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Yatra AI (My TripPlanner): An Integrated AI-Assisted Travel Planning, Logistics, and Safety Platform

Mr. Chaitanya walke[1], Mr. Burhanoddin Hakim[2]

Assistant Professor, Dr. D. Y. Patil ACS College, Pimpri, Pune[1]

Student, Dr. D. Y. Patil ACS College Pimpari Pune[2]

Abstract: Planning a trip often means switching between several websites and applications to compare transport, accommodation, places to visit, and prices. A traveller may also need to search separately for local information and emergency contacts. This paper presents Yatra AI (My TripPlanner), a proposed web-based platform intended to bring these activities into one trip-planning workspace. A user would enter a destination, travel dates, group size, interests, and an approximate budget. The system would then help organize a day-wise itinerary, compare available travel options, estimate major expenses, and display information about nearby attractions. The paper also proposes a safety section to make verified emergency details easier to find. The paper explains the problem being addressed, the objectives of the project, its proposed modules, system architecture, data requirements, privacy considerations, and a plan for evaluating a working prototype. The project is currently under development; therefore, the features described here are proposed design elements rather than claims of a fully deployed service. No participant study or performance result is claimed in this paper. These will be reported only after the prototype has been built and tested using a documented method.

Keywords: Artificial intelligence, travel planning, smart tourism, itinerary recommendation, route planning, budget estimation, location-based services, travel safety, web application.

I. INTRODUCTION

Planning a journey can involve more work than simply choosing a destination. Travellers usually need to decide how to reach a place, where to stay, how much money to keep aside and which attractions can reasonably fit into the available time. These decisions are connected. For example, choosing a hotel far from the main attractions may increase local travel costs, while selecting a cheaper transport option may require more time. When the information is spread across different applications, comparing the complete trip can become inconvenient.

Yatra AI (My TripPlanner) is being developed as an attempt to make this process more organized. The idea is to provide one place where a user can enter trip requirements and review a suggested plan. The proposed platform combines itinerary preparation, route and transport information, accommodation suggestions, budget estimation, nearby place information, and a safety section. The intention is not to replace every travel service. Instead, Yatra AI aims to help users understand their choices and move between planning and trusted booking providers more easily.

The project is being approached as a student-developed web application. At its present stage, the paper explains the proposed design and development plan. Any feature that depends on live transport schedules, hotel availability, payment processing or emergency-service integration will require a reliable external provider and practical testing before it can be described as operational.

II. PROBLEM STATEMENT

Many online services provide travel information, but a traveller may still have to combine it manually. Maps can help with routes, booking platforms can show rooms and tickets, review services can describe attractions, and official websites can provide local guidance. The difficulty addressed by this project is the effort involved in bringing these separate pieces together while keeping the trip within a time and budget limit.

The project therefore focuses on the following question: **How can a single, easy-to-use web application help a traveller organize route choices, accommodation, activities and estimated costs according to personal requirements, while presenting safety information responsibly?** The paper does not claim that existing applications lack these features

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individually. The proposed contribution is the design of an integrated and understandable workflow for a student-level prototype.

III. AIM AND OBJECTIVES

The main aim is to design and develop an AI-assisted travel-planning website that helps users prepare and manage a trip using their destination, dates, budget and preferences.

The objectives are:

- To create a simple interface for entering destination, departure location, travel dates, group size and interests.
- To prepare an editable itinerary with suggested places and an order for visiting them.
- To present available transport modes and route information where reliable data sources are accessible.
- To estimate trip expenses under clear categories such as transport, stay, food, local travel and entry fees.
- To show useful information about nearby attractions, including distance and relevant background.
- To provide a safety section containing verified emergency contact information and clear location-sharing choices.
- To evaluate the working prototype for usability, clarity, planning time and accuracy of its estimates.

IV. PROPOSED NOVELTY AND CONTRIBUTION

The proposed value of Yatra AI is the way it brings several planning steps into one workflow. A user should not have to treat transport, accommodation, sightseeing and budgeting as unrelated decisions. The planner is intended to show how one choice may affect the rest of the trip and allow the user to revise the plan before making a booking.

The proposed contributions are summarized below:

Proposed contribution	What it is intended to provide
Integrated trip workspace	A common interface for destination details, routes, stays, activities and estimated expenses.
Preference-based suggestions	Recommendations that take account of budget, interests, available time and travel preferences.
Itemized budget planning	A breakdown of expected costs so users can see which parts of a trip contribute most to the total.
Editable itinerary	A plan that users can adjust when they change dates, transport preferences or selected attractions.
Safety information area	A dedicated place for verified emergency numbers and nearby essential services, with clear limits on what the prototype can do.
Modular development	A design that can later support regional languages, live data connections, booking links and feedback-based improvements.

These points describe intended contributions. Whether they are achieved will depend on the implementation and evaluation of the system.

V. BACKGROUND AND RELATED WORK

Research on travel recommendation has explored how digital systems can help people select destinations and organize visits. One recent study describes an integrated recommender for multi-day tourist itineraries and treats itinerary creation as a problem involving user preferences and practical constraints [1]. This is relevant to Yatra AI because a useful itinerary must do more than list popular places: it should consider the time available and the relationship between locations.

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The project also draws on the broader idea of location-based services. Map and routing platforms can provide geographic information, directions and place data, but the application must follow the relevant provider terms and communicate when information is estimated or unavailable [4], [5]. Security guidance is equally important because a travel-planning website may store account details, saved trips and location-related information. The OWASP Top 10 provides a widely used reference for common web application security risks [6].

The Ministry of Tourism, Government of India, reported approximately 2,948.19 million domestic tourist visits in India during 2024 [2]. This figure gives context to the scale of domestic tourism, but it counts visits rather than unique travellers and does not prove demand for this particular project. Yatra AI will need its own user feedback and evaluation before conclusions can be made about usefulness or adoption.

VI. PROPOSED SYSTEM AND FUNCTIONAL MODULES

Module	Purpose
User account and preferences	Allows users to create an account, save trips and enter preferences such as group size, language and accessibility needs. Account and location permissions should be explained clearly.
AI-assisted trip planner	Uses the trip details supplied by the user to prepare an itinerary suggestion. The user should be able to edit the result and understand why a place was recommended.
Route and transport planner	Organizes route legs and may compare train, bus, flight, taxi or walking options when suitable data is available. Estimated details must be labelled as estimates.
Accommodation and package comparison	Displays stay options, facilities, location and partner booking links. The system must not show invented room availability or pretend that a booking has been confirmed.
Budget manager	Estimates expenses for transport, accommodation, meals, local travel and attraction fees. Unknown or changing costs should be identified.
Nearby places and destination information	Presents attractions with distance, category, likely visit duration and short historical or cultural information where reliable sources are available.
Safety centre	Makes verified emergency contacts and nearby essential services easier to find. Location sharing should be optional and controlled by the user.
Administration and content verification	Provides an authorized way to review destination information, partner links and emergency contact records, including the date they were last checked.

VII. PROPOSED SYSTEM ARCHITECTURE

A practical implementation can be developed using a responsive frontend, a server-side application programming interface (API), and a database. The frontend would collect trip requirements and display the itinerary. The API would validate requests, manage accounts, and coordinate the recommendation and travel-data modules. The database would store user-approved trip information, destination records, and feedback. External services should be connected through server-side components so that private API credentials are not exposed in browser code.

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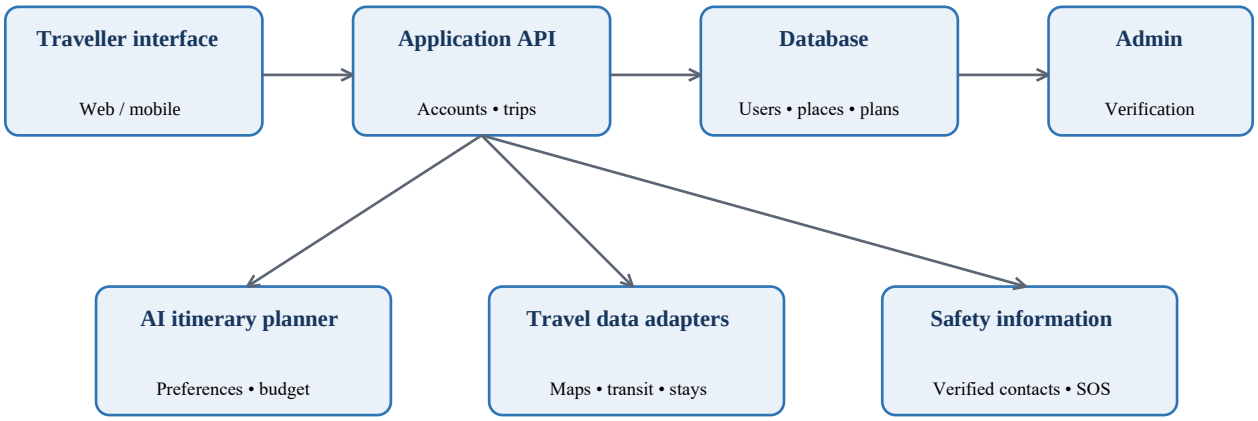


Fig. 1 Proposed high-level architecture of Yatra AI. The diagram represents a design proposal, not a deployed system.

The AI planning component should work with structured and checked information wherever possible. It may help rank places or arrange itinerary suggestions, but it should not be allowed to invent train timings, hotel availability, ticket prices, emergency telephone numbers, or opening hours. If a data provider is unavailable, the interface should say so rather than presenting an unsupported answer.

VIII. TRAVEL LOGISTICS AND BUDGET MODEL

A trip can be represented as a sequence of travel legs and planned activities. Each travel leg may include the starting point, destination, mode of transport, estimated departure and arrival times, transfer details, data source, and the time when the information was checked. Each activity may include the place name, planned duration, coordinates, opening-hours source, and accessibility notes. This structure can help the planner identify unrealistic schedules before showing the itinerary to a user.

The proposed budget calculation is:

Estimated trip cost = transport + accommodation + meals + local transport + attraction or entry fees + service charges + contingency.

The application should distinguish between a price returned by a provider, an estimate calculated by the system and a cost that is not yet known. Comparing transport options should consider the overall journey, including transfers and time, rather than comparing ticket prices alone. The user should also be able to change the hotel category, transport mode or activities and see how the estimated total changes.

Booking status needs careful wording. A suggested option is not a reservation. A link to a booking partner means the user has been redirected to another service. A booking should be described as confirmed only when the provider returns a confirmation. This distinction is important for user trust.

IX. HOW A USER WOULD USE YATRA AI

The proposed user journey is shown below. The exact screens and controls will be finalized during development.

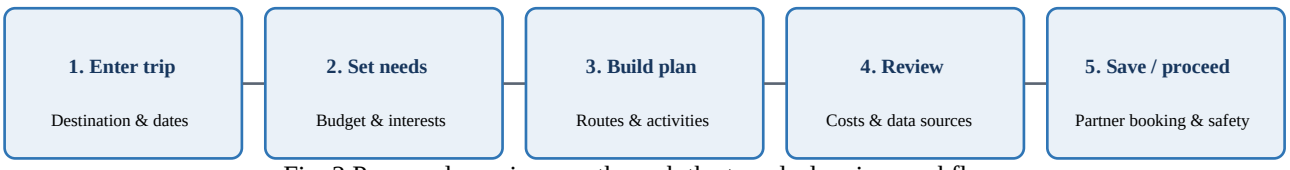


Fig. 2 Proposed user journey through the travel-planning workflow.

A user would begin by entering a destination, departure city, and travel dates. The next step would be to provide the number of travellers, approximate budget, preferred transport, accommodation category, and interests. Yatra AI would then prepare a suggested itinerary for review. The user could inspect the route, estimated travel time, nearby attractions, and budget breakdown, then make changes before saving the plan. For actual tickets or hotel rooms, the user would

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continue through a trusted booking provider. Before travelling, the user could review the safety section and choose whether to share trip or location information.

X. DEVELOPMENT APPROACH AND PROTOTYPE STAGES

A staged development plan is suitable for this project because it allows the main idea to be checked before complex integrations are attempted. The first stage can focus on the screens and navigation. A basic working version can then support trip entry, saved itineraries, a small verified destination dataset and budget calculations. AI-assisted recommendations can be added after the core workflow works reliably. Live transport or accommodation integrations should be treated as a later stage because access may depend on provider approval, technical limits and commercial terms.

Stage 1 – Interface prototype: Prepare the home page, trip form, itinerary view, map/list view, budget panel and safety screen.
Stage 2 – Basic working version: Add account handling, saved trips, itinerary editing, sample destination data and budget calculations.
Stage 3 – AI-assisted recommendations: Add structured itinerary suggestions, preference-based ranking and explanations for recommendations.
Stage 4 – External travel integrations: Connect suitable map, transport and accommodation services, and show data freshness and booking hand-off clearly.
Stage 5 – Safety and refinement: Test emergency information workflows, privacy controls, accessibility and limited offline access.

XI. DATA MANAGEMENT, PRIVACY AND SECURITY

The proposed system may handle account details, trip preferences, saved itineraries and, if the user chooses, location information. Only information needed for the service should be collected. Location access should be optional, explained in plain language, and possible to revoke. The project should avoid retaining location history by default unless there is a clear reason and the user has given informed consent.

Basic security measures should include HTTPS, secure password hashing, access controls, input validation, rate limiting, and safe session handling. API keys should be kept on the server and not placed in public frontend code. The database should not store raw card numbers or card verification values. For a student demonstration, payment integration should use a provider's test environment rather than real payment details. These practices should be checked against established web security guidance such as the OWASP Top 10 [6].

The safety centre also needs careful limits. Displaying an emergency number or a nearby hospital is not the same as dispatching help. The interface must not claim that an SOS alert has reached police or an ambulance unless a tested and authorized integration confirms it. Where possible, the application should offer direct-call options, show the source and verification date of contact details, and explain that network access or GPS accuracy may affect results.

XII. RESEARCH METHODOLOGY AND EVALUATION PLAN

At the present stage, Yatra AI is under development. The paper therefore sets out an evaluation plan rather than reporting completed user testing. Once a working version is available, the project can be evaluated using a small, documented usability study. Participants could include frequent travellers, occasional travellers and people who are less familiar with digital trip-planning tools. Participation should be voluntary, and the purpose of the study and the handling of responses should be explained before collecting information.

A consistent set of tasks can be used for evaluation: create a three-day trip within a stated budget; change the transport mode; identify why a place was recommended; locate a verified emergency contact; and edit the itinerary after one activity becomes unavailable. The same task can be completed using a usual manual planning method and the Yatra AI prototype, where appropriate. The researcher can record task completion, time taken, errors, user comments, and whether the budget estimate was understandable.

Possible measures include task success rate, median task-completion time, number of errors, user ratings of recommendation relevance, and the difference between estimated and known sample costs. If a standard usability questionnaire such as the System Usability Scale is used, it should be administered and scored according to its published

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instructions. The final paper should report the sample size, recruitment method, test tasks, anonymized results, and limitations. No numerical result should be added until it has actually been collected and checked.

XIII. EXPECTED OUTCOMES

If the proposed system is implemented successfully, it is expected to provide a more organized way to prepare and revise a trip. Users should be able to view itinerary suggestions, compare the main cost categories and identify which information is estimated or supplied by an external provider. The safety section is expected to make verified contact information easier to locate, while keeping location sharing under the user's control. These are expected outcomes and will need to be checked through prototype testing; they are not findings from a completed experiment.

XIV. LIMITATIONS

The usefulness of Yatra AI will depend on the quality and availability of external data. Transport schedules, hotel prices, opening hours and attraction fees can change. Some providers may restrict API access or require commercial agreements. AI-generated suggestions may be unsuitable if user requirements or destination information are incomplete. GPS readings can be inaccurate, and internet access may not always be available. A student prototype cannot replace official emergency services or guarantee that a suggested route is safe. These limitations should be visible to users rather than hidden behind confident wording.

XV. FUTURE SCOPE

Future versions may include Marathi, Hindi and other regional languages; weather-aware itinerary changes; group trip collaboration; shared budgets; accessibility-focused recommendations; offline trip summaries; and opt-in check-ins with trusted contacts. Feedback from actual users could help improve the relevance of recommendations. Any new feature involving personal information, payments or emergency communication should be introduced only after its security, consent and reliability requirements have been addressed.

XVI. CONCLUSION

Yatra AI (My TripPlanner) is a proposed travel-planning platform intended to bring itinerary preparation, route information, accommodation suggestions, budget estimation, destination details and safety information into one place. The project focuses on making the planning process easier to follow and giving users a clearer view of the choices involved in a trip. Its contribution at this stage is the proposed integrated design and development plan. The next important step is to complete a working prototype, connect reliable data sources where possible and evaluate the system using real tasks and documented user feedback. The final claims of the research should be based on that implementation and evidence.

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[5]. Mapbox, "Documentation." https://docs.mapbox.com/
[6]. OWASP Foundation, "OWASP Top 10: Web Application Security Risks." https://owasp.org/www-project-top-ten/ Appendix A. Suggested Project Deliverables
[7]. Requirements specification and use-case diagram.
[8]. Interface wireframes or a clickable prototype.
[9]. System architecture and database entity-relationship diagram.
[10]. A working minimum viable product with sample destinations.
[11]. Test cases, a usability questionnaire and anonymized evaluation results.
[12]. Setup instructions, data-source attribution, privacy notice and user guide. .

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