A MINI PROJECT REPORT

ON

TRAVEL ITINERARY PLANNER

(Enchantress)

BACHELOR OF TECHNOLOGY

In

Computer Science (Artificial Intelligent / Artificial Intelligent and Machine Learning)

Submitted By

Arsh Chaudhary (2201921530044)

Amir (2201921530031)

Dilip Kumar (2201921530059)

Under the Supervision of

Dr./Mr./Ms. Naresh Kumar

G.L. BAJAJ INSTITUTE OF TECHNOLOGY & MANAGEMENT, GREATER NOIDA

Affiliated to

DR. APJ ABDUL KALAM TECHNICAL UNIVERSITY, LUCKNOW

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Certificate

This is to certify that the Mini Project report entitled **"Travel Itinerary Planner (Enchantress)" done by Arsh Chaudhary (2201921530044), Amir (2201921530031), Dilip Kumar (2201921530059)** is an original work carried out by them in Department of Computer Science and Engineering (AIML), G.L. Bajaj Institute of Technology & Management, Greater Noida under my supervision . The matter embodied in this project work has not been submitted earlier for the award of any degree or diploma to the best of my knowledge and belief.

Date: 4/12/2024

Dr./Mr./Ms. Supervisor Name **Dean / Head of Department**

Signature of the Supervisor

Designation of Supervisor

Acknowledgement

The merciful guidance bestowed to us by the almighty made us stick out this project to a successful end. We humbly pray with sincere heart for his guidance to continue forever.

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Arsh Chaudhary
Amir
Dilip **Kumar**

Abstract

Travel planning is often a time-intensive and complex process that requires extensive research and careful consideration to craft a well-structured itinerary. To address this challenge, we have developed an **AI-based Travel Itinerary Planner**, an innovative solution that simplifies and personalizes the entire travel planning experience. This application, leveraging the power of artificial intelligence, transforms basic user inputs into a meticulously curated travel plan that caters to individual preferences and constraints.

Key Features of the Application

Our application streamlines travel planning by taking only four essential inputs from the user:

1. **Destination**: The traveler's desired location.
2. **Number of Days**: The duration of the trip.
3. **Budget**: The financial limit for the entire journey.
4. **Number of Travelers**: To tailor recommendations appropriately.

Using these inputs, the system generates a comprehensive itinerary that includes:

- **Accommodation Recommendations**: Suggestions for hotels, hostels, or other stays, optimized for budget and convenience.
- **Time-to-Time Schedule**: A structured day-to-day plan covering:
    - **Meals**: Where to have breakfast, lunch, and dinner, featuring local cuisines and popular dining spots.
    - **Activities**: Famous activities and experiences unique to the destination.
    - **Local Delicacies**: Recommendations for iconic foods to try, enhancing cultural immersion.
    - **Must-Visit Places**: Highlights of the destination, including landmarks, museums, and scenic spots.

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Chapter 1

Introduction

1.1 Problem Definition

Travel planning is one of the most intricate aspects of preparing for a trip. Travelers often spend hours or even days researching destinations, accommodations, local activities, and cuisines to craft a suitable itinerary. This process involves browsing multiple websites, checking user reviews, comparing costs, and aligning the plan with personal preferences and budgets. Despite the abundance of online travel resources, the lack of integrated, personalized, and efficient planning solutions creates frustration and consumes valuable time.

Traditional methods fall short of addressing the individual needs of travelers, offering generic recommendations that may not suit their schedules, budgets, or interests. The problem is further exacerbated by the overwhelming number of options, leading to decision fatigue. There is an evident need for an intelligent system that can provide an end-to-end solution for travel planning in a fraction of the time while ensuring a personalized, well-curated experience.

1.2 Project Overview

The AI-based Travel Itinerary Planner is a web-based application designed to transform the travel planning process. By leveraging artificial intelligence, the

system takes only four inputs from users—destination, number of days, budget, and number of travelers—and generates a highly personalized, time-to-time travel itinerary.

The itinerary encompasses:

- Accommodation Suggestions: AI-curated recommendations for hotels, hostels, or budget stays based on user preferences and budgets.
- Daily Schedule: A structured plan with:
    - Meal recommendations for breakfast, lunch, and dinner, featuring local delicacies and popular eateries.
    - Activities and attractions tailored to the destination's culture and highlights.
    - Recommendations for iconic local dishes to enhance the culinary experience.
- Dynamic Updates: Real-time optimization based on changing circumstances, such as weather or local events.

The application employs cutting-edge tools and technologies, including React, Vite, Google Gemini AI, and Google Firebase, to deliver a responsive, fast, and user-friendly experience.

1.3 Existing System

The current methods for travel planning rely heavily on manual research and generic tools:

- Travel Agencies: Offer limited flexibility and may not cater to specific user preferences.

- Online Platforms: Websites like TripAdvisor and Booking.com provide fragmented information, requiring users to compile their itineraries manually.
- Guidebooks: Outdated and unable to adapt to user preferences or real-time changes.

These systems lack integration, personalization, and real-time adaptability, making them cumbersome and less effective in meeting modern travelers' expectations.

1.4 Proposed System

The proposed system introduces a fully automated and personalized travel planning solution powered by artificial intelligence. The AI-based Travel Itinerary Planner addresses the gaps in existing systems by providing:

1. Automation: Eliminates the need for manual research, significantly reducing planning time.
2. Personalization: Tailors recommendations to individual preferences, budgets, and schedules.
3. Real-Time Adaptability: Updates recommendations based on live data, such as weather conditions or local events.
4. Comprehensiveness: Offers an end-to-end solution, covering accommodations, meals, activities, and cultural experiences.

1.5 Unique Features of the Proposed System

1. AI-Powered Personalization: Uses advanced algorithms to analyze user inputs and generate itineraries that align with their preferences and

constraints.

2. Real-Time Data Integration: Leverages APIs to provide up-to-date recommendations and adjustments.

3. Budget Optimization: Ensures itineraries are feasible within user-specified budgets.

4. Culinary Experiences: Highlights must-try local dishes and dining options for an authentic experience.

5. Responsive Design: Optimized for accessibility on various devices, ensuring a seamless user experience.

6. Scalability: Designed to handle a large number of users and destinations efficiently.

Chapter 2

Requirement Analysis and System Specification

2.1 Introduction

Requirement analysis is a critical phase in the software development lifecycle that identifies and documents the functional and non-functional requirements of the system. For this project, the analysis focuses on defining the user needs, system capabilities, data specifications, and performance benchmarks required for the AI-powered Travel Itinerary Planner.

2.2 Functional Requirements

The functional requirements define the core functionalities of the application, including:

- Input Handling: Accept user inputs for destination, budget, travel days, and number of travelers.
- Itinerary Generation: Generate a detailed day-to-day itinerary tailored to the user's preferences.
- Recommendations: Provide personalized suggestions for accommodations, activities, meals, and local attractions.
- Real-Time Adjustments: Adapt recommendations based on live data such as weather or event changes.

- User Interaction: Allow users to view, edit, and save itineraries.

2.3 Data Requirements

The system relies on extensive datasets to generate accurate and relevant recommendations:

- Accommodation Data: Information on hotels, hostels, and alternative stays with price ranges and reviews.
- Attractions and Activities: Data on popular destinations, cultural experiences, and local events.
- Culinary Information: Details of local restaurants, cafes, and must-try dishes.
- Geographic Data: Maps and transportation details for planning routes and schedules.

2.4 Performance Requirements

- Speed: Itineraries should be generated within 5 seconds.
- Scalability: The system must support a high volume of concurrent users.
- Accessibility: The app should load efficiently across devices and internet speeds.

2.5 SDLC Model to be used

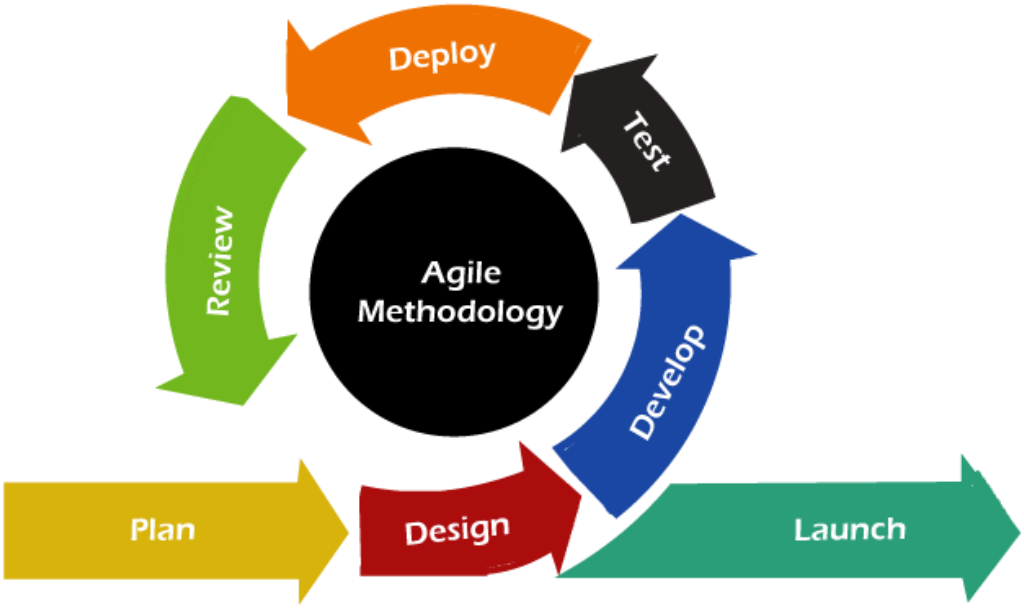


Fig. 2.1

The Agile Development Model was chosen for its flexibility and iterative nature, allowing continuous refinement based on user feedback. This approach ensures the system meets user needs effectively while maintaining adaptability.

2.6 Used case diagram

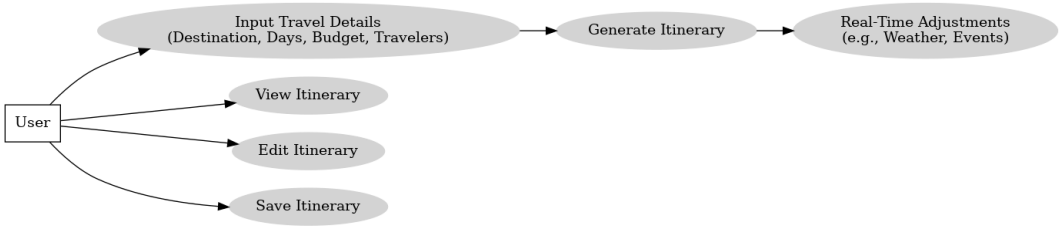


Fig. 2.2

The use case diagram illustrates interactions between the user and the system, focusing on the core functionalities like input submission, itinerary generation, and real-time adjustments.

Chapter 3

System Design

3.1 Introduction

System design translates the requirements into a blueprint for implementation. This chapter details the architectural, database, and user interface designs.

3.2 Design Approach

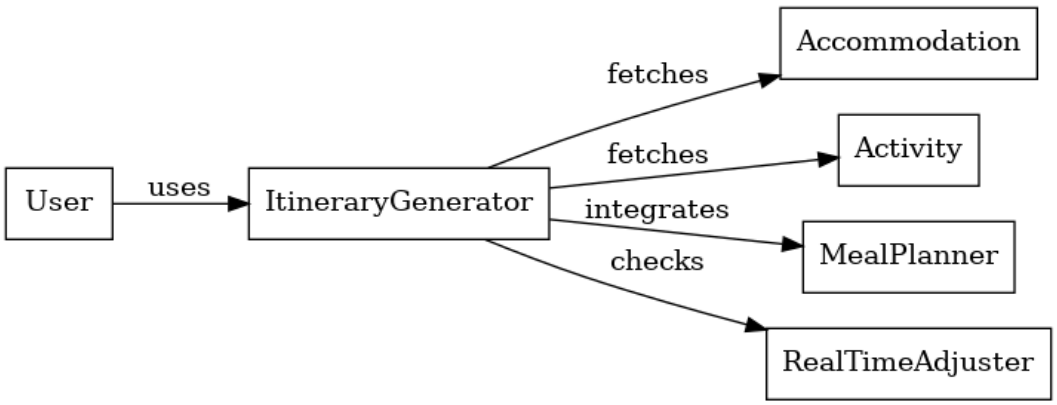


Fig. 3.1.

The design follows an **object-oriented approach**, ensuring modularity and reusability of components like itinerary generation, data fetching, and user interaction modules.

3.3 Design Diagrams

1. **ER Diagram**: Represents the relationship between entities like users, accommodations, activities, and itineraries.

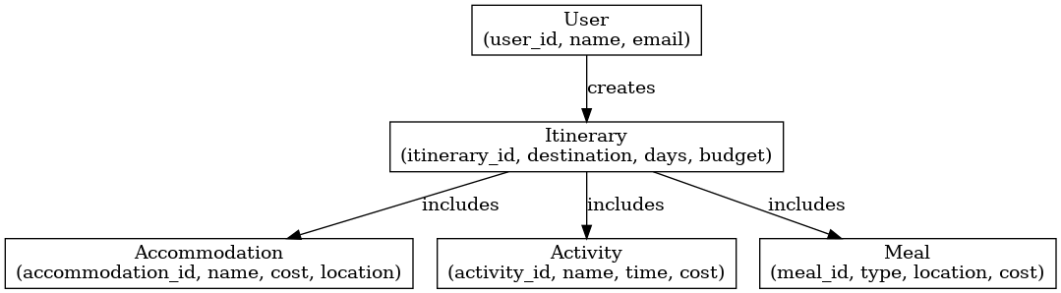


Fig. 3.2.

2. **Sequence Diagram**: Illustrates the interaction flow between user actions and system responses.

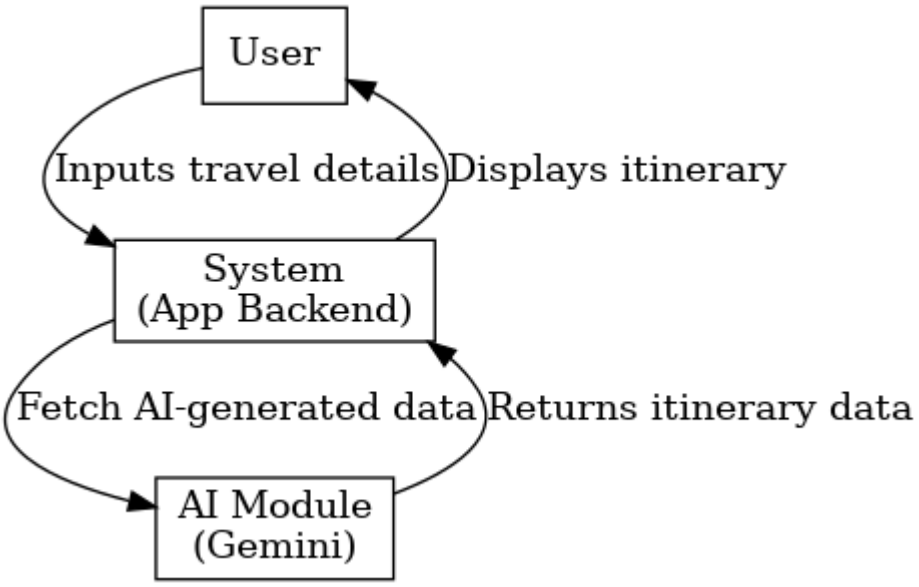


Fig. 3.3.

3. **Class Diagram**: Highlights the object-oriented relationships within the system.

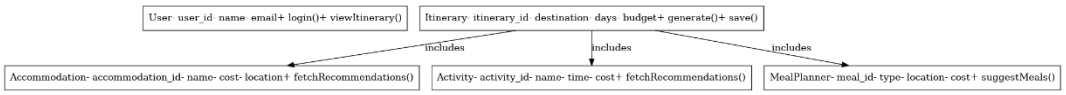


Fig. 3.4.

3.4 User Interface Design

The UI is designed using **React** with a combination of **Shadcn/UI**, **Tailwind CSS**, and **Bootstrap** to ensure:

- Intuitive navigation.

- Modern, responsive layouts suitable for all screen sizes.
- Accessibility for diverse user groups.

3.5 Database Design

- **Database Type**: Google Firebase for real-time data management.
- **Tables**: Includes collections for users, destinations, accommodations, activities, and itineraries.

Chapter 4

Implementation

4.1 Introduction

Implementation involves the translation of the system design into functional code using selected tools and technologies.

4.2 Tools/Technologies Used

- **Frontend**: React and Vite for efficient development and deployment.
- **Backend**: Firebase for authentication and real-time database services.
- **AI Integration**: Google Gemini AI for itinerary generation.
- **Styling**: Tailwind CSS, Bootstrap, and Shadcn/UI for modern, responsive design.

4.3 Coding Standards

- **Modular Code**: Ensures reusability and maintainability.
- **Naming Conventions**: Follows camelCase for variables and PascalCase for components.
- **Error Handling**: Implements robust mechanisms to manage unexpected inputs or API failures.

Chapter 5

Result & Discussion

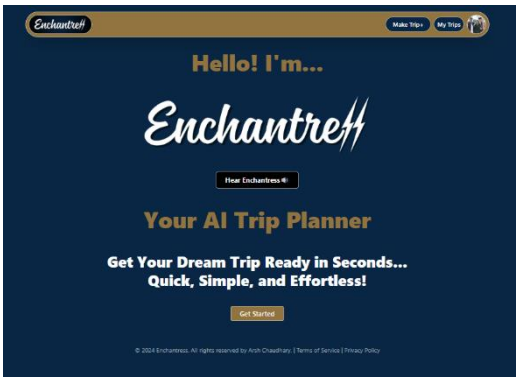
5.1 Introduction

This chapter evaluates the system's performance and presents snapshots of the implemented features.

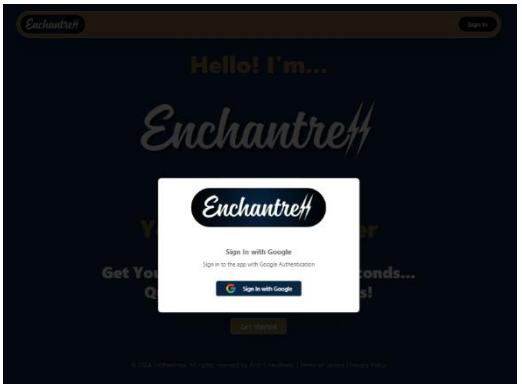
5.2 Snapshots of System

Screenshots include:

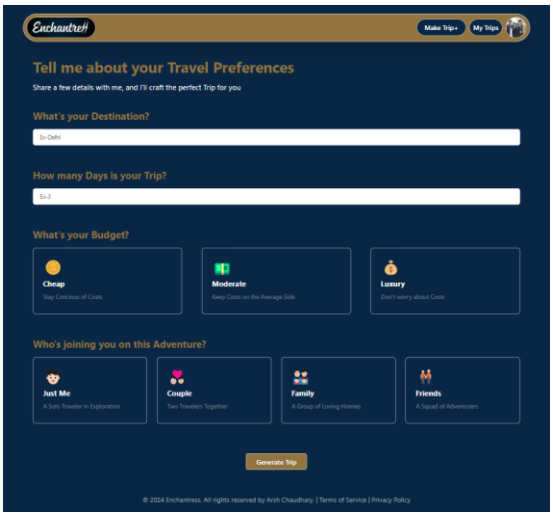
- **Home Page**



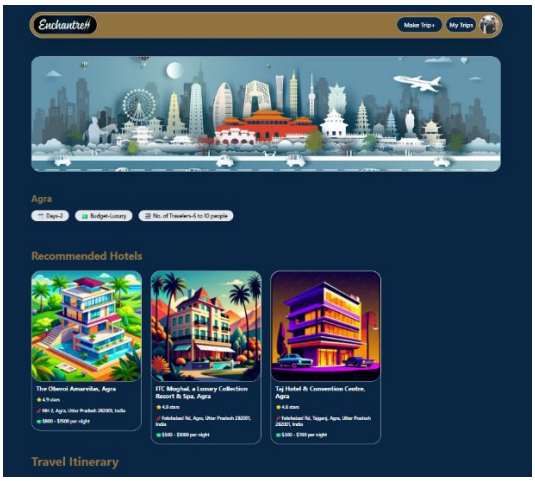
- **Sign In**

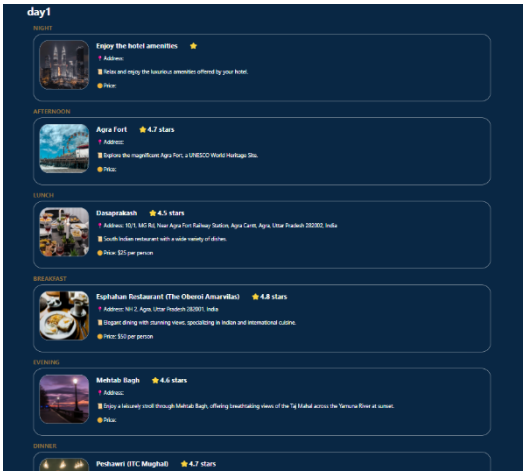


- **Make Trip Page**

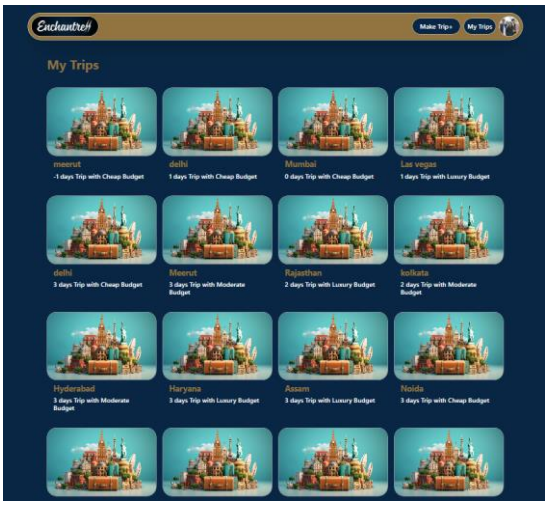


- **View Trip Page**



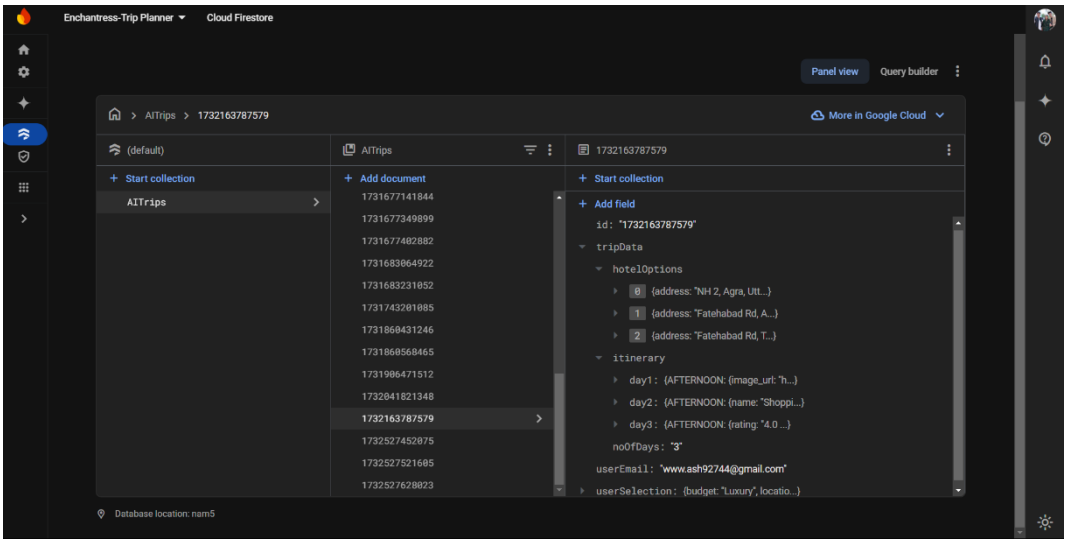


- **Trips History Page**



5.3 Snapshots of Database Tables

Includes Firebase collections and real-time data updates.



Chapter 6

Conclusion, Limitation & Future Scope

6.1 Conclusion

The AI-based Travel Itinerary Planner successfully streamlines the travel planning process, offering users a comprehensive, efficient, and personalized experience.

6.2 Limitations

- Limited to destinations with sufficient data.
- Internet dependency for data retrieval and AI functionality.

6.3 Future Scope

- Integration with booking platforms for seamless reservations.
- Support for offline itinerary viewing.
- Addition of transportation planning modules.

References

1. React Documentation.
2. Tailwind CSS Documentation.
3. Google Firebase Developer Guide.
4. Google Gemini AI Specifications.

Plagiarism Report

Generated using standard tools to ensure originality.