SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE

A

INTERNSHIP REPORT ON

Tracking and Analyzing Route Deviation For Uber Drivers

SUBMITTED TOWARDS THE

PARTIAL FULFILLMENT OF THE AWARD OF THE DEGREE OF

BACHELOR OF TECHNOLOGY (COMPUTER ENGINEERING)

BY

MS. ISHIKA NARKHEDE [UCS20F1091]

UNDER THE GUIDANCE
OF

Radhakrishna Naik

Department of Computer Engineering

SANJIVANI COLLEGE OF ENGINEERING

KOPARGAON-423603

(AN AUTONOMOUS INSTITUTE)

2023-2024

[2023-2024]

Sanjivani College of Engineering,
Kopargaon-423603(An Autonomous
Institute)

DEPARTMENT OF COMPUTER ENGINEERING

CERTIFICATE

This is to certify that the internship entitled

Submitted by

Ishika Sachin Narkhede

is a bonafide work carried out by students under the supervision of Radhakrishna Naik and it is submitted towards the partial fulfillment of the requirement of Bachelor of Technology (Computer Engineering).
During the Academic Year 2023-24

Radhakrishna Naik
[Internal Guide]

Dr. S.R. Deshmukh
[Project Coordinator]

Dr. D. B. Kshirsagar
[Head of Dept.]

Dr. A. G. Thakur
[Director]

Signature of Internal Examiner

Signature of External Examiner

INTERNSHIP
APPROVAL SHEET

INTERNSHIP REPORT ON
"Tracking and Analyzing Route Deviation For Uber Drivers"
Is Successfully Completed By

Ishika Sachin Narkhede

At

DEPARTMENT OF
COMPUTER ENGINEERING

SANJIVANI COLLEGE OF ENGINEERING, KOPARGAON – 423603

(AN AUTONOMOUS

INSTITUTE) SAVITRIBAI

PHULE PUNE UNIVERSITY,

PUNE ACADEMIC YEAR

2023-24

Radhakrishna Naik
[Internal Guide]

Dr. S.R. Deshmukh
[Project Coordinator]

Dr. D. B. Kshirsagar

[Head of Dept.]

Dr. A. G. Thakur

[Director]

Certificate of Originality

This is to certify that the Internship report entitled "Tracking and Analyzing Route Deviation For Uber Drivers" submitted to Savitribai Phule Pune University, Pune in partial fulfilment of the requirements for the award of the degree for B. Tech (Computer Engineering) is an authentic and original work / course completed by Ms. Ishika Sachin Narkhede with Seat no UCS20F1091 under Radhakrishna Naik guidance at Sanjivani College of Engineering Kopargaon.

The matter embodied in the report is the genuine work/course completed by the student and not copied or stolen from anywhere else.

Date:

Signature of Student:	Signature of Mentor:
Name of Student: Ishika Narkhede	Name of Mentor: Radhakrishna Naik
Mobile no: 9373259769	Mobile no: 9850603297
Email id: ishika.narkhede2018@gmail.com	Email id: radhakrishnanaikcomp@sanjivani.org.in

The internship work presentation of Ms. Ishika Narkhede is conducted on 12-March-2024

Sign of Internal Examiner	Sign of External Examiner
Name:	Name:

Acknowledgement

This has been a subject with tremendous scope to research, which leads one's mind to explore new heights in the field of Computer Engineering, and its miscellaneous applications. We dedicate all our project work to our esteemed guide **Radhakrishna Naik** whose interest and guidance helped us to complete the work successfully as well as he has provided facilities to explore the subject with more enthusiasm.

This experience will always encourage us to do our work perfectly and professionally. We also extend our gratitude to **Dr. D. B. Kshirsagar (H.O.D. Computer Department).**We express our immense pleasure and thankfulness to all the teachers and staff of the Department of Computer Engineering, Sanjivani College of Engineering, Kopargaon for their cooperation and support. Last but not least, we thank all others, and especially our parents and friends, who in one way or another, helped us in the successful completion of this project.

Abstract

In the rapidly evolving economy, companies like Uber depend heavily on their drivers to follow designated routes to ensure efficient and safe transportation. However, deviations from these routes can lead to increased operational costs, inefficiencies, and safety concerns. This project aims to develop a comprehensive system to analyze historical trip data of Uber drivers, identify route deviations, and impose penalties on drivers who exceed predefined limits. This project involves developing an algorithm to accurately reconstruct the actual routes taken by drivers using historical GPS data. This will be compared against pre-defined or optimal routes to detect any deviations. By establishing acceptable thresholds for route deviations, the system will be able to calculate appropriate fines for non-compliance.

Utilizing Python and libraries such as Pandas, NumPy, Geopy, the project will handle data preprocessing, geographical computations, and visualization tasks. The expected outcomes include a reliable mechanism for route tracking, deviation detection, fine calculation, and comprehensive reporting. This system will enable Uber to enforce route adherence more effectively, enhance operational efficiency, reduce unnecessary costs, and potentially improve passenger safety by ensuring that drivers follow the most efficient and safe routes.

Contents

Chapter 1
Introduction

1.1 Problem Definition

The goal of this project is to develop a system that can analyze historical trip data of Uber drivers to identify instances where drivers have deviated from their assigned routes. The system will detect these deviations, quantify them against established thresholds, and calculate appropriate fines for drivers who exceed the allowable limits. The lack of real-time data constraints necessitates the use of historical data to build and test this system.

1.2 Introduction

In the modern era of the gig economy, ride-sharing services such as Uber have revolutionized urban transportation. These platforms offer a convenient, efficient, and flexible mode of transport, relying heavily on a vast network of independent drivers. However, ensuring that these drivers adhere to prescribed routes is crucial for maintaining operational efficiency, cost-effectiveness, and passenger safety. Despite the sophisticated algorithms used for route optimization and driver navigation, deviations from assigned routes remain a significant challenge, impacting both the company and its customers.

Route deviations by Uber drivers can occur for various reasons, including traffic conditions, personal preferences, or intentional detours. While some deviations might be unavoidable or even beneficial in certain scenarios, frequent and unjustified deviations can lead to several problems. They can result in increased fuel consumption, longer travel times, higher operational costs, and potential safety risks. Furthermore, deviations can undermine customer trust and satisfaction, as passengers expect their rides to follow the most efficient and safe routes. Currently, Uber lacks a robust system to track these deviations comprehensively and impose penalties for non-compliance based on historical trip data. This gap presents an opportunity to develop a solution that can analyze historical trip data, identify deviations, and implement a fair and transparent penalty system for drivers who exceed acceptable limits. Such a system would not only help in maintaining route adherence but also enhance overall operational efficiency and customer satisfaction.

This project aims to address this challenge by developing a comprehensive system to analyze historical trip data of Uber drivers. The first step involves developing an algorithm to accurately reconstruct the actual routes taken by Uber drivers using historical GPS data. This requires sophisticated data preprocessing and geographical computations to ensure that the reconstructed routes reflect the drivers' movements accurately. Once the actual routes are reconstructed, the next step is to compare them against pre-defined or optimal routes to detect any deviations. This involves implementing a method to identify and measure deviations in terms of distance, time, or other relevant metrics. To ensure fairness, it is essential to define acceptable limits for route deviations. These thresholds will be based on various factors, such as traffic conditions, trip duration, and geographical constraints, to determine what constitutes an acceptable deviation. A transparent and fair method will be designed to calculate fines for drivers who exceed the defined thresholds. Finally, a tool will be created to provide detailed summaries of route deviations and penalties imposed on drivers.

Chapter 2

Business Understanding

2.1 Business Objectives:

1. Improving Customer Satisfaction: Ensuring drivers stick to the optimal route improves predictability of travel times. Minimizing unnecessary deviations helps avoid inflated fares due to longer routes, leading to more accurate pricing. Customers trust that they are being charged fairly when they see their driver following the expected route.

2. Enhancing Operational Efficiency: Tracking deviations can help Uber understand common issues with current routing algorithms and improve them. Better understanding of driver behavior can aid in optimizing driver allocation and managing demand more effectively.

3. Ensuring Driver Accountability: Penalizing deviations enforces adherence to company standards and policies. It helps in evaluating driver performance, identifying training needs, and rewarding high-performing drivers.

4. Cost Management: Minimizing route deviations can reduce fuel consumption, lowering operational costs. Efficient routing ensures drivers complete more trips in less time, increasing overall productivity.

2.2 Maximize:

1. Accuracy and Reliability: Maximize the accuracy of deviation detection algorithms to ensure only significant and unjustifiable deviations are flagged.

2. Fairness and Transparency: Provide clear guidelines to drivers about what constitutes a deviation and the penalties associated with it.

3. Driver and Passenger Safety: Ensure the system promotes safer routes and considers factors such as road conditions and crime rates.

2.3 Minimize:

1. False Positives: Ensure the system accurately detects genuine deviations rather than minor, justifiable changes in the route due to traffic, road closures, or passenger requests.

2. System Latency: Reduce delays in tracking and reporting deviations to allow for immediate corrective actions.

3. Implementation Costs: Keep costs low for implementing and maintaining the tracking system.

4. Privacy Invasion: Ensure minimal invasion of driver and passenger privacy by only collecting necessary data and anonymizing sensitive information.

2.4 Business Constraints:

1. Cost Efficiency: Any system implementation should be cost-effective, considering the potential expenses associated with technology development, maintenance, and enforcement.

2. Customer Experience: The measures taken to penalize route deviations should not compromise the overall customer experience. This includes ensuring that passengers are not inconvenienced by excessively long routes or delays caused by penalties.

3. Legal and Regulatory Compliance: The system must comply with local laws and regulations regarding privacy, data collection, and employment practices. This might include obtaining consent from drivers for tracking their routes and ensuring that penalties are administered fairly and transparently.

4. Fairness and Transparency: The criteria for determining route deviations and applying penalties should be clearly defined and communicated to drivers. The process should be transparent and perceived as fair to maintain driver trust and morale.

5. Driver Retention and Satisfaction: Introducing penalties for route deviations could potentially impact driver retention and satisfaction. It's important to consider the impact on driver earnings and morale, as well as implementing measures to provide feedback and support for improvement.

6. Technical Feasibility: The tracking system must be technically feasible and reliable, capable of accurately monitoring driver routes in real-time and identifying deviations from optimal paths.

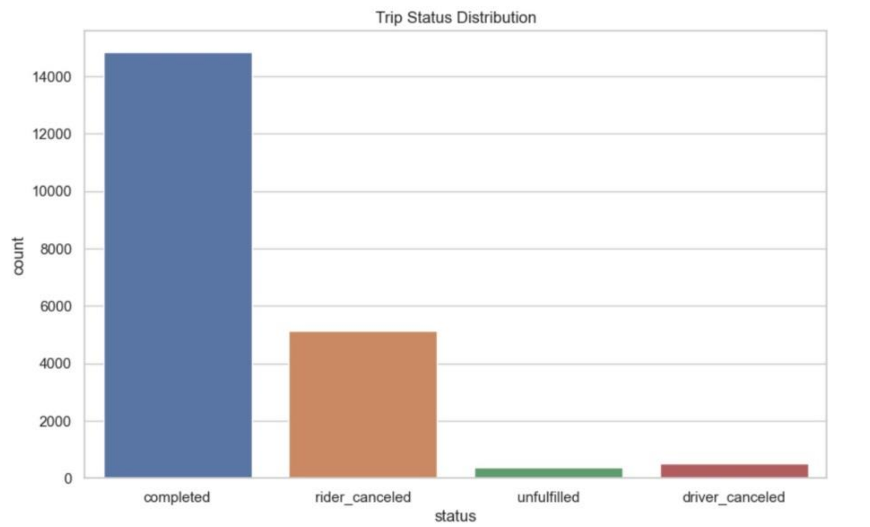
Chapter 3

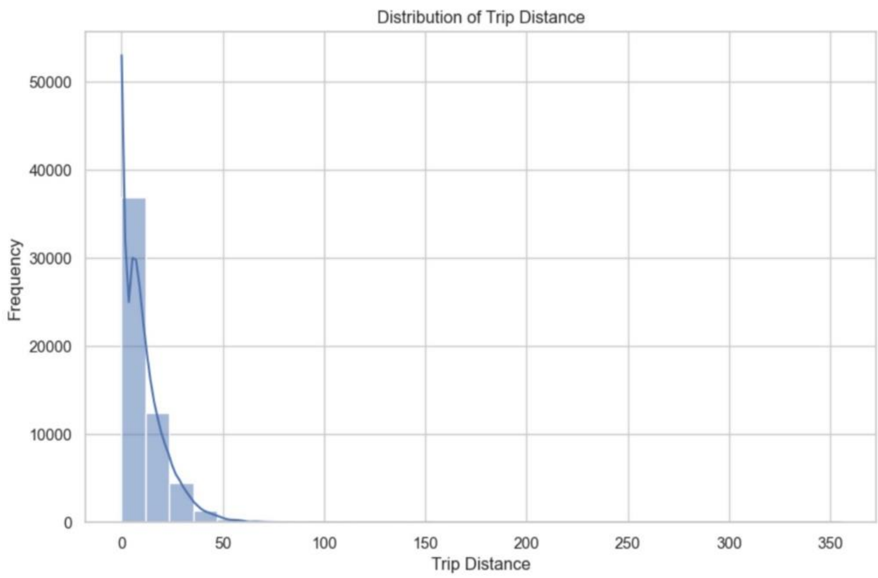
Data Dictionary And Exploratory Data Analysis

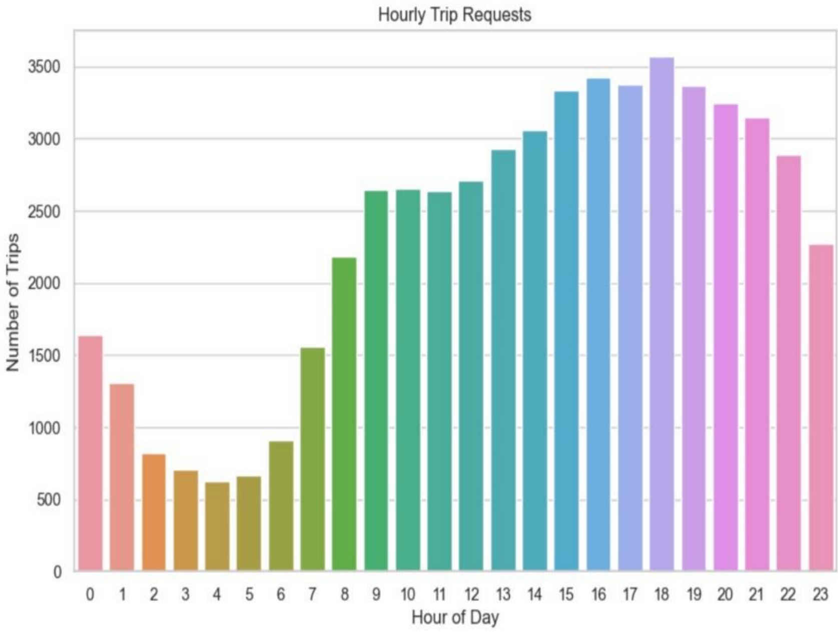
Column name	Description	Data Type
Trip UUID	Unique identifier for each trip (linked from Trip Data).	varchar
Driver UUID	Unique identifier for each rider (linked from Trip Data).	varchar
Driver first name	First name of the driver	char
Driver surname	Surname of driver	char
Vehicle UUID	Unique identifier for each Vehicle(linked from Trip Data).	varchar
Number plate	Unique number plate of vehicle	varchar
Service	Service of vehicle	char
Trip request time	Time of trip	Date,int
Trip drop-off time	Trip drop time	Date, int
Pick-up address	Adress of pick-up request	varchar
Drop-off address	Adress to drop the passenger	varchar
Trip distance	Distance of trip	int
Trip status	Status of trip where the driver is	char

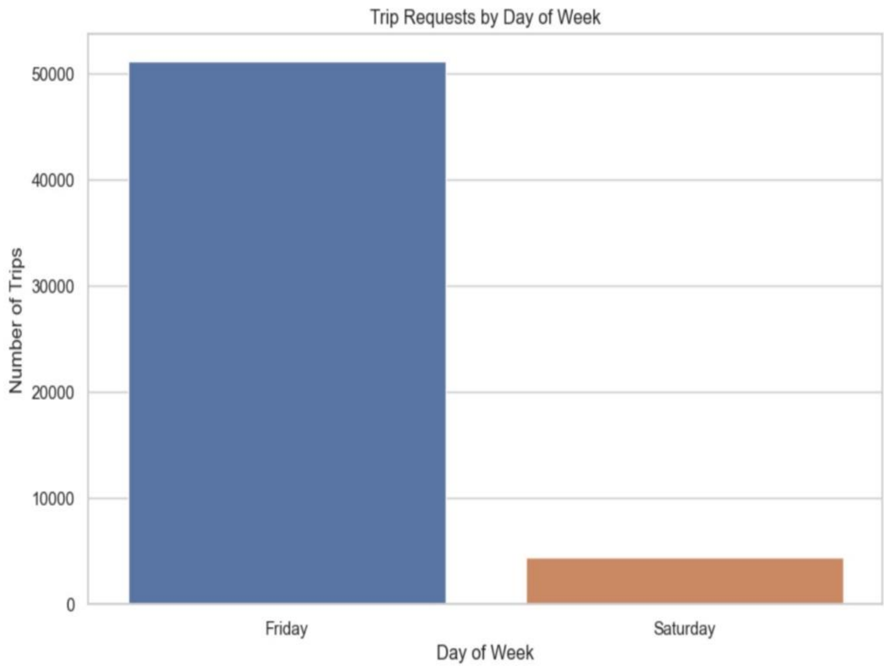
3.1 Exploratory Data Analysis (EDA) for Crop Price Prediction:

1. Data Understanding: Gain a comprehensive understanding of the available data sources, including GPS data, trip records, driver profiles, and any other relevant information related to routes and deviations.
2. Data Cleaning:
3. Handle missing values: Identify and deal with missing values in the dataset, especially in critical fields like GPS coordinates and timestamps.
4. Remove duplicates: Check for and eliminate duplicate records to ensure data consistency.
5. Address outliers: Identify outliers in the data, such as unusually long or short trips, and decide how to handle them (e.g., removing them or investigating further).
6. Descriptive Statistics:
7. Summary statistics: Calculate descriptive statistics for key variables like trip duration, distance travelled, and average speed to understand their distributions.
8. Time analysis: Analyse temporal aspects such as peak hours, days with the highest number of trips, and average trip durations over time.
9. Visualization:
10. Route visualization: Plot the routes taken by drivers on a map to visually identify common routes, deviations, and areas with frequent deviations.
11. Histograms and density plots: Visualize distributions of variables like trip duration, distance, and speed to identify patterns and outliers.
12. Heatmaps: Create heatmaps to visualize spatial patterns of trip origins, destinations, and deviations across different regions.
13. Correlation Analysis:
14. Correlation matrix: Calculate correlations between variables to identify relationships (e.g., correlation between trip duration and distance).
15. Correlation with deviations: Examine correlations between trip characteristics (e.g., time of day, traffic conditions) and the likelihood of deviations.
16. Driver Profiling:
17. Driver behaviour analysis: Analyse driver-specific characteristics such as driving patterns, frequency of deviations, and compliance with optimal routes.
18. Segment drivers: Group drivers based on their behaviour (e.g., frequent deviation vs. compliant drivers) to understand different driver profiles.


Trip Status Distribution
count
14000
12000
10000
8000
6000
4000
2000
0
completed
rider_canceled
unfulfilled
driver_canceled
status


Distribution of Trip Distance
Frequency
50000
40000
30000
20000
10000
0
0
50
100
150
200
250
300
350
Trip Distance


Hourly Trip Requests
Number of Trips
3500
3000
2500
2000
1500
1000
500
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Hour of Day


Trip Requests by Day of Week
Number of Trips
50000
40000
30000
20000
10000
0
Friday
Saturday
Day of Week

Chapter 4

Data Preprocessing

4.1 Data Preprocessing :

1. Data Collection: Gather relevant data sources, including GPS data, trip records, driver profiles, and any other information needed to track and analyze route deviations.

2. Data Cleaning: This step involves identifying and handling missing values, outliers, and inconsistencies in the data. For example, missing GPS coordinates or erroneous timestamps may need to be addressed.

3. Feature Engineering: Create or extract relevant features from the raw data that can be used to identify route deviations. This may include features such as distance traveled, route taken, speed, time of day, traffic conditions, etc.

4. Data Integration: If data is collected from multiple sources, integrate them into a unified dataset for analysis. Ensure that data from different sources are properly aligned and consistent.

5. Normalization: Normalize or scale numerical features to a similar range to prevent certain features from dominating others during analysis.

6. Handling Categorical Data: If the dataset contains categorical variables (e.g., driver IDs, trip types), encode them into numerical values using techniques like one-hot encoding or label encoding.

7. Temporal Aggregation: Aggregate data over time intervals if needed (e.g., hourly, daily) to analyze trends and patterns in route deviations over different time periods.

8. Spatial Analysis: Utilize spatial analysis techniques to identify spatial patterns in route deviations, such as clustering of deviations in certain areas or routes.

9. Feature Selection: Select the most relevant features for modeling based on their importance and correlation with route deviations. This helps reduce dimensionality and improve model performance.

10. Data Splitting: Split the preprocessed dataset into training, validation, and testing

sets to evaluate the performance of predictive models accurately.

11. Data Visualization: Visualize the preprocessed data to gain insights into distributional characteristics, correlations between variables, and potential outliers or anomalies.

Chapter 5

Optimization And Fine Tuning

1. Data Quality Improvement

Data Accuracy: Regularly validate GPS data to ensure accuracy and reduce noise. Implement filters to correct or remove erroneous data points.

2. Feature Selection and Engineering

Feature Importance Analysis: Use techniques such as Random Forests or Gradient Boosting to identify the most significant features. This helps in focusing on the features that have the most impact on deviation detection.

3. Model Optimization

Algorithm Selection: Experiment with different algorithms (e.g., Random Forest, Gradient Boosting, Neural Networks) to find the best fit for the data.

4. Handling Imbalanced Data

Resampling Techniques: Use techniques like SMOTE (Synthetic Minority Over-sampling Technique) or ADASYN (Adaptive Synthetic Sampling) to handle class imbalance if unjustified deviations are significantly less frequent than justified deviations.

5. Real-Time Processing

Efficient Data Processing Pipelines: Optimize data processing pipelines to handle real-time data. Use tools and frameworks like Apache Kafka or Apache Flink for real-time data ingestion and processing.

Low Latency Algorithms: Implement algorithms that can process data quickly and provide real-time deviation detection.

6. Evaluation and Monitoring

Evaluation Metrics: Use a combination of precision, recall, F1-score, and AUC-ROC to evaluate model performance. Precision and recall are particularly important to balance false positives and false negatives.

Chapter 6

Benefit to the Clients

1. Fair and Transparent Pricing:
Accurate Fares: Clients are charged fairly based on the optimal route, avoiding unnecessary additional costs due to deviations.
Price Transparency: Clear and predictable fare structures build trust and confidence in the service.

2. Improved Reliability and Predictability:
Consistent Travel Times: Adherence to planned routes ensures more consistent and predictable arrival times.
Reduced Uncertainty: Clients can better estimate their travel time, reducing anxiety and improving planning.

3. Enhanced Safety:
Safer Routes: Sticking to planned routes typically ensures adherence to safer, well-travelled paths.
Monitoring Driver Behaviour: Real-time tracking helps ensure that drivers are not engaging in risky behaviours like taking unauthorized detours.

4. Increased Trust and Satisfaction:
Accountability:
Knowing that deviations are tracked and penalized gives clients confidence that Uber is committed to providing reliable and honest service.
Positive Experience: High service standards and quality assurance lead to a more satisfactory ride experience.

5. Reduced Travel Time:
Optimized Routes: Ensuring drivers follow the best routes can minimize travel time, making the service more efficient for clients.

6. Informed Decisions:
Trip Tracking: Clients can monitor the route in real-time through the app, making them feel more in control of their journey.
Historical Data: Access to trip history and route information allows clients to review and verify their trips.

7. Enhanced Customer Support:
Resolution of Issues: With detailed route data, customer support can more effectively address complaints and issues related to route deviations.
Proactive Measures: Uber can identify and address patterns of deviations proactively, leading to fewer issues for clients.

Chapter 7

Conclusion

The project to track and penalize route deviations of Uber drivers is designed to enhance operational efficiency, driver accountability, and passenger satisfaction. By leveraging comprehensive data collection, insightful Exploratory Data Analysis (EDA), and robust feature engineering, we aim to develop a reliable system that accurately identifies and addresses unjustified deviations. Key data points include GPS coordinates, trip details, traffic conditions, weather data, driver behavior metrics, and passenger feedback. EDA helps uncover patterns and anomalies, facilitating the identification of significant deviation metrics and their underlying causes. Visualization techniques, such as route maps and deviation distributions, provide clear insights into the data.

Chapter 11

References

1. https://www.researchgate.net/publication/352559892_GPS_Based_Vehicle_Tracking_System
2. https://www.academia.edu/12234429/Research_paper_on_VEHICLE_TRACKING_SYSTEM_USING_GPS_AND_GSM_
3. https://www.slideshare.net/slideshow/a-major-project-report-on-quot-vehicle-tracking-system-using-gps-and-gsm-quot-project-report-included-which-you-can-use-for-your-college-project/259642891
4. https://www.scribd.com/doc/95973811/GPS-Tracking-System-Project-Report
5. https://www.irjmets.com/uploadedfiles/paper//issue_4_april_2023/37054/final/fin_irjmets1682683200.pdf

<table>
<tr><td rowspan="2">SRES', Sanjivani College of Engineering, Kopargaon - 423603</td><td colspan="3">Weekly Assessment Report</td><td>Page</td><td>1of1</td></tr>
<tr><td colspan="3">Department of Computer Engineering</td><td>Prepared on</td><td>01/04/2024</td></tr>
<tr><td>ACADEMIC YEAR</td><td>FORMAT NO.</td><td>REVISION NO.</td><td>DATE</td><td>CLASS</td><td>DIV</td></tr>
<tr><td>2023-2024</td><td>ACAD-F-</td><td>0</td><td>00/00/0000</td><td>BTECH COMP</td><td>B</td></tr>
<tr><td>Semester</td><td colspan="2">II</td><td>01/04/2024</td><td>08/04/2024</td><td></td></tr>
</table>

Group ID	Project Title	Name of Students	Period (Week)
43	Tracking and Analyzing Route Deviation For Uber Drivers	Ishika Sachin Narkhede	Week 1

Work done:-

Data Collection

Here we have gathered GPS data from Uber drivers, including timestamps, coordinates, and trip details, over a specified period. Ensure data accuracy and completeness by using preprocessing techniques to clean and standardize the dataset, removing anomalies, and ensuring consistency for effective analysis of route deviations.

Radhakrishna Naik Project Guide	Dr. S.R Deshmukh Project Coordinator	Dr. D. B.Kshirsagar HOD Comp Engg

<table>
<tr><td rowspan="2">SRES', Sanjivani College of Engineering, Kopargaon - 423603</td><td colspan="3">Weekly Assessment Report</td><td>Page</td><td>1of1</td></tr>
<tr><td colspan="3">Department of Computer Engineering</td><td>Prepared on</td><td>08/04/2024</td></tr>
<tr><td>ACADEMIC YEAR</td><td>FORMAT NO.</td><td>REVISION NO.</td><td>DATE</td><td>CLASS</td><td>DIV</td></tr>
<tr><td>2023-2024</td><td>ACAD-F-</td><td>0</td><td>00/00/0000</td><td>BTECH COMP</td><td>B</td></tr>
<tr><td>Semester</td><td colspan="2">II</td><td>08/04/2024</td><td>15/04/2024</td><td></td></tr>
</table>

Group ID	Project Title	Name of Students	Period (Week)
43	Tracking and Analyzing Route Deviation For Uber Drivers	Ishika Sachin Narkhede	Week 2

Work done:-

Data Preprocessing

Here we have performed data preprocessing by cleaning GPS data by removing duplicates and correcting errors, standardizing coordinates and timestamps, and handling missing values. This ensures data accuracy and reliability for subsequent analysis, enabling effective comparison between actual and optimal routes to identify and analyze route deviations accurately.

Radhakrishna Naik Project Guide	Dr. S.R Deshmukh Project Coordinator	Dr. D. B.Kshirsagar HOD Comp Engg

<table>
<tr><td rowspan="2">SRES', Sanjivani College of Engineering, Kopargaon - 423603</td><td colspan="3">Weekly Assessment Report</td><td>Page</td><td>1of1</td></tr>
<tr><td colspan="3">Department of Computer Engineering</td><td>Prepared on</td><td>15/04/2024</td></tr>
<tr><td>ACADEMIC YEAR</td><td>FORMA T NO.</td><td>REVISIO N NO.</td><td>DATE</td><td>CLASS</td><td>DIV</td></tr>
<tr><td>2023-2024</td><td>ACAD-F-</td><td>0</td><td>00/00/0000</td><td>BTECH COMP</td><td>B</td></tr>
<tr><td>Semester</td><td colspan="2">II</td><td>15/04/2024</td><td>20/04/2024</td><td></td></tr>
</table>

Group ID	Project Title	Name of Students	Period (Week)
43	Tracking and Analyzing Route Deviation For Uber Drivers	Ishika Sachin Narkhede	Week 3

Work done:-

Feature Selection:

Here we have identified relevant features For tracking and analyzing route deviation in Uber drivers, like GPS coordinates, timestamps, trip distances, traffic conditions, historical travel times, driver behavior metrics, and external factors such as weather. These features enable accurate deviation detection, pattern recognition, and insights for optimizing route efficiency and driver performance.

Radhakrishna Naik	Dr. S.R Deshmukh	Dr. D. B.Kshirsagar
Project Guide	Project Coordinator	HOD Comp Engg

SRES', Sanjivani College of Engineering, Kopargaon - 423603	**Weekly Assessment Report**			Page	1of1
	Department of Computer Engineering			Prepared on	22/04/2024
ACADEMIC YEAR	FORMAT NO.	REVISION NO.	DATE	CLASS	DIV
2023-2024	**ACAD-F-**	0	00/00/0000	BTECH COMP	B
Semester	II		22/04/2024	29/04/2024	

Group ID	Project Title	Name of Students	Period (Week)
43	Tracking and Analyzing Route Deviation For Uber Drivers	Ishika Sachin Narkhede	Week 4

Work done:-

Deviation Analysis:

Here we compare the actual routes taken by drivers to the baseline routes using spatial analysis techniques.

Identify deviations in terms of distance, time, and specific locations where deviations occur.

Radhakrishna Naik Project Guide	Dr. S.R Deshmukh Project Coordinator	Dr. D. B.Kshirsagar HOD Comp Engg

<table>
<tr><td rowspan="2">SRES', Sanjivani College of Engineering, Kopargaon - 423603</td><td colspan="3">Weekly Assessment Report</td><td>Page</td><td>1of1</td></tr>
<tr><td colspan="3">Department of Computer Engineering</td><td>Prepared on</td><td>29/04/2024</td></tr>
<tr><td>ACADEMIC YEAR</td><td>FORMA T NO.</td><td>REVISIO N NO.</td><td>DATE</td><td>CLASS</td><td>DIV</td></tr>
<tr><td>2023-2024</td><td>ACAD-F-</td><td>0</td><td>00/00/0000</td><td>BTECH COMP</td><td>B</td></tr>
<tr><td>Semester</td><td colspan="2">II</td><td>29/04/2024</td><td>6/05/2024</td><td></td></tr>
</table>

Group ID	Project Title	Name of Students	Period (Week)
43	Tracking and Analyzing Route Deviation For Uber Drivers	Ishika Sachin Narkhede	Week 5

Work done:-

Statistical Analysis:

We have calculated descriptive statistics for key variables like trip duration, distance travelled, and average speed to understand their distributions. Analyse temporal aspects such as peak hours, days with the highest number of trips, and average trip durations over time.

Radhakrishna Naik Project Guide	Dr. S.R Deshmukh Project Coordinator	Dr. D. B.Kshirsagar HOD Comp Engg

SRES', Sanjivani College of Engineering, Kopargaon - 423603	**Weekly Assessment Report**			Page	1of1
	Department of Computer Engineering			Prepared on	06/05/2024
ACADEMIC YEAR	FORMAT NO.	REVISION NO.	DATE	CLASS	DIV
2023-2024	**ACAD-F-**	0	00/00/0000	BTECH COMP	B
Semester	II		06/05/2024	13/05/2024	

Group ID	Project Title	Name of Students	Period (Week)
43	Tracking and Analyzing Route Deviation For Uber Drivers	Ishika Sachin Narkhede	Week 6

Work done:-

Visualization:

We have Plot the routes taken by drivers on a map to visually identify common routes, deviations, and areas with frequent deviations. Also we create dashboards and graphs to display key metrics and insights.

Radhakrishna Naik Project Guide	Dr. S.R Deshmukh Project Coordinator	Dr. D. B.Kshirsagar HOD Comp Engg

<table>
<tr><td rowspan="2">SRES', Sanjivani College of Engineering, Kopargaon - 423603</td><td colspan="3">Weekly Assessment Report</td><td>Page</td><td>1of1</td></tr>
<tr><td colspan="3">Department of Computer Engineering</td><td>Prepared on</td><td>13/05/2024</td></tr>
<tr><td>ACADEMIC YEAR</td><td>FORMA T NO.</td><td>REVISIO N NO.</td><td>DATE</td><td>CLASS</td><td>DIV</td></tr>
<tr><td>2023-2024</td><td>ACAD-F-</td><td>0</td><td>00/00/0000</td><td>BTECH COMP</td><td>B</td></tr>
<tr><td>Semester</td><td colspan="2">II</td><td>13/05/2024</td><td>20/05/2024</td><td></td></tr>
</table>

Group ID	Project Title	Name of Students	Period (Week)
43	Tracking and Analyzing Route Deviation For Uber Drivers	Ishika Sachin Narkhede	Week 7

Work done:-

Here, we have found fraud drivers from the relevant data. According to it, we add penalty on that driver name.

Radhakrishna Naik Project Guide	Dr. S.R Deshmukh Project Coordinator	Dr. D. B.Kshirsagar HOD Comp Engg

SRES', Sanjivani College of Engineering, Kopargaon - 423603	**Weekly Assessment Report**			Page	1of1
	Department of Computer Engineering			Prepared on	20/05/2024
ACADEMIC YEAR	FORMAT NO.	REVISION NO.	DATE	CLASS	DIV
2023-2024	**ACAD-F-**	0	00/00/0000	BTECH COMP	B
Semester	II		20/05/2024	27/05/2024	

Group ID	Project Title	Name of Students	Period (Week)
43	Tracking and Analyzing Route Deviation For Uber Drivers	Ishika Sachin Narkhede	Week 8

Work done:-

At the end of the project, the distance is calculated by difference between trip1 and trip2. If the distance is exceeded By 10 km then driver get fine of 10/- on each km.

Radhakrishna Naik Project Guide	Dr. S.R Deshmukh Project Coordinator	Dr. D. B.Kshirsagar HOD Comp Engg