# IoT DA

# J component

# Group – 8

# IoT Enabled GPS Tracker

**Team Members-**

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**Objective-**

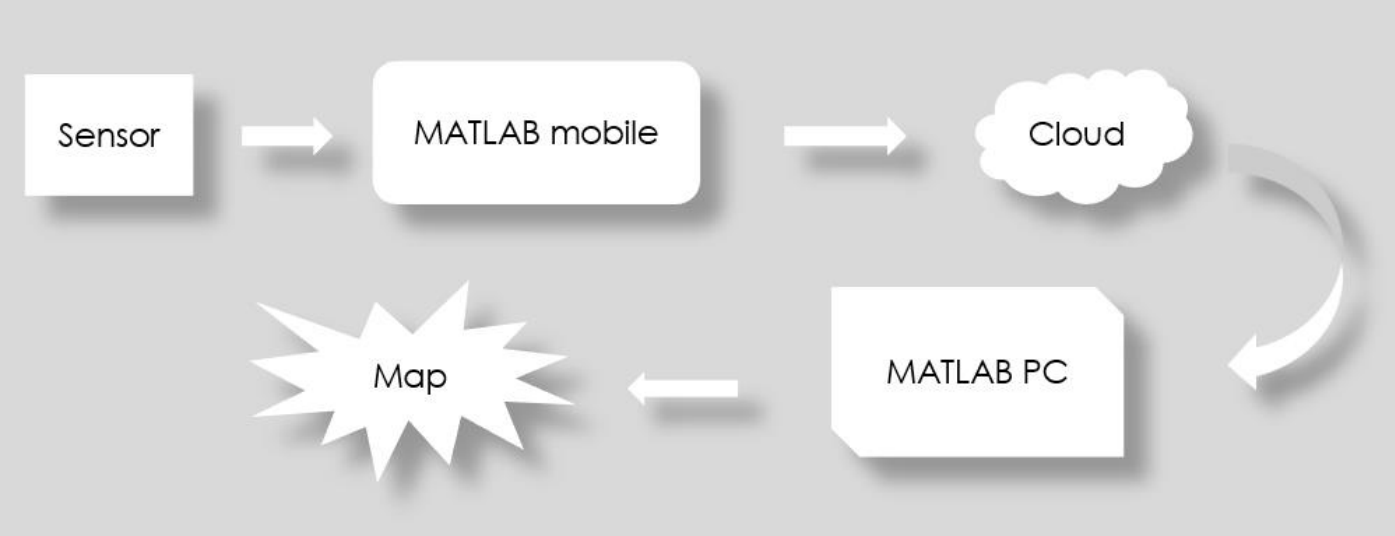
- Using the MATLAB mobile application, we will be getting the latitudes and the longitudes of the device.
- Uploading the same information to the MATLAB desktop platform from the MATLAB cloud.
- Using a suitable application like Freeboard platform which will help to locate the live coordinates in a map and will refresh after some time as per the programmer.
- We can also locate the patient position using the MATLAB WebMap feature.

**Abstract-**

A patient tracking system is essential when it comes to an amnesiac. The system is a technology that is used by individuals to track a vehicle in a variety of ways, such as GPS, which uses satellites and ground-based stations, or our approach, which relies on cellular mobile towers. Our IoT-based solution brings a tracker for people with amnesia. Developed with the help of MATLAB and python script the technology is simple and

versatile to use in nature. The app tracks the movement of the patient and relays their current position to their family members. There is a high demand for object tracking applications for business and medical processes. Real-time tracking information on valuable items and assets has the potential to solve many global problems. GPS stands for Global Positioning System, and it provides location information in any weather condition, both off-line and online.

## Methodology-




## Literature Review-

| Paper | Researcher | Work Done |
|---|---|---|
| 1. Bus Tracking and monitoring using RFID | Pravin A. Kamble, Rambabu A. Vatti; ICIIP 2017 | In this research paper, they have made a real time tracking of a bus for the passengers waiting at the bus stop. They have used a tracker which will track the bus location and will upload the live details to the ThingSpeak platform. They have also made a software which will read the data from the ThingSpeak platform and update to the passenger. |

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| | | It will also tell the number of vacant seats which will be updated manually by the conductor of the bus. This help reducing the waiting time for the passengers, also avoids the overcrowding which also reduce the possibilities for theft. We can do the same by adding MATLAB mobile to the drivers or the conductor device and the with our methodology me can finish setting up a stable and more accurate setup while reducing the cost |
| 2. IOT based Real-Time Vehicle Tracking System | Abdullah H. Alquhali, Mardein Roslee, Mohamad Y. alias, Khalid S. Mohamed; IEEE 2019 | In this research paper the researcher has used the inbuilt GPS and GSM of a mobile which helped him to get the exact location or the coordinates of the user. As in the today's era, as the transportation is growing, the risk towards the safety of an individual is also increasing so in order to track a person's current details, the researcher has taken the location information using GSM and GPS of the device and used ThingSpeak platform to read the information and then display the coordinates. They have also used Freeboard platform which will display the location in the map. We can use MATLAB mobile and display the information to ThingSpeak and also can |

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| | | used some software's to locate the coordinates using map. |
| 3. IoT device with Global Positioning System | Takeshi Tanaka, Nobuharu Okamitsu, Kenshi Nishino | In this the researchers have developed a rudimentary IoT device equipped with a global positioning system module using the Sigfox network. The data is sent from the Sigfox cloud to the ThingSpeak platform and are received and saved. They have additionally used Python, ipleaf, Jupiter Note Maps and Anaconda platform modules to locate the location on the map online. So they have used the hardware Sigfox module to take coordinates using the digital processing, and saved to the ThingSpeak but we will used MATLAB mobile to locate as it can easily be excess using the ThingSpeak. |
| 4. TRACKING OF DEMENTIA PATIENTS USING GPS &LORA WIFI | T. Pavan, V. Meghana, S. Sowjanya, S.K.Yaseen; IEEE 2018 | The researchers in this paper have made a wrist band for the Dementia patient (a state of order where the old-aged people tend to lose their memory and wander around without their consciousness) which will help to track their location for at least 40 hours using continuous GPS and will update the location after every 60 seconds. Lora WAN supports up to 5km in urban and 20 km in rural area the range. This |

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| | | wrist band will be a low battery consumption in order to take care of such patients. It is a wonderful project for the patients as well as it can be used for baby monitoring. The LoRa communications are used in place of ThingSpeak which will be working automatically and does not require a manual check. |
| 5. The Development of Modularized Post Processing GPS Software Receiving Platform | Ghangho Kim, Hyoungmin So, Sanghoon Jeon, Changdon Kee, Youngsu Cho5 and Wansik Choi; ICC, Automation and System 2008 | This paper presents a study of modulization of GPS SDR software platform and development of the GNSS SDR software platform using MATLAB Simulink. They focus on especially post processing SDR platform which is usually adapted in research area. The main functions of SDR are GPS signal acquisition, signal tracking, decoding navigation data and calculating stand alone user position from stored data that was intermediate frequency (IF) down converted and sampled. Each module of SDR platform is categorized by function for applicability. The developed SDR software platform was tested using stored data that IF down converted and sampled. The test results present that the SDR software platform calculates user position properly. |
| 6. Design of Anti-GPS for Reasons of Security | Hazem M. El-Bakry, Nikos Mastorakis; RECENT | In this paper, the major issues on GPS like GPS |

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| | ADVANCES IN APPLIED MATHEMATICS AND COMPUTATIONAL AND INFORMATION SCIENCES | jamming in laboratory test environment are introduced. The paper mainly deals with the achievement of high accuracy of the GPS and even the high precision. The entire data are collected together in a long vector and then tested as a one input pattern. Proposed fast time delay neural networks (FTDNNs) use cross correlation in the frequency domain between the tested data and the input weights of neural networks. It is proved mathematically and practically that the number of computation steps required for the presented time delay neural networks is less than that needed by conventional time delay neural networks (CTDNNs). Simulation results using MATLAB confirm the theoretical computations. |
| 7. Design and implementation of an accurate real time GPS tracking system | Dafallah, H.A.A. | The paper talks about an attachable GPS device to monitor the movements of people. It basically is designed to monitor kids and elderly people. A small Visual Basic program was written for simulation phase, to simulate NMEA sentence input to the micro-controllers as there is no GPS device representation in Proteus simulator. |

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| 8. Designing the blind stick using the SRF-04 distance sensor based on GPS tracker and navigation | S A Hulukati1, and A Salihi | The report talks about an aide for the blind people. This tool was developed with Arduino nano because of its small size, so it does not interfere with their activities and power consumption against the speed of low command execution. This tool is also developed using a proximity sensor (SRF-04), and GPS Tracking is a remote monitoring system that uses GPS Satellites as a determinant of the location of vehicles/assets to move accurately and accurately in the form of coordinates. |
| 9. Analysis of Location Tracker Devices (GPS Microcontroller STM 32) on The Position of Solar-powered Electric Bicycles | Syamsuri , H S Maulana , D Fachrudin | This research was conduct to determine the speed and holding time of data retrieval during the data delivery from location to serve. This research was carried out by analysing the variations of holding 15 minutes with a delay of 3 seconds: holding 30 minutes with a delay of 2 seconds: holding 1 hour with a delay of 30 seconds. The research results showed that the difference between GPS (Global position system) and the delay was 4%. |

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| 10. IoT-based GPS assisted surveillance system with inter-WBAN geographic routing for pandemic situations. | Seda Savaşc, ŞenaMurtaza, CicioğlubAliÇalhanc | Coronavirus symptoms such as respiration rate, etc. can be monitored. The wearing mask status of persons can be displayed with IoT software. IoT based WBAN with a geographic routing for pandemic situations is proposed. IoT software (InfluxDB, Node-RED and Grafana) have been used. |
| 11. An Efficient Data Collection Algorithm for Wearable / Mobile Tracking System in IoT/WSN | N.A.M Alduais, J.Abdullah, J.Abdullah | In this research they talked about how to make data transmission though GPS efficient. This is because the cost of energy consumed to transmit one bit via WSN/IoT is higher than running several microcontroller instructions. Using this algorithm the power consumption save 77% of energy. |
| 12. A Cloud-Based Bus Tracking System Based on Internet-of-Things Technology | Sharmin Akter Thouhedul Islam<br>Rashidah F. Olanrewaju | This research was conduct to reduce human intervention, waiting time and energy. In this cloud based bus tracking is used to find exact location and arrival time of the bus can be tracked dynamically by using a mobile application to provide better and efficient bus service .This way rider can use their time efficiently |

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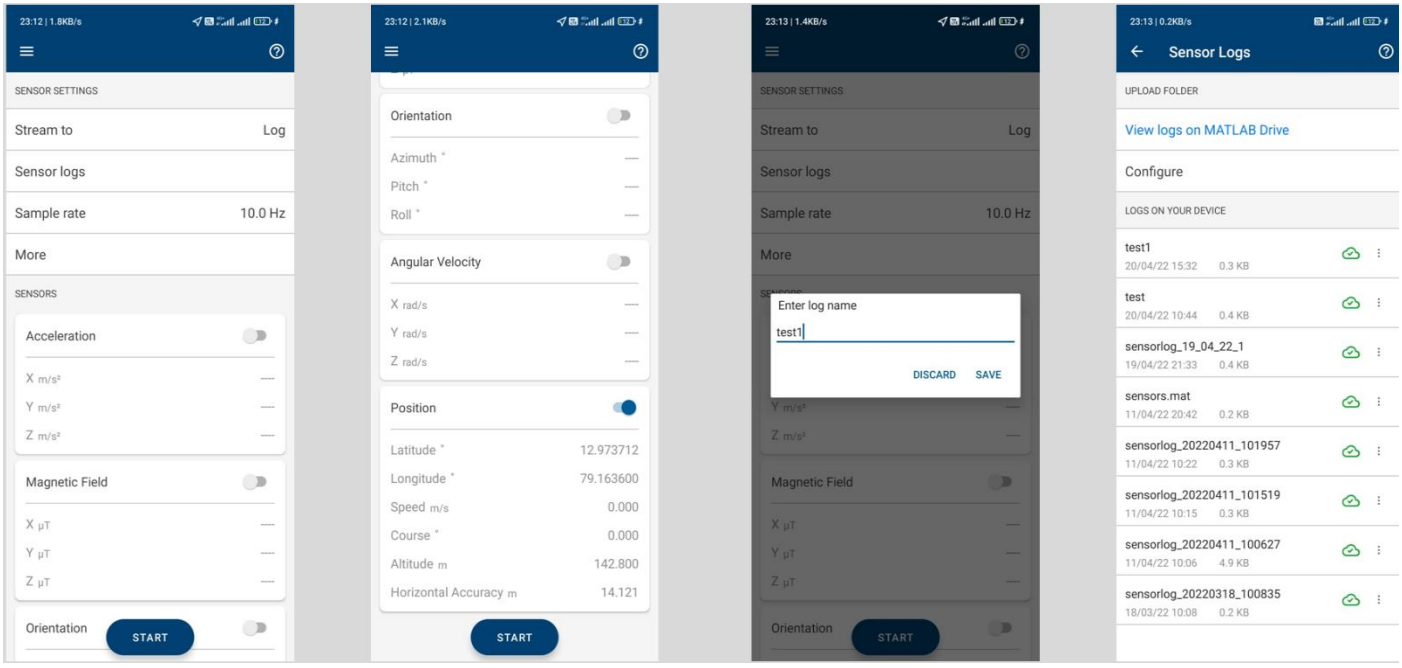
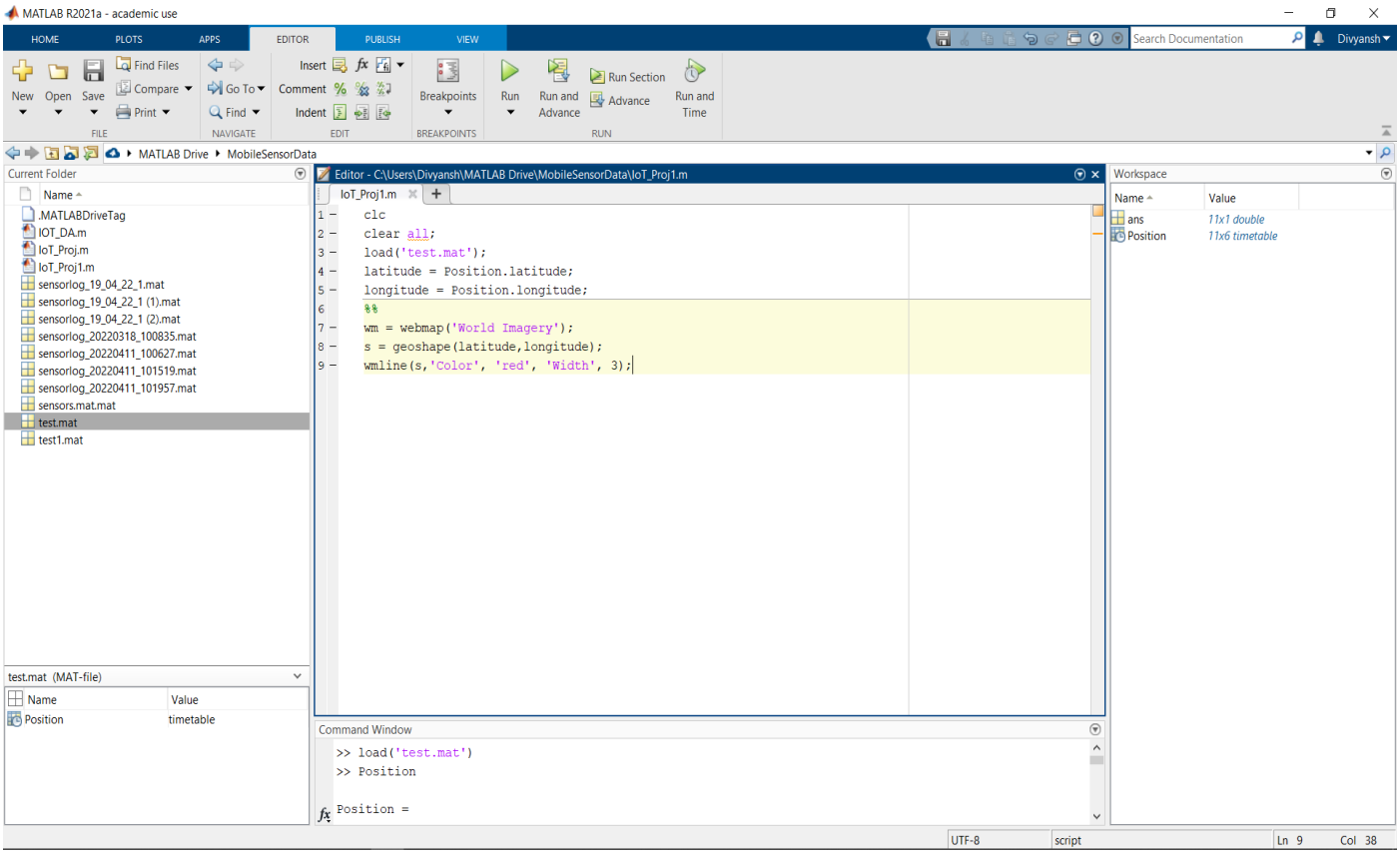
| | | And book ticket accordingly . |
| 13 . Internet of Things (IOT) Based Ambulance Tracking System Using GPS and GSM Modules | ARITRA BAKSI1, MAYOOKH BHATTACHARJEE2, SIDDHANTA GHOSH2, SOHAM KANTI BISHNU1, ARINDAM CHAKRABORTY1 | As we know there is lot of traffics on road and it common to stuck in jam. This can cause problem for the ambulance in emergency . This project aim to solve this problem using IOT. Each ambulance will be equipped with GPS and GSM modem which in case of emergency will send its GPS coordinates to the cloud server, which will then mark the shortest distance from its present location to the hospital via the place from where the emergency call has been raised |

## Images of MATLAB mobile Directories-

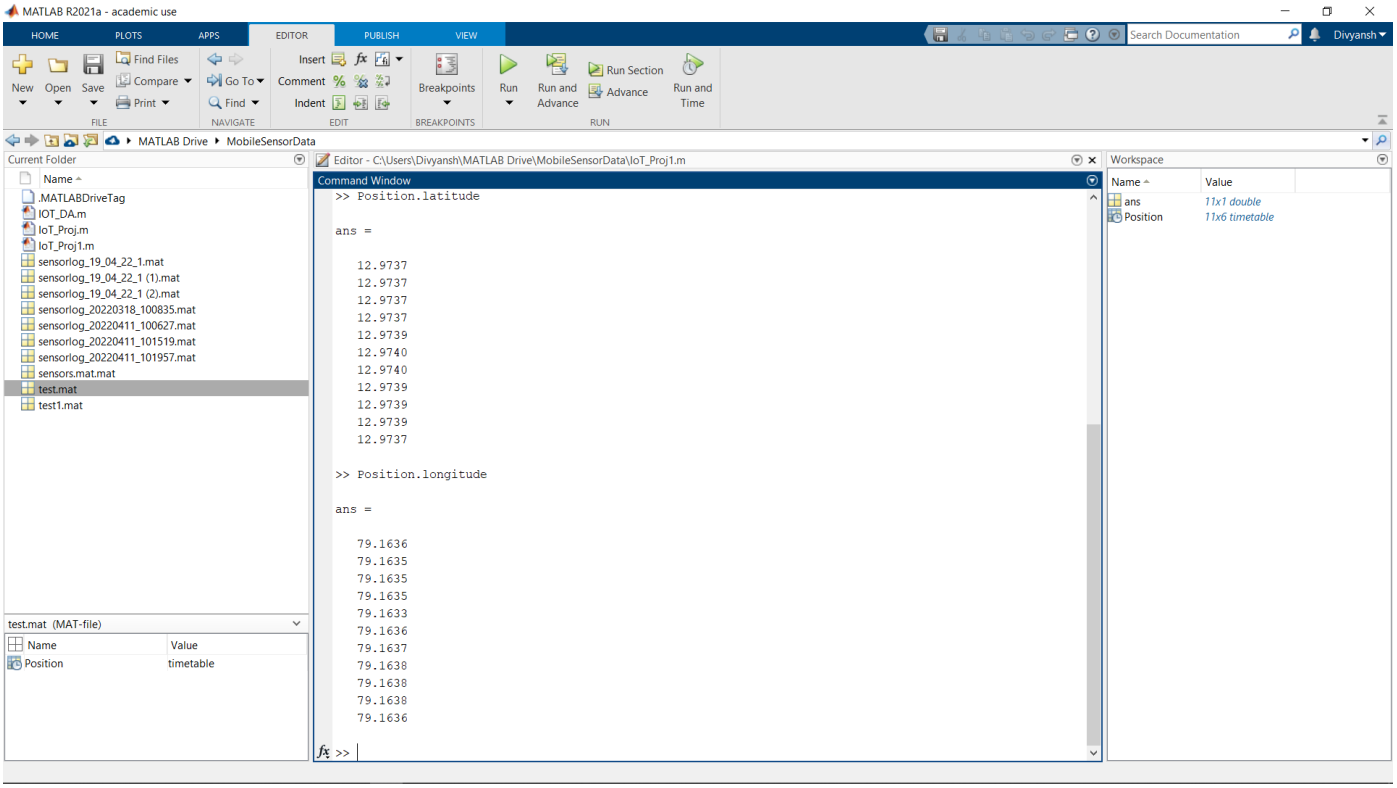


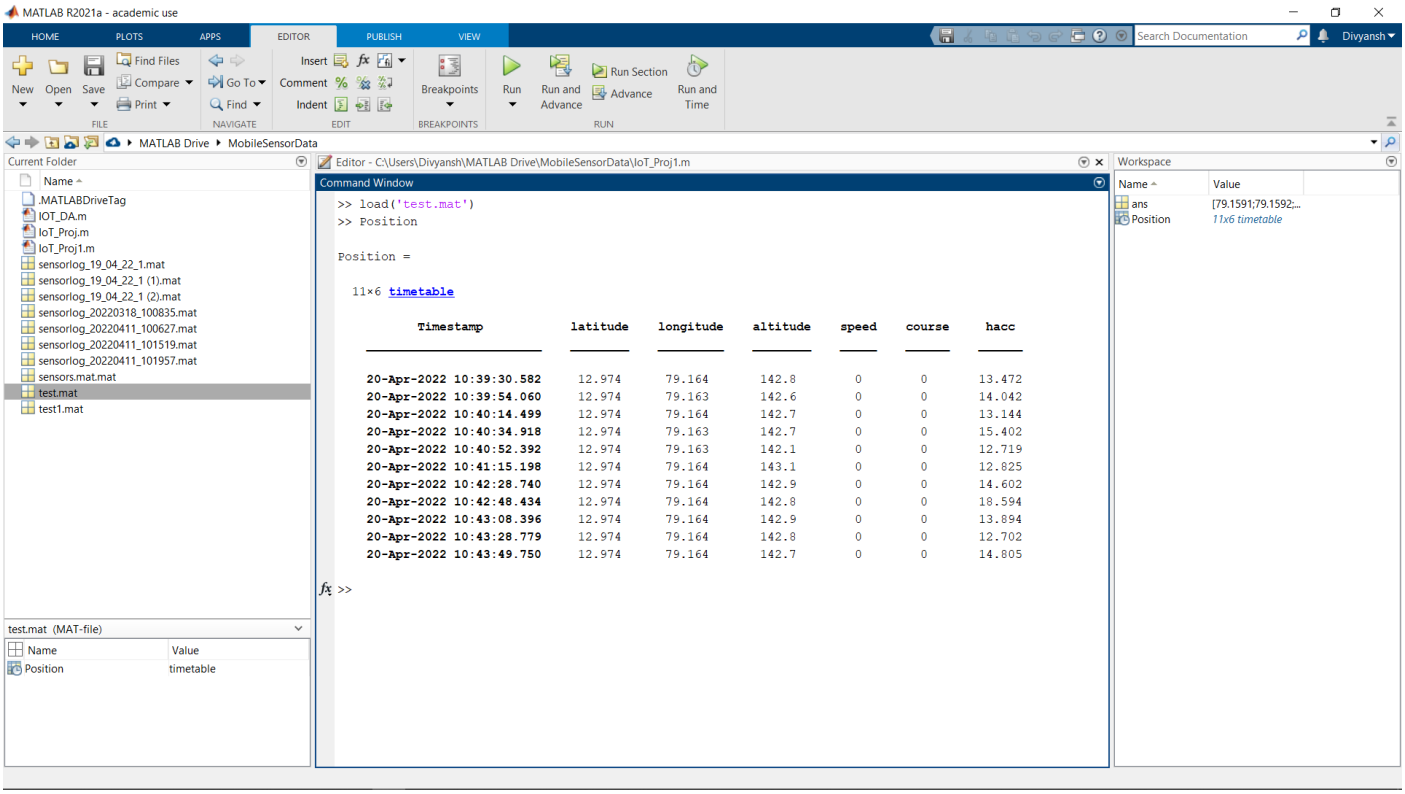
# MATLAB code-

```
clc
clear all;
load('test2.mat');
latitude = Position.latitude;
longitude = Position.longitude;
%%
wm = webmap('World Imagery');
s = geoshape(latitude,longitude);
wmline(s,'Color', 'red', 'Width', 3);
```



# Tracking-


MATLAB R2021a - academic use
>> Position.latitude
ans =
12.9737
12.9737
12.9737
12.9737
12.9739
12.9740
12.9740
12.9739
12.9739
12.9739
12.9737
>> Position.longitude
ans =
79.1636
79.1635
79.1635
79.1635
79.1633
79.1636
79.1637
79.1638
79.1638
79.1638
79.1636


MATLAB R2021a - academic use
>> load('test.mat')
>> Position
Position =
11×6 timetable
Timestamp latitude longitude altitude speed course hacc
20-Apr-2022 10:39:30.582 12.974 79.164 142.8 0 0 13.472
20-Apr-2022 10:39:54.060 12.974 79.163 142.6 0 0 14.042
20-Apr-2022 10:40:14.499 12.974 79.164 142.7 0 0 13.144
20-Apr-2022 10:40:34.918 12.974 79.163 142.7 0 0 15.402
20-Apr-2022 10:40:52.392 12.974 79.163 142.1 0 0 12.719
20-Apr-2022 10:41:15.198 12.974 79.164 143.1 0 0 12.825
20-Apr-2022 10:42:28.740 12.974 79.164 142.9 0 0 14.602
20-Apr-2022 10:42:48.434 12.974 79.164 142.8 0 0 18.594
20-Apr-2022 10:43:08.396 12.974 79.164 142.9 0 0 13.894
20-Apr-2022 10:43:28.779 12.974 79.164 142.8 0 0 12.702
20-Apr-2022 10:43:49.750 12.974 79.164 142.7 0 0 14.805

# Mapped location-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## Thank You