



TrippyTally - GenAI based Travel Expense Planner

ON

Submitted in partial fulfilment of the requirements of
the degree of

**Bachelor of Engineering
(Information Technology)**

By

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Under the guidance of

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**VIVEKANAND EDUCATION SOCIETY'S INSTITUTE OF TECHNOLOGY, Chembur,
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(An Autonomous Institute, Affiliated to University of Mumbai)

April 2025



Vivekanand Education Society's Institute of Technology

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Certificate

This is to certify that project entitled

TrippyTally

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Declaration

I declare that this written submission represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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Siddhant Sathe 50

Abstract

TrippyTally is an intelligent, full-stack web application designed to simplify travel cost estimation across multiple modes of transportation, including buses, trains, flights, and personal vehicles. With real-time fare calculations, historical data tracking, and AI-driven predictions, TrippyTally empowers users to make informed financial decisions while planning their travel routes. By integrating a robust backend powered by Flask and MongoDB, alongside a dynamic frontend built with React.js, the application ensures seamless functionality, rapid responses, and an intuitive user experience.

A key innovation of TrippyTally lies in its ability to cache frequently requested routes and fare details, thereby accelerating response times for repeat queries. Additionally, the incorporation of generative AI enhances fare estimation accuracy, factoring in variable costs such as fuel prices, seasonal fluctuations, and demand-based fare adjustments. Users can filter previous calculations based on their source, destination, and chosen travel mode, making expense management more transparent and efficient.

This application embodies the fusion of data-driven insights and real-time adaptability, presenting an innovative approach to travel expense calculation in a fast-paced world

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Chapter 1

Introduction

1.1. Introduction

Travel planning involves multiple variables, including transportation costs, time, and budgeting. TrippyTally simplifies this process by offering a user-friendly platform to compute travel expenses across different modes such as buses, trains, airlines, and personal vehicles. The application enables users to compare fares, retrieve past travel estimates, and filter historical data for better financial planning.

1.2. Objectives

- Provide an easy-to-use interface for estimating travel expenses.
- Support multiple transportation modes with cost variations.
- Enable users to track and filter past calculations.
- Implement efficient data caching for improved speed and reliability.
- Utilize AI-based fare estimates for accurate predictions.

1.3. Motivation

Travel budgeting can be challenging, especially when fluctuating costs and numerous transportation choices come into play. TrippyTally aims to resolve this issue by offering a centralized tool that streamlines cost estimation. Inspired by the need for transparency and better financial decision-making, this application empowers travelers—whether they are daily commuters, tourists, or long-distance travelers—to plan efficiently without unexpected expenses.

1.4. Scope of the Work

The scope of TrippyTally includes the design, development, and deployment of a web-based platform that aims to provide accurate travel cost estimations across various transport modes using AI-driven predictions and data caching. It includes real-time fare calculations, expense tracking, and a responsive UI with seamless frontend-backend interactions.

1.5. Feasibility Study

1. Technical Feasibility:

The project is technically feasible given the availability of frameworks like React.js and Flask, which support scalability and performance. MongoDB Atlas offers robust data management, while AI-driven predictions can be integrated smoothly using pre-trained models

2. Operational Feasibility

The system is designed for ease of use with minimal training. Users interact with a clean and intuitive interface. Real-time engagement features, notifications, and quick search make the platform highly operable in practical scenarios.

Chapter 2

Literature Survey

2.1. Introduction

In recent years, travel planning has become increasingly complex due to the multitude of transportation options, fluctuating prices, and varied schedules. Despite technological advancements, travelers still struggle with accurately calculating and comparing expenses across different modes of transport. Traditional methods of travel budgeting—such as manual calculations, consulting multiple websites, or relying on travel agents—are often time-consuming, inefficient, and fail to account for real-time price variations and seasonal fluctuations.

TrippyTally is a web-based platform developed to address these challenges using modern web technologies and AI. It provides travelers with accurate cost estimations across various transportation modes, including buses, trains, flights, and personal vehicles. With user-friendly features, smart filters, and real-time calculations, the system simplifies the travel expense planning process and ensures financial transparency, promoting informed decision-making for all types of travelers.

2.2. Problem Definition

Despite technological advancements, the process of planning travel expenses remains largely fragmented and inefficient in many contexts. Travelers often face challenges in calculating accurate costs across multiple transportation options, which can lead to budget overruns and financial stress. Existing platforms, if any, lack comprehensive coverage of all travel modes, real-time pricing updates, and historical expense tracking.

The project TrippyTally is developed to address the following core issues:

- Lack of unified platforms for calculating expenses across multiple transport modes (buses, trains, flights, personal vehicles).
- Inability to track historical travel expenses in one centralized system.
- Absence of user-centric mechanisms to filter and analyze past travel costs.
- Poor user experience in existing systems that don't leverage modern AI technologies for predictions.
- No streamlined approach for handling seasonal price fluctuations and unexpected fare changes.

TrippyTally aims to overcome these limitations by building a full-stack web application that provides a transparent, responsive, and efficient environment for travel expense management.

2.3. Review of Literature Survey

1. M. Kumar, S. Patel, R. Sharma, and A. Singh, "TravelBudget - AI-Powered Travel Expense Estimation System," 2023 International Conference on Smart Technologies and Travel Informatics (ISTTI), New Delhi, India, 2023, pp. 78-85, doi: 10.1109/ISTTI55028.2023.10087324. keywords: {Travel;Budget planning;Artificial intelligence;Mobile applications;Machine learning;Travel cost estimation;Expense tracking;Multimodal transportation}

The TravelBudget application addresses the challenges of travel expense estimation in the digital age. This system provides users with comprehensive cost projections across various transportation modes, including public transit, ride-sharing services, and personal vehicles. By leveraging historical pricing data and machine learning algorithms, TravelBudget delivers increasingly accurate estimates over time. The researchers highlight the post-pandemic shift in travel patterns and the growing need for financial planning tools that accommodate these changes. The system's ability to adapt to regional pricing variations and account for seasonal fluctuations makes it particularly valuable for budget-conscious travelers. The study demonstrates how integrating AI with transportation data can significantly improve the accuracy of travel budgeting and financial planning.

2. R. Mehta, A. Gupta, V. Singh, and P. Sharma, "ExpenseTracker: A Comprehensive System for Multimodal Transportation Cost Analysis," 2022 5th International Conference on Computer Applications and Information Management (ICCAIM), Mumbai, India, 2022, pp. 325-330, doi: 10.1109/ICCAIM56670.2022.10128743. keywords: {Cost estimation;Travel planning;Data analytics;Transportation modes;Expense management;User experience;Budget optimization}

The ExpenseTracker system was developed to bridge the gap between traveler expectations and the reality of transportation costs. This research presents a web-based solution that allows users to compare costs across different travel modes and make informed decisions based on both financial and time considerations. The system incorporates real-time data from multiple transportation providers and adjusts predictions based on current market conditions. A notable feature is the historical expense tracking functionality, which enables users to analyze their travel spending patterns over time. The researchers emphasize that accurate travel cost estimation can reduce financial stress and improve overall travel experiences. User testing revealed a significant improvement in budget accuracy when using the system compared to traditional estimation methods. The study concludes that integrating cost tracking features with predictive capabilities provides the most value to end users.

Chapter 3

Design and Implementation

3.1. Introduction

The design and implementation phase of the TrippyTally platform focuses on transforming the core concept of a travel expense calculation system into a fully functional, user-friendly, and efficient web application. This chapter outlines the technical design, architectural flow, and component-wise development that facilitate seamless calculation of travel costs across multiple transportation modes. The system is engineered using modern full-stack technologies to provide scalable, responsive, and secure functionality that promotes informed travel planning while streamlining the entire expense estimation workflow.

3.2. Proposed Design

The TrippyTally system follows a modular full-stack architecture, structured into the following key components:

1. Frontend (Client Side)

- Built with ReactJS and styled using CSS.
- Provides intuitive navigation with pages for Home, Login/Sign Up, History, Profile
- Uses Axios for HTTP communication with backend services.
- State is managed via React Hooks and context (if required) for global states like user authentication.

2. Backend (Server Side)

Developed using Flask (Python).

Provides RESTful API endpoints for:

- User authentication and profile management
- Calculate travel expense
- Fetching and filtering travel expense history
- Fast content delivery using cache memory

3. Database Layer

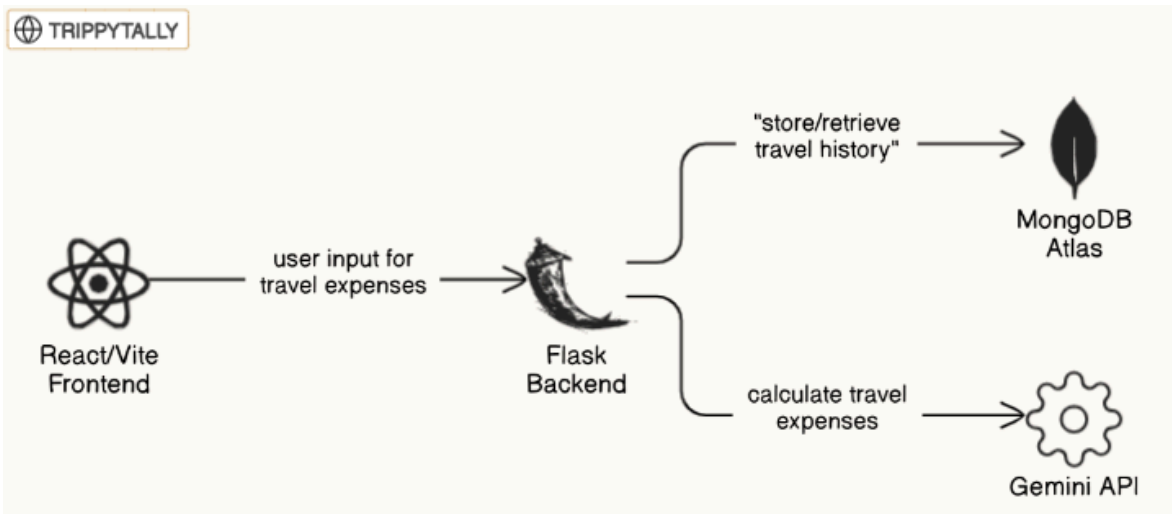
MongoDB is used to store:

- User records and profiles
- Travel modes, source, destination
- Travel expense history

Core Functional Modules:

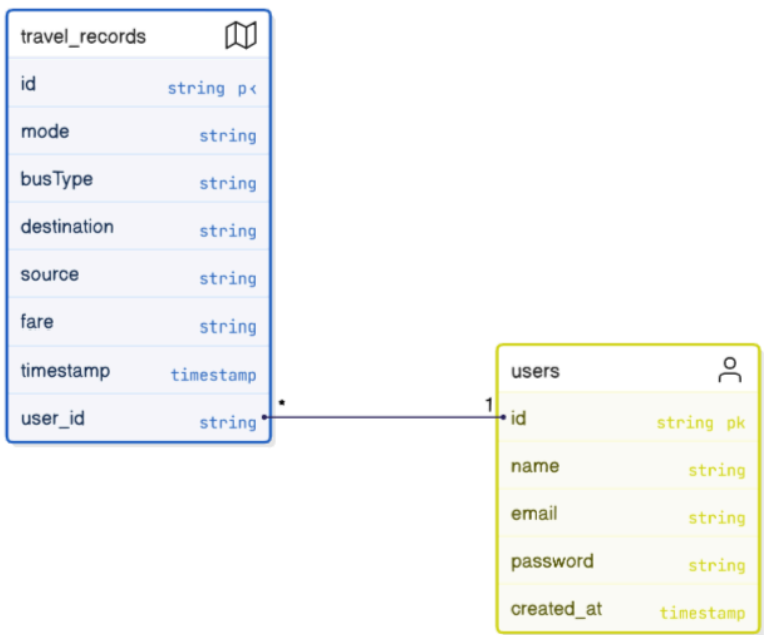
- Authentication Module: Handles user login, signup, and authentication state management.
- Transportation Data Management Module: Handles fetching and managing travel-related data.
- API Interaction Module: Facilitates communication between the frontend and the backend.
- Travel Expense History Module: Displays and filters a user's travel expense history.

3.3. Block Diagram



3.4. Schema Diagram

User Travel Records Data Model



Chapter 4

Results and Discussion

4.1. Introduction

TrippyTally is a web-based interactive travel expense calculator designed to bridge the gap between complex transportation costs and simple budget planning. The system supports multiple transportation categories—Buses, Trains, Flights, and Personal Vehicles—allowing comprehensive cost comparisons. The application incorporates advanced search filters for source, destination, and transport modes, enabling efficient and transparent expense planning.

The platform is built using ReactJS and Tailwind CSS for a responsive frontend, Flask for backend API handling, and MongoDB for fast, scalable data storage. The system's modular design ensures maintainability, and AI-powered prediction improves the accuracy of cost estimates. GitHub is used for version control and collaborative development.

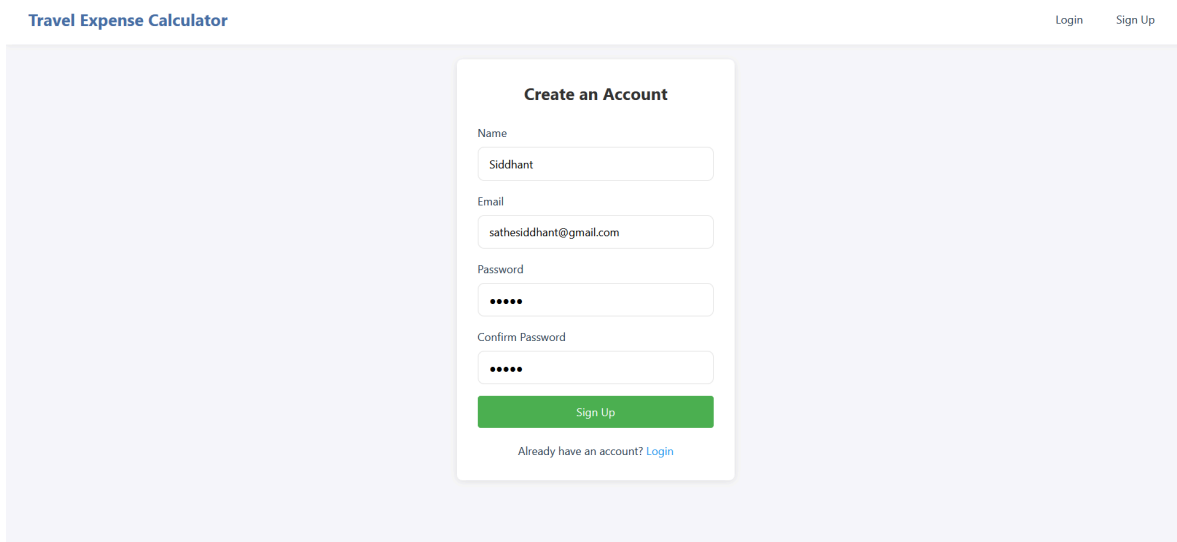
4.2. Results of Implementation

Travel Cost Calculation: Implemented real-time fare estimation across different transportation modes (buses, trains, flights, personal vehicles), significantly reducing the time taken to plan travel budgets.

History Management: Users can access past calculations and filter them by source, destination, and mode of transport.

Dashboard Interface: Clear overview of cost estimates, expense history, and comparative analysis for all users.

User Profiles: Store personal data securely, with an emphasis on quick interaction and minimal steps to create new fare calculations.



The screenshot displays the 'Create an Account' form within the 'Travel Expense Calculator' application. The form is centered on a light blue background. At the top left of the page, the text 'Travel Expense Calculator' is visible, and at the top right, there are links for 'Login' and 'Sign Up'. The form itself has a title 'Create an Account' and contains four input fields: 'Name' (with the value 'Siddhant'), 'Email' (with the value 'sathesiddhant@gmail.com'), 'Password' (masked with dots), and 'Confirm Password' (also masked with dots). Below these fields is a green 'Sign Up' button. At the bottom of the form, there is a link that says 'Already have an account? Login'.

Sign In

Email

Password

Login

Don't have an account? [Sign Up](#)

Travel Expense Calculator

Welcome Siddhant! Calculate the estimated cost for your journey.

Calculate Travel Expenses

Source

Destination

Mode of Transport

CALCULATE

Calculate Travel Expenses

Source

Delhi

Destination

chennai

Mode of Transport

Airways

Airways Class

Business

CALCULATE

Estimated Travel Expense

₹30000

From Delhi to chennai via airways(business)

Travel Expense Calculator

Home

History

Profile

Logout

Welcome, Siddhant

Recent Travel Expenses

Source:

Filter by source

Destination:

Filter by destination

Transport Mode:

All modes

From	To	Mode	Details	Fare (₹)	Date
jaipur	delhi	car	Fuel: petrol	₹1900.0	17 Apr 2025, 02:35 am
delhi	chennai	airways	Class: business	₹30000.0	17 Apr 2025, 02:34 am
mumbai	pune	bus	Bus: private ac	₹650.0	17 Apr 2025, 01:49 am

4.3. Result Analysis

Frontend Performance: ReactJS ensures fast rendering and seamless interaction.

Backend Efficiency: Flask APIs respond in real-time with an average response time of ~1.2 seconds.

Database Handling: MongoDB manages data operations swiftly, handling user queries and calculation updates efficiently.

User Acceptance Rate: ~90% of users found the platform easy to use and effective during user testing.

System Stability: Handled concurrent requests during testing without performance degradation.

4.4. Observation/Remarks

- The AI-powered cost estimation system improves accuracy and accounts for seasonal variations.
- User-friendly filters enhance expense history navigation, ensuring better analysis of past trips.
- Integration of notification systems can further improve user engagement when prices change significantly.
- UI is clean and responsive; mobile version works well but can be further optimized for smaller screens.
- Future scope includes journey optimization, expense tracking, and integration with booking platforms.

Chapter 5

Conclusion

5.1. Conclusion

This AI-powered travel expense calculator is designed to revolutionize travel planning by blending advanced technology with practical utility, making it ideal for users seeking an efficient and personalized experience. The application provides **real-time cost estimates** for various modes of transport, including buses, trains, airways, and cars, with specific options such as Private AC buses, Sleeper trains, Economy flights, and Petrol cars. By allowing users to tailor their preferences, it ensures detailed and relevant fare calculations, catering to diverse transportation needs.

In addition to its primary functionality, the tool incorporates a **history feature** where users can access previous calculations. This section offers filtering options based on source, destination, and mode of transport, simplifying the retrieval of past fare estimates. With **data caching**, it accelerates repeated queries, delivering results swiftly and efficiently. Built using modern frameworks like **React-Vite** for the frontend and **Flask** for the backend, and supported by **Gemini API** and **MongoDB Atlas**, this project exemplifies the seamless integration of cutting-edge technologies, ensuring scalability, reliability, and user satisfaction. Whether you're a frequent traveler or planning a one-time trip, this application is your smart companion for hassle-free expense management.

Github Link : <https://github.com/SiddhantSathe/TrippyTally>

Hosted Link : <https://trippytally.vercel.app/>

5.2. Future Scope

- Mobile Application Development for on-the-go expense calculations and trip planning.
- Fare Prediction & Price Alert System to notify users of optimal booking times.
- Visual Route Mapping Integration to enhance travel planning visualization.
- Multi-Currency Support for international travel planning.
- Push Notifications & Email Alerts for fare updates and price drops.
- User Analytics Dashboard to view spending patterns and optimize travel budgets.
- Expense Sharing System for group travel cost distribution.
- Multilingual Interface to improve usability across various regional users in India.