**Vivekanand Education Society's Institute of Technology**



**Department of Computer Engineering**

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**Project Synopsis (2024-25) - Sem V**

**Journey Gennie: A trip planner AI**

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**Abstract:**

This project focuses on developing "Journey Gennie," an advanced travel planning application designed to streamline travel arrangements by integrating multi-modal transportation options, constraint handling, and AI-driven customization. The app aims to offer a comprehensive solution by comparing various transportation modes, incorporating constraints and providing personalized travel plans. Leveraging generative AI and Machine Learning (ML), this app creates tailored itineraries based on user preferences and real-time data. Additionally, the app utilizes Big Data Analytics (BDA) to manage and analyze extensive transportation and hotel data, enhancing travel planning. By combining these features, this app aspires to provide an intuitive and efficient tool for planning seamless and personalized travel journeys.

**Introduction:**

Travel planning can be a daunting task in today's fast-paced world, with traditional tools often falling short in providing the flexibility and personalization that modern travelers demand. Our project aligns with Sustainable Goal 9: Industry, Innovation, and Infrastructure, by leveraging advanced technology and innovative solutions to enhance travel planning and connectivity. Our project aims to address this challenge by developing an innovative travel planning app that allows users to compare various transportation options and create customized itineraries based on their unique preferences and constraints. By leveraging artificial intelligence and generative models, our app will not only optimize travel routes but also suggest suitable accommodations, streamlining the planning process and enhancing overall travel satisfaction. This comprehensive solution promises to empower travelers with a tailored experience that meets their needs in an increasingly complex travel landscape.

**Problem Statement:**

In the modern era of travel, finding and planning the most efficient and cost-effective routes across multiple modes of transportation remains a complex challenge. Traditional travel planning tools often lack comprehensive features and provide limited customization based on user preferences. This creates a gap for travelers who need a solution that offers a detailed and personalized approach to route planning. Our app aims to address this gap by providing a comprehensive travel planning solution that allows users to compare various transportation options, apply specific constraints and generate customized travel plans based on user-defined criteria.Additionally, the app will suggest suitable hotels based on the user’s preferences and travel itinerary .By leveraging AI and generative models, the app will ensure an optimized and tailored travel experience. This approach not only simplifies the planning process but also enhances the efficiency and satisfaction of users’ travel experiences, making it a valuable tool for today’s travelers.

**Proposed Solution:**

This app aims to streamline travel planning through a multi-faceted approach. The app offers a comprehensive comparison of transportation options, including buses, trains, flights, and car rentals. Users can input their travel preferences and constraints, such as avoiding toll roads or minimizing travel time. This app dynamically adjusts recommendations to align with these constraints.A key feature is the generative AI-based itinerary generation, which creates personalized travel plans by analyzing user preferences and real-time data. This AI-driven approach ensures tailored travel suggestions, including transportation and hotel recommendations. This app also integrates Big Data Analytics and Machine Learning to continuously refine recommendations based on user feedback and data trends. The user-friendly interface makes it easy to input preferences and view optimized travel itineraries. Overall, this app combines advanced technology with user-centric design to provide a seamless and personalized travel planning experience.

**Methodology**

* Users will first create an account by providing their personal details, such as name, email, and phone number. This information will be securely stored to set up their user profile.
* Next, users will input their travel preferences, including their desired destination, travel dates, budget, and any specific constraints like avoiding toll roads or adhering to time limits. The app will record these preferences and constraints, which will be essential for generating a customized travel plan.
* When the user requests a travel plan, the app will use generative AI to create a personalized itinerary based on the provided information. This plan will include various transportation options and accommodation recommendations, detailing costs, schedules, and proximity to travel routes.
* The app will then display the suggestions of transportation modes and hotels. Users can review these options and make adjustments to their preferences or constraints if needed. The app will update the travel plan in real-time, ensuring the revised recommendations align with the user’s changes.
* For booking and reservations, the app will facilitate the process by integrating with third-party services.
* After the trip, users will have the opportunity to submit feedback about their experience. The app will collect this feedback to enhance future recommendations and features.

**Hardware , Software and Tools Required:**

### **Hardware Requirements**

1. Servers
   * Cloud Servers: For hosting the backend services, databases, and AI models.
   * Local Development Machines: For app development and testing.
2. User Devices
   * Smartphones/Tablets: For running the app (iOS and Android devices).
   * Computers: For accessing the web version of the app

### **Software Requirements**

1. Backend
   * Server Framework: Node.js and Flask for developing the backend services.
   * Database: MongoDB for storing user data, preferences, travel itineraries, etc.
   * API Management: Postman for testing APIs.
2. Frontend
   * Mobile Development Framework: Flutter and React Native for cross-platform mobile app development.
   * Web Development Framework: React.js for developing the web version.
   * UI/UX Design Tools: Figma and Canva for designing the app interface.
3. AI/ML Models
   * Programming Languages: Python for developing AI and generative models.
   * Frameworks: PyTorch for building and training AI models.
   * APIs: Google Maps API, Skyscanner API, Amadeus API for fetching transportation and accommodation data.
4. Other Tools
   * Firebase Analytics for tracking user interactions and app performance.
   * Git and GitHub for source code management.

**Proposed Evaluation Measures:**

1. User Satisfaction
   * Surveys and Feedback: Collect user feedback and satisfaction ratings through surveys and in-app feedback forms.
2. Performance Metrics
   * Response Time: Measure the average response time for route planning and travel plan generation.
   * Uptime and Reliability: Track the app’s uptime and reliability metrics to ensure it is available when users need it.
3. Usage Statistics
   * Active Users: Track the number of daily, weekly, and monthly active users.
   * User Engagement: Measure the average session duration and the number of interactions per session.
4. Cost-Efficiency
   * Cost Savings: Calculate the average cost savings for users based on the optimized travel plans compared to traditional methods.
5. Accuracy and Optimization
   * Route Accuracy: Evaluate the accuracy of the suggested routes and travel plans.
   * Optimization Effectiveness: Measure how well the app optimizes travel plans based on user-defined criteria and constraints.
6. AI Model Performance
   * Model Accuracy: Measure the accuracy of AI models in predicting user preferences and optimizing travel plans.
   * Training Time: Track the time taken to train AI models and ensure it is within acceptable limits.
   * Model Updates: Monitor the frequency and effectiveness of AI model updates.
7. User Retention
   * Churn Rate: Measure the percentage of users who stop using the app over a given period.
   * Retention Rate: Track the percentage of users who continue to use the app over time.

**Conclusion:**

In conclusion, our travel planning app represents a significant advancement in addressing the complexities of modern travel. By integrating AI and generative models, we provide users with a powerful tool to efficiently compare transportation options, create personalized itineraries, and find suitable accommodations—all in one platform. This innovative approach not only simplifies the travel planning process but also enhances the overall travel experience, ensuring that users can embark on their journeys with confidence and ease. As we continue to refine and develop our app, we are committed to delivering a solution that meets the evolving needs of today’s travelers, ultimately transforming the way they plan and experience their adventures.

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