

### Covid Free Bus Traveling Using Raspberry Pi

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#### Abstract:

Public transport works in excellent quality system wherever sizable amount of individuals will move at a time. Conjointly saves large traffic and fuel. This COVID pandemic time everywhere the country taking measures to unfold of virus. To run a Transport system safely and firmly bus transportation primarily faculty for varsity} and college buses. Education system has got to take needed and advanced measurements. A screening method ought to proceed which might discover the symptoms all told attainable ways that. This disaster don't over take the human or instructional life .a safe screening virus detection is developed. During this project a secure travel observance system is enforced. RF used for access the licensed individuals and hard their blood heat exploitation IR device. A camera to alert the mask covering with share. A DC motor is hooked up and GPS for pursuit and locating the vehicle. This could add each cycles that entry and exit. The data is shared to mobile application for licensed users.

#### INTRODUCTION

Before COVID -19 Pandemic the public transport is successfully running with full capacity which helps the Government organizationsfanatically. Directly or indirectly works to save fuel and pollution. After the Pandemic every one is using their own or rented vehicles. Thatmakes problem for Environment and public transportation employability.So, by taking safety measuresthis issue can be solved. Here below figure is the reference for COVID-19 has sent shockwaves through the mobility ecosystem.

### Covid-19 has sent shockwaves through the mobility ecosystem



Figure 1 COVID transport system graph

By taking considering US consumer transportation spending fell sharply in April change in spending from 2019 for the week ending April 1. The graph is gradually decreased. Public transportation systems have taken a hit % change from baseline in 5 populous states. This system is gradually decreasing from February 2020 to May 7. COVID detection electronic gadget used in this system to overcome the problem.

### LITERATURE SURVEY

Vinoth Kumar, Akash Ravishankar, A. Karan, K. Vishal and J. AanandhaPraseeth Kumar, "A sensible public installation for reliable and trouble free conveyance in property sensible cities", International Conference on pc Communication and information processing, June 2020. There are several device specifications and kinds supported system needs and design specifications. a number of the GPS chase elements are already designed by makers and may be assembled exploitation hardware-based components; microcontrollers, a GSM module, and a GPS defend. These 3 elements are basic elements required to place along a reasonably economical chase unit to be put in in vehicles. The advancement when installation involves the administrator receiving logs (coordinates, timestamps, and different parameters) that are streamed and hold on during a central info and accustomed track this location of devices. Such AN design provides AN interface wherever assets is tracked while not the data of a driver and would be appropriate within the use case wherever the administrator has to track many devices and assets while not the data of others.

S. Vigneshwaran, K. Raghul, B. Nivas and V.M. Kishore, "Design of Bus chase and Fuel observance System", sixth International Conference on Advanced Computing and Communication Systems. we tend to will model our system when the easiest within the transport arena that could be a company referred to as Uber that uses mobile-based apps for chase and providing different connected services, and within the age wherever we discover ourselves with enhancements in technology and also the convenience of computing devices that generate a great deal of information, our projected system intends to develop a pipeline to create eta predictions supported machine learning algorithmic programs like lightweight trees from Microsoft and Cat boost algorithm recently developed.

Judy Thyparampil Raj; JairamSankar, "IoT based mostly sensible motorbus observance and notification system", IEEE Region ten Humanitarian Technology Conference. Detecting the vehicle location and chase. Opens the door for under approved users. To travel within the vehicle.

Ciya James; David Nettikadan, "Student observance System for varsity Bus exploitation Facial Recognition", International Conference on Trends in physics and information processing. This project is very for varsity bus students. to observance the scholars exploitation camera in real time so open CV idea will with success runs that is face recognition.

SanamKazi; MurtuzaBagasrawala; Farheen Shaikh; AnamtaSayyed, "Smart E-Ticketing System for conveyance Bus", International Conference on sensible town and rising Technology. To transportation department into advanced technological user or digitalized ticketing system. That helps into cashless transportation wherever infections can't be transmitted.

### PROPOSED SYSTEM

The planned epitome is figure 2. Raspberry-pi reads the ID knowledge detail victimization Radio Frequency ID reader. Once ID card details square measure recognized. The camera reads the user (ID card) face of the user and transmits it. To Open laptop Vision (OCV) and reads the current image with the reference image to see and determine the wears the mask or not. Gift planned system additionally checks

the body temperature of the traveler victimization Infrared temperature sensing element and check it with threshold temperature. If the user body temperature is detects to but the edge price. The vehicle door is opens for the traveler to get into the vehicle. When these stages of observation. The coed is allowed to enter into the vehicle. Therefore present system gives safety for the passenger people square measure motion within the design in the vehicle. Raspberry Pi transmits the information to mobile application using cloud. If a He/She fails to wear a mask or if the temperature exceeds the reference price, then the server sends the message to the Guardian. The Institute administration also monitors the standing of the attending within a web site. Epitome is additionally connected with Global Positioning System that tracks vehicle sporadically to the Guardian until vehicle reaches the boarding purpose of the traveler.

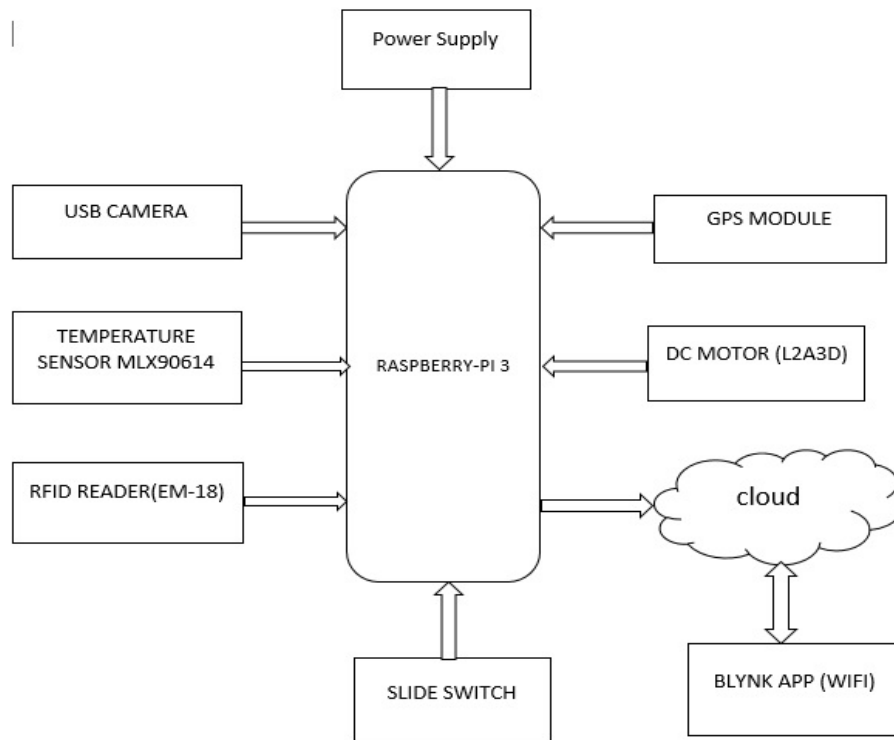


Figure 2: Block diagram of the proposed system.

A message regarding the security of the people measured within the vehicle and transmit to Guardian as soon as possible the vehicle reaches the referral point of the rider. The automated vehicle door system is employing a multidimensional language mentioned. Whenever a passengers get into the vehicle. He/she must draw the card. Then the system access to user to get into the vehicle once the COVID example reading. The planned works mistreatment raspberry pi. The proposed system is enforced and modules explained.

### RASPBERRY PI MODULE

The below figure 2 is Raspberry Pi Model B+ is AN updated revision of the Model B. It will increase the quantity of USB ports. Additionally, it's improved power electronic equipment that permits higher supercharged USB devices to be connected and currently hot blocked. The total

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size composite video connection has been removed and so the practicality emotional to the 3.5mm audio/video jack.

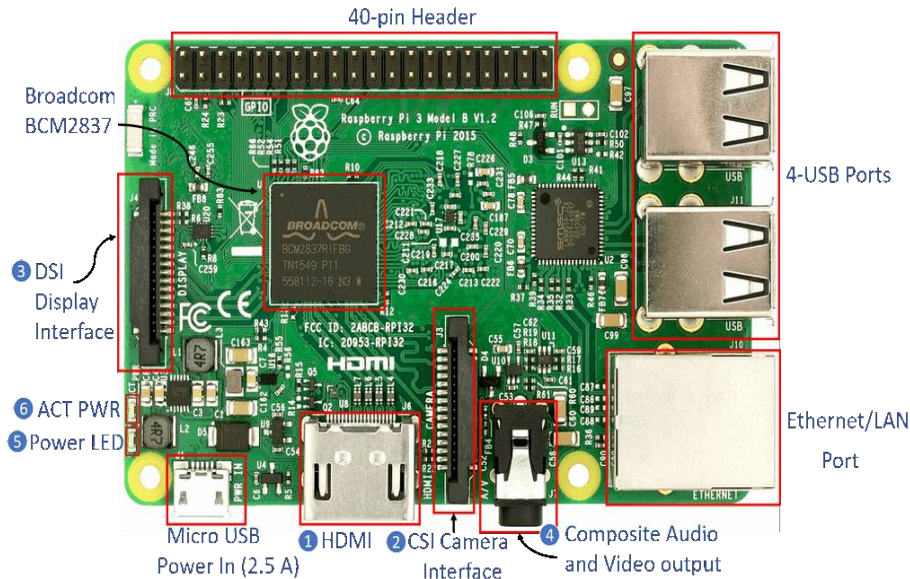


Figure 3: Raspberry Pi module.

### GPS

The 3 key parts of the GPS system area unit the house space, management half, and user phase. Within the house phase, there area unit up to twenty four operational NAVSTAR satellites scattered over six orbital ways. Compared to the human on the earth, the satellites aren't in geosynchronous orbit and area unit in continuous motion.

GPS receivers calculate their distances by measure the space (range) to satellites in contumaciously known orbits at constant time. It measures a special and precise location for the receiver by trilateration of the ranges.



Figure 4: GPS module.

### USB Camera



Figure 5: Image of USB camera.

The photographs area unit captured employing a USB camera during this project. This captured image can then be analyzed. The camera is hooked up to the Raspberry Pi through one among the USB ports. Figure 6 illustrates the way to connect a USB camera to a Raspberry Pi.



Figure 6: Connecting Camera to raspberry pi.

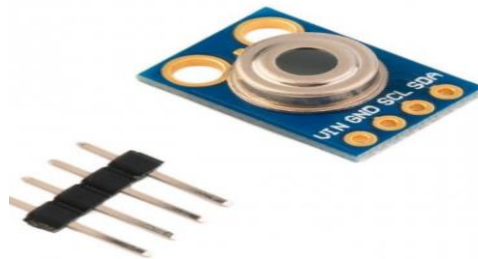


Figure 7:Temperature Sensor

MLX90614 is an Infrared thermometer used to Non-conductive measurement. Detect the body temperature. It is integrated with Raspberry Pi to monitor the body temperature.

### **IoT (Internet of Things)**

Thingspeak is employed within the planned theme (IoT). It's AN open supply IoT framework and API for storing and retrieving information from things over the net or over space neighborhood area network victimization MQTP and hypertext transfer protocol protocols (LAN).

Victimization this protocol could be a great way to travel. The recorded image is saved and sent by email. In irregular conditions, a "URL" is commonly retrieved and sent to a mobile range via the Pi module.



Figure 8: Radio Frequency Identification card

Radio Frequency Identity card tags send the data about an object through radio waves to the antenna and reader combination. Reads the desired Information allows the access through the cycle. Used in swiping at entry and exit points.

#### **FLOW CHART**

Starting the power supply to Board and initialize to Raspberry PI, IR temperature sensor & web cam.  
Performing the operation of COVID detection.

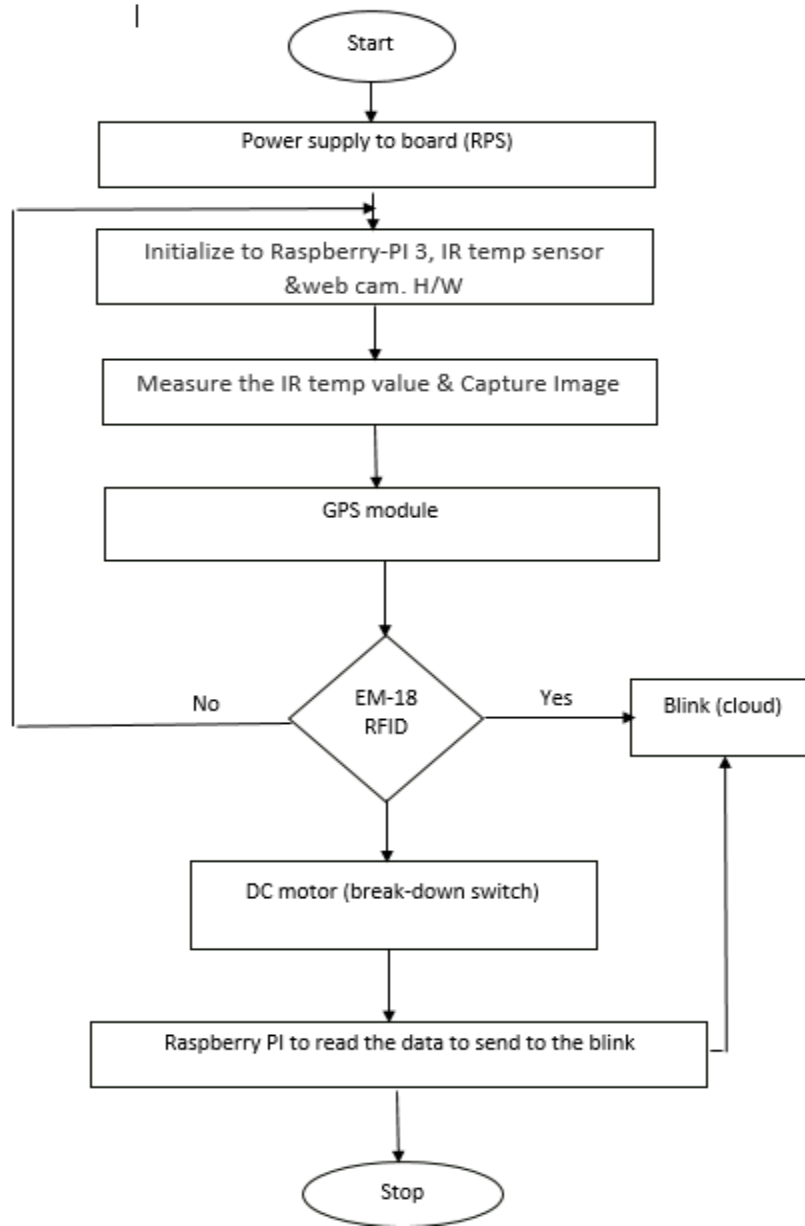


Figure 9 Flow chart COVID detection system

In the starting the Algorithm based mostly sensors identifies whether or not the virus is contains mask or not. Proposed system is created strong that completed using coaching. The system with multiple angles of pictures with a mask and while not mask so as to avoid false positives from results. This operation were wiped out 2 parts; the part one is that the coaching innovate that many pictures which has the faces with Associate in Nursing while not masks got as an input. The coaching phase that is reference victimization work flow. Succeeding part is that the preparation part that works the face detection and explains the given input picture is with masked or not masked. This proposed system comprises 1456 datasets of that 786 pictures square measure the face with mask covered and also the remaining 677 pictures square measure faces while not mask. Once the pictures square measure the stored with this information set it'll

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be bestowed with a check data a picture or live USB camera. First it reads the face from the USB camera so the system detects the region of covered from USB camera. The algorithmic program additionally initiates Associate in nursing alert and stores the detail within the info regarding the passenger not wearing the mask.

### RESULTS AND DISCUSSION

Radio Frequency ID reader reads the RFID tag properly, then 2nd stage detection method begins. 2nd stages of detection body mask detection case and body temperature watching period.

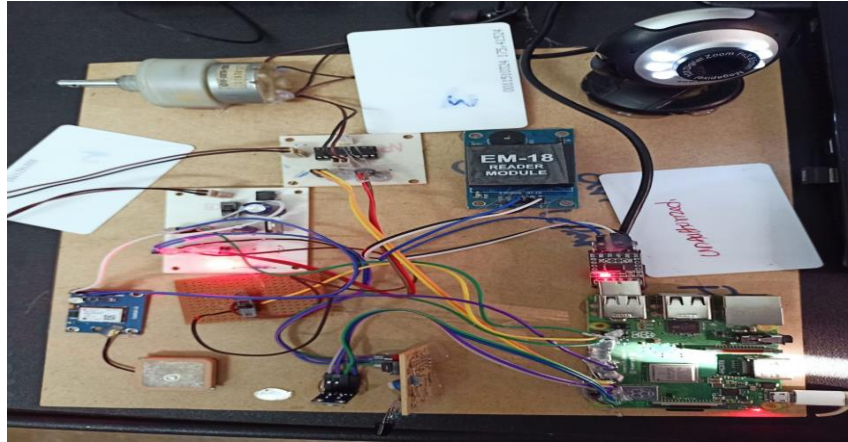


Figure 10 Proposed project setup.

In the 1st stage, the Algorithm based mostly deep network identifies whether or not the passengers is carrying Mask or not. Alerting the traveler to hide the face with mask so vires unfold is controlled. Here camera works sort of a sensing element which may observe the mask lined proportion.



Figure 11 alert the passenger to cover the face .



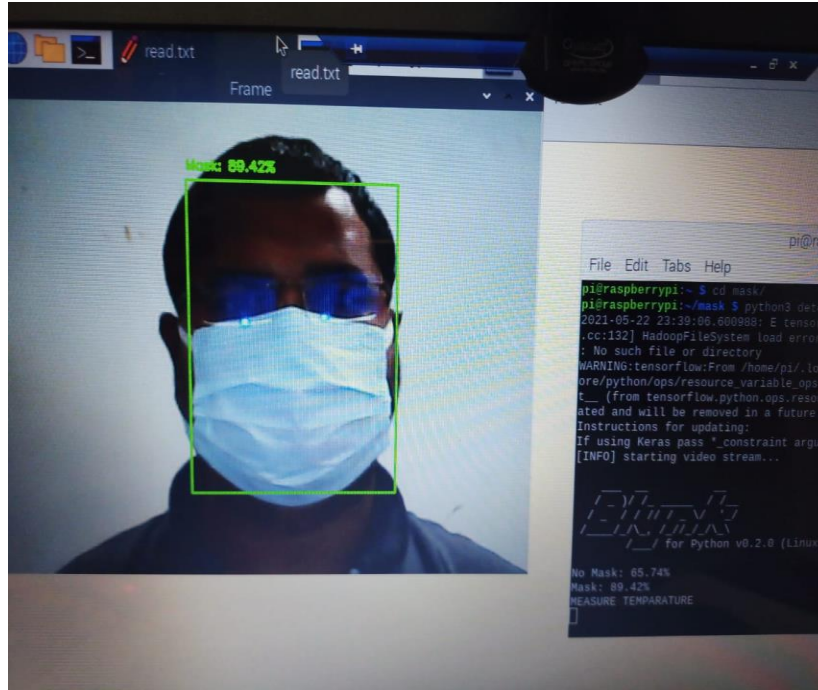


Figure 12 percentage of the face covered by mask.

Here, the present information is compared with the reference information and therefore the results are out. The results of the mask detection and a message sent to guardian concerning the not-covered with mask with their open region.

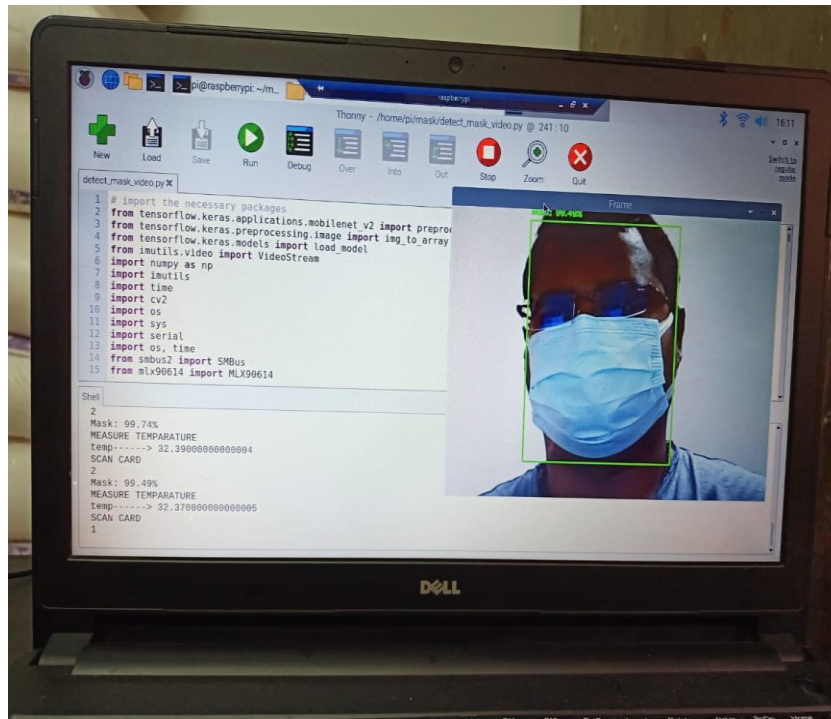


Figure 13 PI based results with mask covered and Body temperature.

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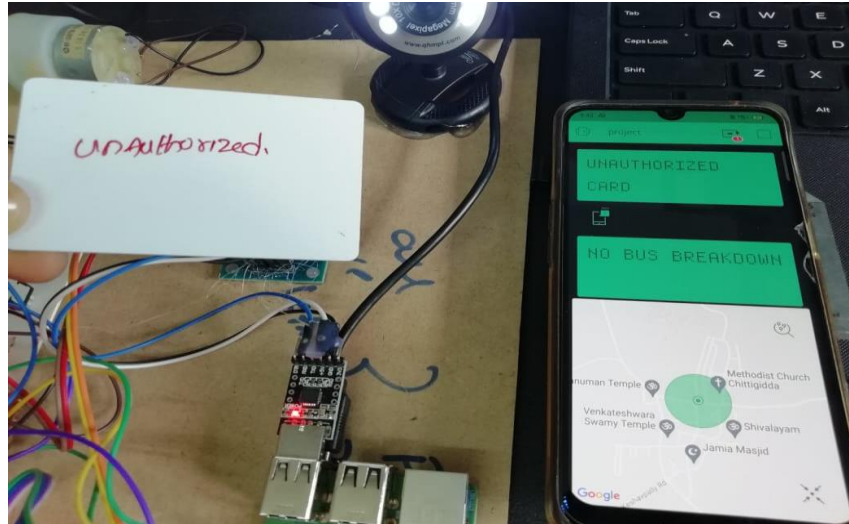


Figure 14 Authorization check using mobile app as output.

The passenger isn't admitted into the vehicle so as to forestall him from move within the vehicle with vast risk issue. The 1<sup>st</sup> case of detection is done, then the body temperature of the COVID is monitored exploitation Infrared temperature detector. Once the body temperature of the COVID results the edge level, a messages are going to be sent to the Guardians concerning the health condition of their people. The Global Positioning System module that's offered in a proposed system. Tracks the situation of the Vehicle and transmits the situation details of times to the fogeys till the Vehicle reaches their boarding point. Safety measures details transmits to the Guardian using prototype system is pictured. This helps the Guardian to envision the supply of required elements with their relative or friend that is extremely abundant necessary throughout the jaunt stop their friend or relative from the unfold of the sickness.

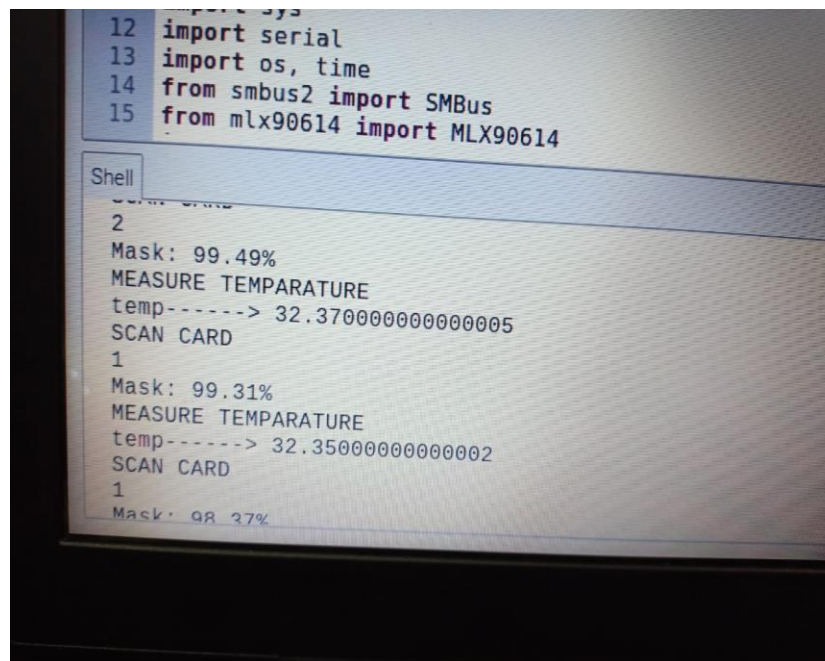


Figure 15 number wise members detected and their mask, temperature and scan ID.

Mobile app is the heart element in this system. Because large number of outputs are managed in a single window. Where it acts as information receiver, alerting and tracking.

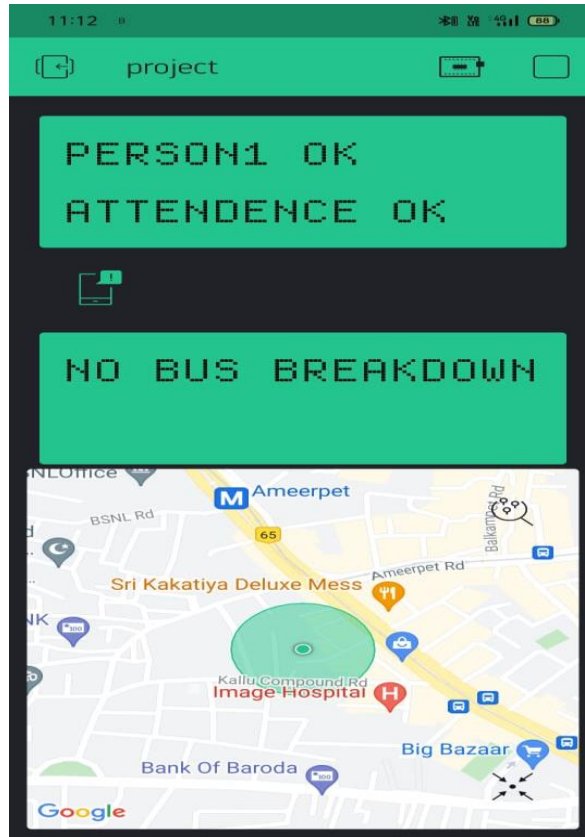


Figure 16 Person1 status with tracking can viewed in mobile application.

Number of users can be stored with unique RF code. That helps to maintain large data in a single card reader. We are represented with person and numbers examples like person1, person2 so on.

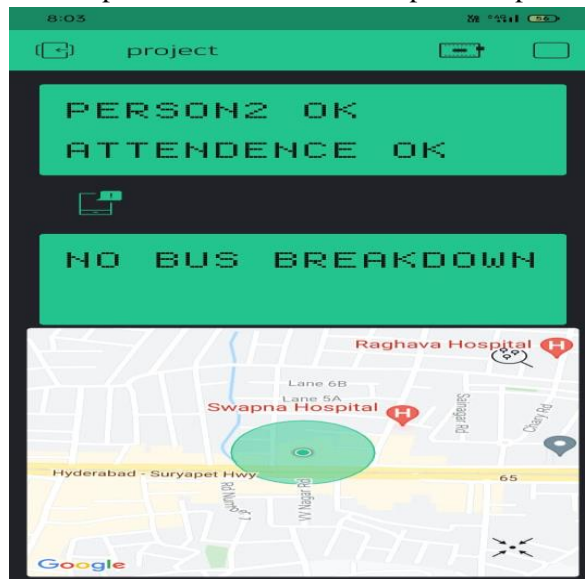


Figure 17 Person2 Mobile app monitoring (or) Tracking system.

A prescribed data is stored in the RF cards. This unique data can read by only specified or prerecorded RF reader. By drawing a card into the reader. Where it works under the conditions if the data is matched with reference data then it is gives “AUTHORIZED ACESS”. In all other conditions.It comes under “UNAUTHORIZED USER”. This can referred from below figures.

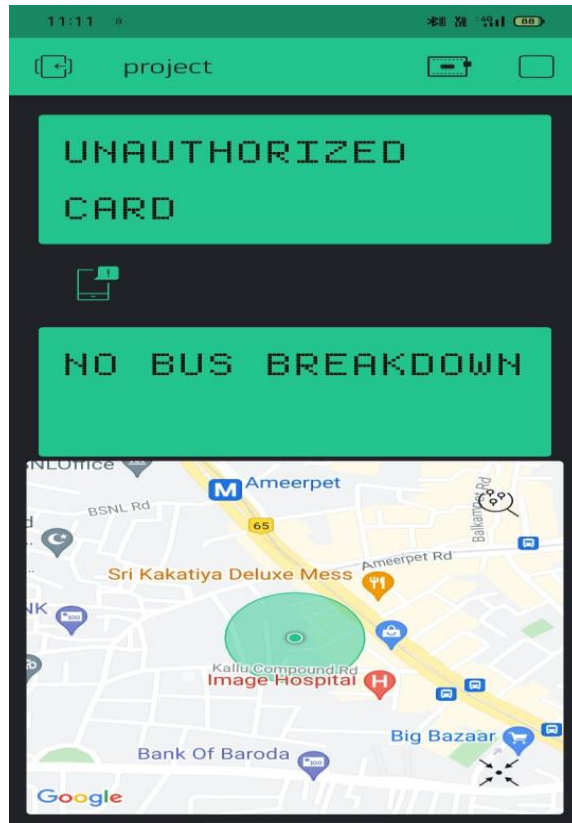


Figure 18 status about UNAUTHORIZED ENTRY

## CONCLUSION & FUTURE SCOPE

Proposed system provides a stage of screening methods and also checks the mask throughout the 1st stage and detects the body heat of the passenger throughout the 2<sup>nd</sup> stage. If any passenger detects the issue these 2nd case of screening, an alerting message are transmits to Guardian and administration knowing the information and standing of the virus. Our proposed system fellows the updates transportsystem group action to the administration. This technique fellows and transmits the placement of the Vehicle sporadically to the oldsters till the vehicle reaches their Known boarding points. Therefore Prototype ensures safe travel and also monitors. The transport system group action of the Vehicle properly. We are able to introduce a customized module can save money and size. The body temperature and therefore the wetness level within the vehicle will be monitored and making safe travel.

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