous chalcogenide. The relation, used for calculating the glass forming ability, is as follows [10]

$$Kgl = (Tc - Tg)/(Tm - Tc)$$

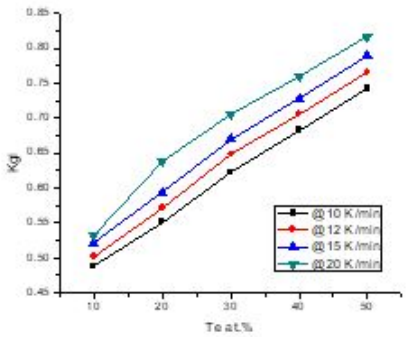

Fig. 5. Variation of Kgl with Te at. %

The values of glass forming ability Kgl, as evaluated using above mentioned relation, are found to be increasing from 0.439 to 0.817 with the increase in Te concentration across various heating rates Fig. 5 depicts the graph for heating rate 10K/min. It is deduced that as compared to those with lower Te concentration, glasses with higher Te concentration are easier to form.

IV. CONCLUSION

In the present article, a systematic investigation for thermal properties of Bi-Se-Te chalcogenide alloys reveal dependence of Tg & Tc on heating rates. However, with the increase in Te concentration, any drastic variation in Tg cannot be expected, which in turn results in iso-structural units of almost same bond strength. The values of Tg as well as Tc, both, are reported to be increasing with the variation in the heating rate for a given range. A positive glass formation tendency at higher Te concentration is found for Bi-Se-Te alloys. The Tc-Tg values were also found to increase with the increase Te concentration (10 50 at. %) as well as heating rates (10 to 20 K/min). The variation of Tg with Z also agrees with available trends. In Bi-Se-Te glassy alloys, the increased values Kgl with increase in Te concentration attributes to reduce the tendency of glass formation at lower Te concentration.

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Study in structural change of Ge-Te-Ga System

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***Abstract*—Recent research has looked at how changes in Gallium affect the structural properties of $Ge_{21}Te_{79-x}Ga_x$ (x = 3 to 18%) glassy alloy. We looked at how changes in coordination numbers, number of constraints, floppy modes, and Lone-pair electrons (electrons that are not shared) affect the structural properties. The structural change occurs due to the gradual replacement of Ga atoms with Te atoms. In this study, we have seen that some of the parameters are decreasing and some are increasing.**

***Index Terms*—Coordination No, Number of constraints, Floppy mode, Lone pairs**

I. Introduction

It is always said that our needs are the cause of invention. Humans have had a strong desire to learn new things since the beginning of time.This thrust gives birth to new things. In this changing world, we are required to store information. Information is increasing, so the requirements, to store it are also increasing. In this regard, we started using pen drives, floppy discs, CDs, DVDs, and many more devices to store information for future use. As we progressed toward CDs, DVDs, and chalcogenide glasses, they became game changers in the history of storage devices. Chalcogenide glasses have become a popular subject for research because they have a unique property that allows them to change back to their original state [1-4].

Germanium, along with chalcogenide (Chg) glasses, has become the game-changing material in infrared optics due to its long range of transparency. GeSe and GeTe are good glass formers. In the study, we found that the structural properties of chalcogenide (Chg) glasses strongly depend on their constitutions. The properties of two-component systems can be controlled with the addition of a third component. The glass-forming ability, along with disorder composition and configuration, can be enhanced with the introduction of a third component. Thus, in the most simple terms, we can say that the properties of the binary chalcogenide system will change when a third component is added [5-8].

II. STUDIES AND DISCUSSION OF THEORY

A. Bonding Constraints and Average Coordination Number

According to J. C. Phillips, the transitions in average coordination number occur between z = 2.4 and 2.67 [9]. To explain glass-forming tendencies, Phillips framed the mechanical-constraint counting theory. PhillipsThorpe explained a successful technique that was successful in studying the ”floppy mode” (meaning zero frequency) and ”rigid mode” and is based on the number of atomic degrees of freedom, The network becomes ”floppy” when it exceeds the number of degrees of freedom by more than the number of restrictions; conversely, stressed-rigid structures will be seen to spread across the system, if the network system becomes over-constrained. According to Phillips, the propensity of glass formation is greatest whenever the number of parameters matches the number of constraints. For the $Ge_{21}Te_{79-x}Ga_x$ (x = 3 to 18%) composition, the average coordination number can be calculated as follows [10].

$$< z > = \frac{\alpha N_{Ge} + \beta N_{Te} + \gamma N_{Ga}}{\alpha + \beta + \gamma} \quad (1)$$

Where (Alpha), (Beta), and (Gamma) are the concentrations (at%) of Ge (Germanium), Se (Selenium), and Ga (Gallium), and NGa = 3, NTe = 2, and NGa = 4 are their coordination numbers.

For x = 0, the value of z ¿ is 2.42 for the system $Ge_{21}Te_{79-x}Ga_x$ (x = 3 to 18%), and the calculated values of z ¿ vary from 2.45 to 2.6 for $Ge_{21}Te_{79-x}Ga_x$ (x = 3 to 18%) as Ga concentration increases at the cost of Te concentration. When z ¿ 1, 2.6 becomes more rigid, and the system is said to be over constrained.

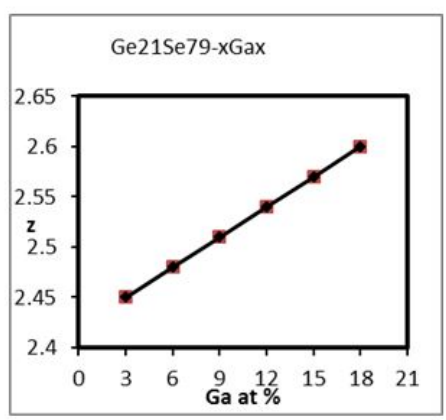

Fig. 1. Variation of coordination number with Ga%

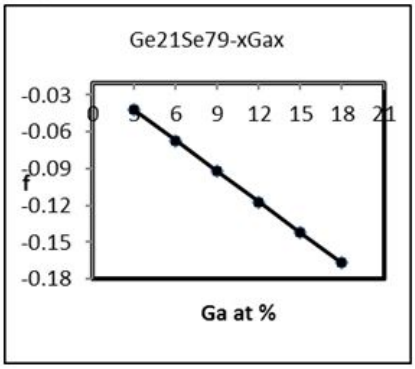

Fig. 2. Variation of floppy mode with Ga%

B. Number of constraints

Determination of $< z >$ allows the calculation of the average number of constraints,

$$N_c = N_a + N_b \qquad (2)$$

Na = z/2 indicates bond stretching constraints and Nb = 2z 3 indicates bond bending constraints The equation implies that the value of $z >$ is 2.42, which is referred to as the regidity percolation threshold, and that dangling ends are missing from the network while all constraints are intact. Glass formation is affected by highly over-or under-coordinated systems, which result in crystalline solids when cooled. M. F. Thorpe [11] pointed out in 1983 that the number of floppy modes per atom, f, is more precisely characterised by the mean-field constraint count according to the relation, or we may say, define the network according to the relation.

$$f = 3 - N_c \qquad (3)$$

This tends to the discovery that when f 0, a glassy network becomes instantly rigid, resulting in a floppy to rigid phase transition [11]. Nc values determined using $< z >$ for $Ge_{21}Te_{79-x}Ga_x$ (x = 3 to 18%). The change of Nc with Ga in percent is seen in Fig. 3. With an increase in Ga at.%, the value of Nc increases from 3.12 to 3.5, indicating that the number of constraints acting on the network is balanced by the number of degrees of freedom available from the atoms in the network. This just indicates that the network is isostastically rigid, meaning that there is no stress present.

$$N_c = N_d. \qquad (4)$$

The cross-linking density(X) is given by [12].

$$X = N_c - 2 \qquad (5)$$

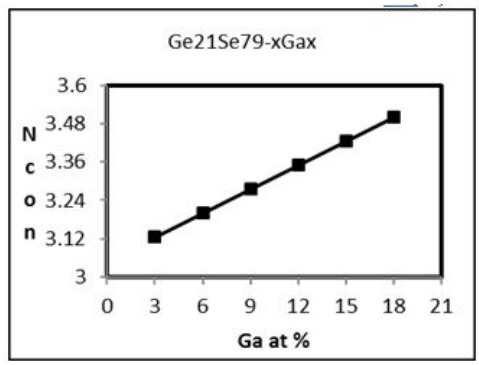

Fig. 3. Variation of Number of constraints with Ga%

C. Composition Stoichiometery Deviation

The parameter R, which is defined as the ratio of chalcogen to non-chalcogen atoms covalent bond possibilities, is a measure of divergence from stoichiometry in a particular composition [13, 14].
For glass system $Ge_{21}Te_{79-x}Ga_x$ (x = 3 to 18%) Deviation from the Stoichiometery is calculated by using the formula

$$R = \frac{\beta N_{Te}}{\gamma N_{Ga} + \alpha N_{Ge}} \qquad (6)$$

Stoichiometry measures weather the system is chalcogenide rich or chalcogenide poor. There may be three states for R :-

1) The system is said to bechalcogen rich, when R¿1,
2) The system is said to be chalcogen poor, when R¡1,.
3) The threshold condition (the point at which only hetropolar bonds exist) is visible when R=1. It's a measurement of the chalcogenide atom's minimal value required for glass production

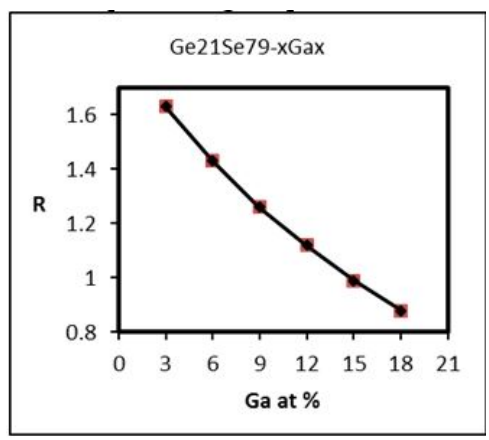

Fig. 4. Variation of Deviation from Stoichiometery with Ga%

For $Ge_{21}Te_{79-x}Ga_x$ (x = 3 to 18%) system the calculated value of R¿1 up to x = 18 which indicates that the system is leading to chalcogen rich of Ga at % up to x = 18

D. Study of Lone pair electrons and glass forming ability

According to Pauling [15], a system's strain energy reduces as the no. of lone-pair electrons increases, and encourage glass formation ability. The relationship [16], used to compute the no. of lone pair electrons is

$$L = V - Z \qquad (7)$$

L stands for the number of lone pair electrons, while V stands for the valance electron. Figure 5 shows a graph depicting the fluctuation of lone-pair electrons as a function of Ga (Gallium) concentration.

The graph shows that when the Ga content increases as L in the $Ge_{21}Te_{79-x}Ga_x$ (x = 3 to 18 %) system decreases fast. Te atom causes between the interaction between of Ga ion and the lone-pair electrons and thus make change in behaviour. Zhenhua provided a simple criterion for binary and ternary systems, namely that the ternary system must be bigger than 1. The graph shows that the values of lone-pair electrons for the Ge21Te79-xGax (x = 3 to 18 %) system range from 3.1 to 2.8, implying that the system under investigation has strong glass forming capabilities.

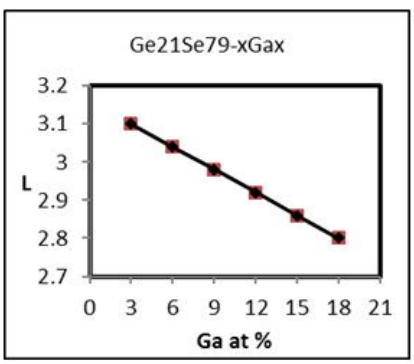

Fig. 5. Variation of lone pair with Ga%

III. CONCLUSION

The structural characteristics of the Ge-Te glassy system alter when Ga (Gallium) is introduced. With the change in Ga content, the parameters coordination number and number of restrictions increase while all other parameters decrease, according to the analysis of numerous graphs. The presence of positive R values indicates that the alloy is chalcogen-rich. Another piece of proof that the current system has strong glass forming capabilities is the lone-pair electron values. As a result, the aforesaid adjustments in the parameters favour glass formation.

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An Empirical Study on Investors Risk Taking Ability with Special Reference to their Educational Background

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***Abstract*—Study of investors behavior with reference to their risk taking ability keeping in context various demographic variables has been a keen area of interest amongst the researchers in the field of behavioral finance. Educational background of the investor is one such demographic variable which has attracted the interest of researcher in their studies. The present research is an attempt to analysis the investor behavior with respect to their risk taking ability keeping in context the educational background of the investors and how the educational background of the investors affects the risk taking ability of the investors.**

***Index Terms*—Risk, Behavioral Finance, Educational Background**

I. Introduction

Behavioral finance as a subject encompasses the study of various demographic, social, mental, and emotional factors on the investment decisions of investors and how all these variables impact the investment decision making process of the individuals and institutions. Behavioral finance uses insight from the ground of psychology and relate them to the actions of individuals in trading and other financial functions specially the choice of investment options.
Azzopardi.V.Paul (2012) describes behavioural finance as the function of Psychology and other analytical tools to the behaviour of investors. Sulphey M.M. (2014) explains that behavioural finance studies how the emotions and psychology of the investors influence the investment decisions. Basically, behavioural finance attempts to explain the what, why, and how of finance and investing, from a human perspective.

II. Demographic Factors And Behavioral Finance

Investment decisions also depends on the types of investors, risk tolerance capacity, education, occupation, age, sex, income, marital status, family back ground, living area and environment and attachment with the financial advisor etc. The impact of various socio-economic factors on investors investment behavior is shown in the figure given below.

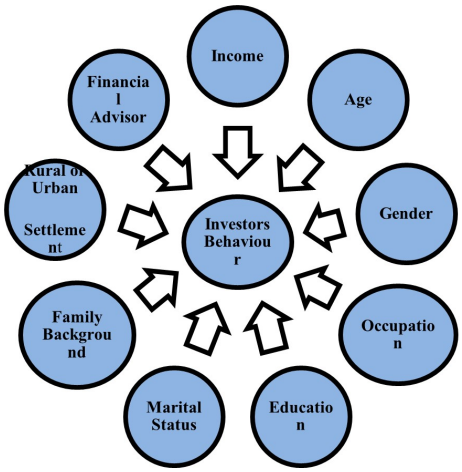

Fig. 1. Investment influencers and Investors Behavior

III. Education and Investors Behavior

The current study focuses on the educational background of the investors and its impact on the risk taking ability of the investors. Education of individuals can be categorized into following categories; basic education which includes education that we get at school level and in graduation while there is another sphere of education in which individual acquires professional education like Doctors, Chartered Accountants and Architects etc. Echelon of education of an individual reveals its Psyche. It affects investors perception of risk. Grimes and Snively (1999) in their study concluded that less educated people are more unconvinced in their perception of risk, whereas, educated people tend to take rather superior degree of risk. Schooley and Worden (1999) accounts that American investors with high-school diplomas tend to hold portfolios profoundly biased toward fixed-income securities, which are seen as less risky than stocks. Christiansen et al. (2006) find that investors with a higher education invest a larger portion of asset in stocks and bonds. These findings provide further support to suggestions made in several studies, which state that the level of education is also of significance

for whether or not an investor participates in the bond and stock market. More well-educated individuals are more likely to be financial investors, for example, Mankiw and Zeldes (1990), Haliassos and Bertaut (1995).

IV. Review of Literature

In order to have a appropriate assessment of the subject, it is necessary to have a birds eye vision of the findings of other academic researchers. Thus the planning and implementation of any research should be preceded by methodical review of literature in related fields since it helps to make acquainted with the work that has been done in that area, eliminates the possibility of unnecessary repetition of efforts and provides valuable information on research techniques.

Volpe et al. (1996) in their research Personal Investment Literacy among College Students: A Survey review the knowledge of personal investment amongst college students and the relationship between investment literacy level. The study concluded that college students had inadequate knowledge of personal investments basics.

Alexander et al. (1997) in their study Investor Self-Selection: Evidence from a Mutual Fund Survey addressed many issues related to the topic of mutual fund investors knowledge. The findings demonstrated a strong relationship between financial literacy level education level. Chen and Volpe (1998) examined the personal financial literacy of college students from 13 campuses located in the USA. They

V. Objective of the Study

The present paper aims at the following objective:

1) To study the investment behavior of investors and choices of their investment avenues.
2) To study the impact of educational background on the risk taking ability of the investors.

VI. Research Methodology

- **Research Type:** Empirical
- **Type of Sampling:** Convenience Sampling
- **Sampling Unit:** Individual persons
- **Sampling Universe:** Region Moradabad, Uttar Pradesh
- **Sample size :** 500

S.No.	Educational Qualification Break up		No. of Respondents	Total
1	Educational Qualification	Upto 10th	30	500
		10+2	45	
		Graduate	200	
		Post Graduate	130	
		Professional	195	

- **Financial Instruments (alternatives) taken for study:** Gold/Silver, Shares, Bonds, Derivatives, Mutual Funds, Bank FDs, Post office saving schemes, LIC, PPF and Real estate.
- **Data Type :** Primary as well as Secondary Data
- **Data Source :** Survey through questionnaire
- **Tools :** ANOVA test and mean scores have been taken for the data taken on a five point likert scale for testing the hypothesis.

VII. Hypothesis Formulation

- **H01:** There is no association between the education of the investors and investment choices made by them.
- **H1a:** There is an association between the education of the investors and investment choices made by them.
- **H02:** There is no association between the education and risk taking ability of the investors.
- **H2a:** There is an association between the education and risk taking ability of the investors.

VIII. Analysis and Interpretation

Investment Alternatives	Education	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Investment in Gold and Silver	Up to 10th	30	3.83	1.085	.198	3.43	4.24	2	5
	10+2	45	4.89	.318	.047	4.79	4.98	4	5
	Graduate	200	3.38	1.358	.096	3.19	3.56	1	5
	Post Graduate	130	2.96	1.260	.111	2.74	3.18	1	5
	Professional	95	3.89	1.125	.115	3.67	4.12	1	5
	Total	500	3.53	1.324	.059	3.41	3.65	1	5
Investment in Shares	Up to 10th	30	2.50	.509	.093	2.31	2.69	2	3
	10+2	45	2.33	.674	.101	2.13	2.54	2	4
	Graduate	200	2.80	1.211	.086	2.63	2.97	1	5
	Post Graduate	130	3.04	1.260	.111	2.82	3.26	1	5
	Professional	95	3.21	1.328	.136	2.94	3.48	1	5
	Total	500	2.88	1.204	.054	2.77	2.99	1	5
Investment in Bonds	Up to 10th	30	2.67	.479	.088	2.49	2.85	2	3
	10+2	45	2.56	.693	.103	2.35	2.76	2	4
	Graduate	200	3.10	1.160	.082	2.94	3.26	1	5
	Post Graduate	130	3.38	1.081	.095	3.20	3.57	2	5
	Professional	95	3.84	.938	.096	3.65	4.03	2	5
	Total	500	3.24	1.098	.049	3.14	3.34	1	5
Investment in Derivatives	Up to 10th	30	2.50	.509	.093	2.31	2.69	2	3
	10+2	45	1.89	.318	.047	1.79	1.98	1	2
	Graduate	200	2.50	.743	.053	2.40	2.60	1	5
	Post Graduate	130	2.65	.921	.081	2.49	2.81	1	5
	Professional	95	2.68	1.084	.111	2.46	2.91	1	4
	Total	500	2.52	.855	.038	2.44	2.60	1	5
Investment in Mutual Funds	Up to 10th	30	2.50	.509	.093	2.31	2.69	2	3
	10+2	45	2.00	.000	.000	2.00	2.00	2	2
	Graduate	200	2.80	1.103	.078	2.65	2.95	1	5
	Post Graduate	130	3.23	1.089	.096	3.04	3.42	2	5
	Professional	95	3.26	1.169	.120	3.03	3.50	2	5
	Total	500	2.91	1.097	.049	2.81	3.01	1	5
Investment in Bank Fixed Deposits	Up to 10th	30	4.50	.777	.142	4.21	4.79	3	5
	10+2	45	4.67	.477	.071	4.52	4.81	4	5
	Graduate	200	4.25	.890	.063	4.13	4.37	1	5
	Post Graduate	130	4.19	.683	.060	4.07	4.31	3	5
	Professional	95	4.47	.756	.078	4.32	4.63	2	5
	Total	500	4.33	.789	.035	4.26	4.40	1	5
Investment in Post Office Savings Schemes	Up to 10th	30	4.67	.758	.138	4.38	4.95	3	5
	10+2	45	4.67	.477	.071	4.52	4.81	4	5
	Graduate	200	3.75	1.181	.084	3.59	3.91	1	5
	Post Graduate	130	3.73	.947	.083	3.57	3.90	1	5
	Professional	95	3.11	.722	.074	2.96	3.25	1	4
	Total	500	3.76	1.070	.048	3.67	3.85	1	5
Investment in LIC (ULIP/Endowment) Policies	Up to 10th	30	3.83	.913	.167	3.49	4.17	3	5
	10+2	45	4.56	.693	.103	4.35	4.76	3	5
	Graduate	200	4.10	.737	.052	4.00	4.20	3	5
	Post Graduate	130	4.23	.641	.056	4.12	4.34	3	5
	Professional	95	4.21	.698	.072	4.07	4.35	3	5
	Total	500	4.18	.727	.033	4.12	4.24	3	5
Investment in Public Provident Fund	Up to 10th	30	3.00	1.174	.214	2.56	3.44	1	5
	10+2	45	3.56	1.589	.237	3.08	4.03	1	5
	Graduate	200	3.55	1.399	.099	3.35	3.75	1	5
	Post Graduate	130	4.15	1.067	.094	3.97	4.34	1	5
	Professional	95	3.74	1.169	.120	3.50	3.97	1	5
	Total	500	3.71	1.315	.059	3.59	3.83	1	5
Investment in Real Estate	Up to 10th	30	4.00	1.017	.186	3.62	4.38	3	5
	10+2	45	4.11	1.301	.194	3.72	4.50	1	5
	Graduate	200	3.35	1.065	.075	3.20	3.50	1	5
	Post Graduate	130	3.08	.920	.081	2.92	3.24	1	5
	Professional	95	3.79	1.157	.119	3.55	4.03	1	5
	Total	500	3.47	1.119	.050	3.37	3.57	1	5

The above table reveals the detail allocation of investors investing in different investment avenues on the basis of education level. Out of total sample size of 500 respondents 30 of them belonged to group who had education up to 10 standard. From this group 25 i.e. 83% of the respondent had

invested in Bank FDs and Post office Saving Schemes making it most popular choice of investment in this group. Gold/Silver was the second best investment option in this group. The least favored choice of investment was in shares, bonds, derivatives and mutual funds with no investment at all in these alternatives from the respondents of this group.

45 of the total respondents had their education level till 10+2 level. Gold/Silver, Bank FDs and Post office Saving Schemes were the most popular investment alternatives in this group as all the respondents of this group have invested in these alternatives respectively. Second most popular investment in this group was LIC with 40 of the respondents i.e. 89% of them in it. While derivatives and Mutual Funds turned out to be the least preferred investment options with none of the respondent from this group invested in it.

200 respondents were graduates and had Bank FDs as their most preferred choice of investment with 180 i.e. 90% of them investing in it. LICs products were the second best investment option among this group with 155 i.e. 78% of the respondent investing in it. Derivative was the least preferred option with only 10 i.e. 5% of the respondent from this group investing in it. Respondents who were postgraduate were 130 in numbers. Bank FDs , LIC and Post office savings certificates were the most popular investment option in this section of investors with 115 i.e. 88% of them investing in it. Post office Saving Schemes was the second most preferred choice with 85 i.e. 65% of them investing in it. Least preferred choice of investment alternatives in this group was Real Estate with only 20 i.e. 15% of them investing in it.

Professionals were 95 in numbers with Bank FDs and LIC being the most popular investment options amongst this group with 85 i.e. 89% of them investing in it. Second preferred choice of investment in this group stands out to be Gold/Silver with 75 i.e. 79% of them investing in them. Least preferred investment option was Post office Saving Schemes with only 25 i.e. 26% of the respondents investing in it.

Investment Alternatives		Sum of Squares	df	Mean Square	F	Sig.
Investment in Gold and Silver	Between Groups	145.309	4	36.327	24.658	.000
	Within Groups	729.241	495	1.473		
	Total	874.550	499			
Investment in Shares	Between Groups	32.703	4	8.176	5.864	.000
	Within Groups	690.097	495	1.394		
	Total	722.800	499			
Investment in Bonds	Between Groups	72.021	4	18.005	16.842	.000
	Within Groups	529.179	495	1.069		
	Total	601.200	499			
Investment in Derivatives	Between Groups	22.906	4	5.727	8.291	.000
	Within Groups	341.894	495	.691		
	Total	364.800	499			
Investment in Mutual Funds	Between Groups	69.952	4	17.488	16.302	.000
	Within Groups	530.998	495	1.073		
	Total	600.950	499			
Investment in Bank Fixed Deposits	Between Groups	11.673	4	2.918	4.833	.001
	Within Groups	298.877	495	.604		
	Total	310.550	499			
Investment in Post Office Savings Schemes	Between Groups	102.509	4	25.627	27.066	.000
	Within Groups	468.691	495	.947		
	Total	571.200	499			
Investment in LIC (ULIP/Endowment) Policies	Between Groups	11.656	4	2.914	5.721	.000
	Within Groups	252.144	495	.509		
	Total	263.800	499			
Investment in Public Provident Fund	Between Groups	46.995	4	11.749	7.127	.000
	Within Groups	815.955	495	1.648		
	Total	862.950	499			
Investment in Real Estate	Between Groups	59.585	4	14.896	13.052	.000
	Within Groups	564.965	495	1.141		
	Total	624.550	499			

On applying the ANOVA test it is established that in all the different investment alternatives p ¡ .05 Null Hypothesis is rejected and alternate hypothesis is accepted. It is concluded that there is an association between the education of the investors and investment choices made by them. Investors who are 12th pass only prefer investment in real estate, post office savings, bank deposits and LIC. While professional persons prefer investment in bonds, shares, derivatives, PPF and mutual funds as they are more aware about these new investment options.

Insert two tables here

TABLE I
DESCRIPTIVE DATA OF THE RISK TAKING ABILITY OF THE RESPONDENTS ACCORDING TO EDUCATION

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min.	Max.
					Lower Bound	Upper Bound		
Up to 10th	30	1.00	1.017	0.186	0.62	1.38	0	3
10+2	45	1.78	1.491	0.222	1.33	2.23	0	4
Graduate	200	1.53	1.165	0.082	1.36	1.69	0	4
Post Graduate	130	1.77	1.191	0.104	1.56	1.98	0	4
Professional	95	2.32	1.307	0.134	2.05	2.58	0	4
Total	500	1.73	1.265	0.057	1.62	1.84	0	4

TABLE II
ANOVA TEST

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	57.294	4	14.323	9.565	0.000
Within Groups	741.256	495	1.497		
Total	798.550	499			

While applying ANOVA test it is found that p ¡ .05 Null Hypothesis is rejected and alternate hypothesis is accepted. It is concluded that there is an association between the education and risk taking ability of the investors. Professionals wish to take high risk as they can trade off between risk and profit (M=2.32) on the other hand less educated people prefer to take less risk (M=1). So the choices of investment of such individuals is less risky instruments or risk free investments like Bank FDs etc.

IX. FINDINGS

Findings of the study are given below

1) Educational background of the investors affects the risk taking ability and choice of investment alternatives.
2) Individuals with low level of education up to 10+2 the degree of risk taken is low which is also reflected in the choice of investments made by them.
3) Real estate, Gold and silver, post office saving schemes and bank FDs were the preferred choice of investment amongst the individuals with low Educational Level.
4) Individuals with higher education with post graduation and professional education have greater risk bearing capacity.
5) Professionals and postgraduates were more inclined towards risky investments options like stocks, derivatives,

mutual funds because they were in better situation to make a risk and return trade off decisions.

X. CONCLUSION

The study reflects upon the relationship of the educational level of investors and their risk taking ability and demonstrates that professionally qualified individuals with high risk as they can trade off between risk and profit (M=2.32) on the other hand less educated people prefer to take less risk (M=1). So the choices of investment of such individuals is less risky instruments or risk free investments like Bank FDs etc.
Higher education are more aggressive and risk taking when it comes to selecting investment alternatives as compared to individuals who have low level of education. High degree of education brings with it ability to access the risk return trade off in a better way, such investors are more aware about investment opportunities and are more competent to synthesis financially sensitive information which helps them to make better risk and return trade off decisions while investing. However since this study has taken only educational qualification as a variable to study the risk taking ability of the investors , it would be worthwhile to include other demographic variables like age , gender, occupation etc. to study the impact of these variables on the risk taking ability of the investors along with educational background.

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