

AI Driven Smart Tourism

Platform for Personalized

Safe & Sustainable

Travel Planning



Presenter
R25 - 006

OUR TEAM



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AGENDA

- 01 BACKGROUND**
- 02 RESEARCH PROBLEM**
- 03 OBJECTIVES**
- 04 OVERALL SYSTEM DIAGRAM**

BACKGROUND

Modern travelers seek highly personalized experiences and seamless itinerary planning tools.

Artificial Intelligence and real-time data are revolutionizing travel by enabling smarter and tailored experiences.

Existing platforms lack advanced features like real-time safety updates, collaborative travel platform, flexible itinerary management, and effective budget planning.



RESEARCH PROBLEM

01

Existing platforms fail to combine itinerary optimization, real-time safety alerts, and cost management, making it difficult for travelers to access a comprehensive solution in one place.

02

Travelers have limited options to modify their plans dynamically based on changing preferences, unexpected events, or real-time conditions during their journey.

03

Most platforms do not focus on enabling group-based travel planning or connecting travelers with similar interests to collaborate on trips or events.

04

Current tools lack the ability to provide predictive cost estimates and adjust budgets dynamically, preventing travelers from effectively managing their expenses across different activities.



OBJECTIVES

Provide a Collaborative Travel Companion Platform for group matching, event planning and real-time communication

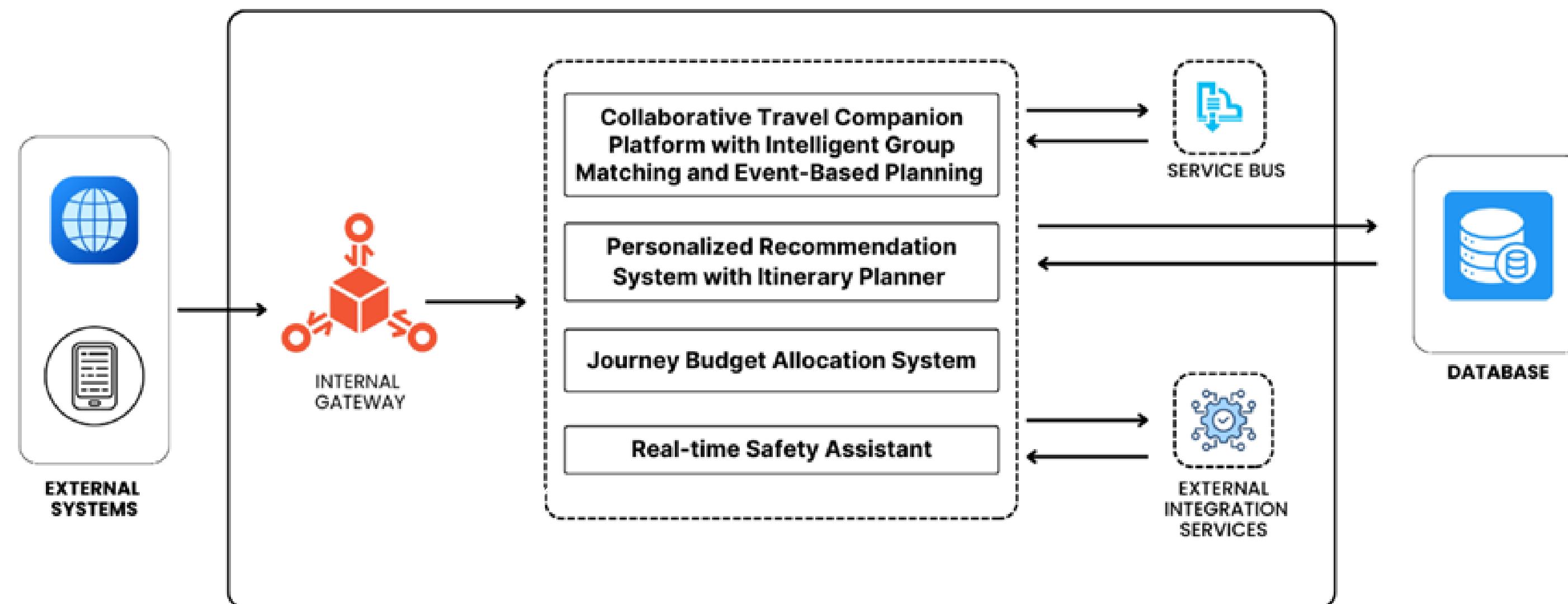
Provide a feature Personalized Recommendation System for AI-driven itineraries.

Provide a feature Travel Budget Allocation System for predictive and adjustable cost management.

Provide a platform for Real-Time Safety Assistant for instant alerts and data-driven insights.



OVERALL SYSTEM DIAGRAM





COST MANAGEMENT PLAN

Type	Cost
Internet use and web hosting	LKR.10,000.00
Training Cost	LKR.30,000.00
Publication Cost	LKR.30,000.00
Stationery	LKR.5,000.00
Total	LKR.75,000.00

This amount may differ according to the economic
crisis

COMMERCIALIZATION

The proposed solution will be integrated with the web application and these features are very unique

By comparing the competitors these features are new to the travel platform.

SUBSCRIPTION

ADVERTISING STRATEGY





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SPECIALIZING - SOFTWARE ENGINEERING





AGENDA

- 01 BACKGROUND**
- 02 RESEARCH QUESTIONS**
- 03 RESEARCH GAP**
- 04 MAIN AND SUB OBJECTIVES**
- 05 METHODOLOGY**

BACKGROUND

Travel platforms currently lack personalized group matching based on users' specific preferences,

Limited tools for real-time coordination of activities and cost-sharing among group members.

- Lack of continuous feedback mechanisms to
- improve recommendations and user satisfaction.



RESEARCH QUESTIONS

01

How can intelligent group matching improve the travel experience for users?

02

What features can facilitate effective real-time coordination among travel group members?

03

How can user-generated trip plans help others with similar preferences?

04

How can continuous user feedback improve group recommendations and enhance user satisfaction?



RESEARCH GAP

Feature	Tripadvisor Sri Lanka	Visit Sri Lanka (Official Tourism Website)	Lanka Traveller	Sri Lanka Group Tours (Tour Operators)	Proposed Collaborative Travel Platform
Group Travel Coordination	✗	✗	✗	✗	✓
Intelligent Group Matching	✗	✗	✗	✗	✓
Real-time Collaboration	✗	✗	✗	✗	✓
Sentiment Analysis	✗	✗	✗	✗	✓

OBJECTIVES

OBJECTIVE 01

AI-Driven Group Matching users by preferences & Suggest trip plans created by other

OBJECTIVE 02

Real-time communication and collaboration allowing group members to efficiently coordinate and plan

OBJECTIVE 03

Implement sentiment analysis techniques to gather feedback from users enhance the recommendations system

OBJECTIVE 04

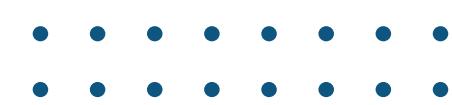
Ensure user-friendly interface and accessible for diverse traveler groups



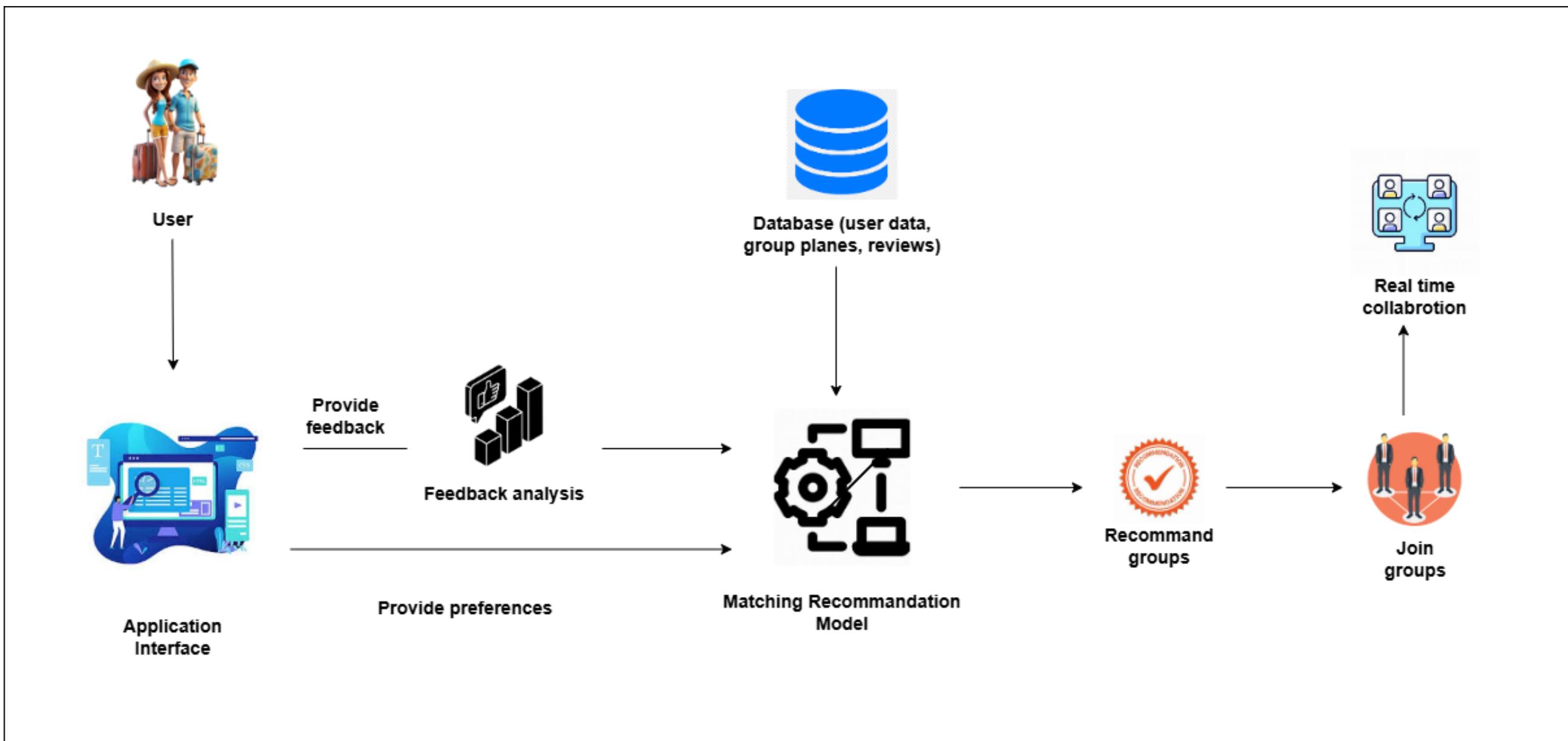


METHODOLOGY

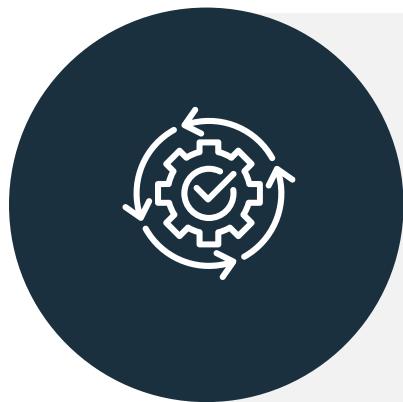
- 01** SYSTEM DIAGRAM
- 02** TOOLS AND TECHNOLOGIES
- 03** REQUIREMENTS
- 04** WORK BREAKDOWN STRUCTURE
- 05** GANTT CHART



SYSTEM DIAGRAM

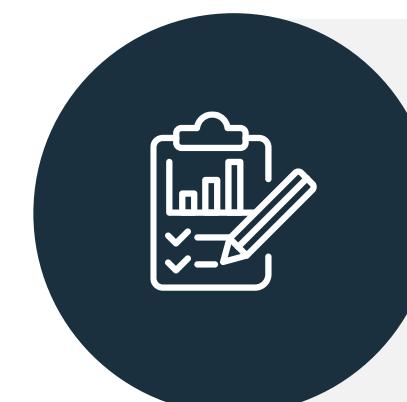


TOOL AND TECHNOLOGIES



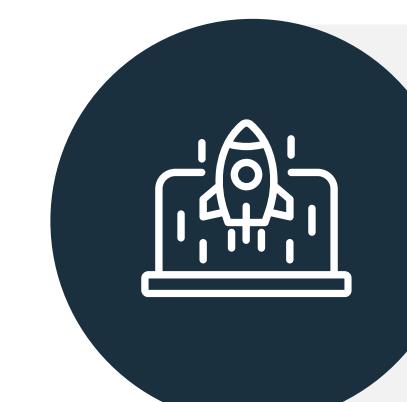
Programming Languages

Python



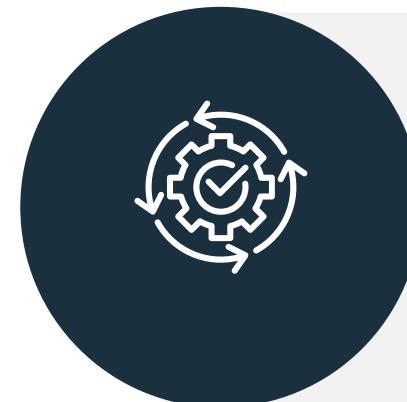
Project Management

Jira



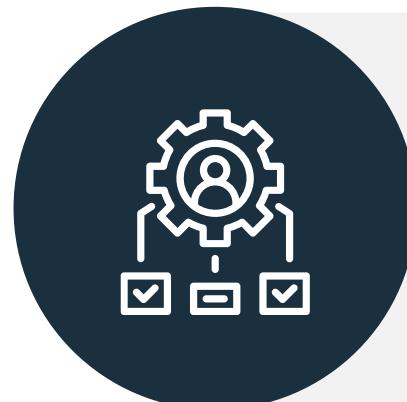
Database

MongoDB



Frameworks & Libraries

NLTK, TensorFlow,
Scikit-learn, React



Other Tools

Git , Draw.io
Postman,
Docker, kubernets

REQUIREMENTS

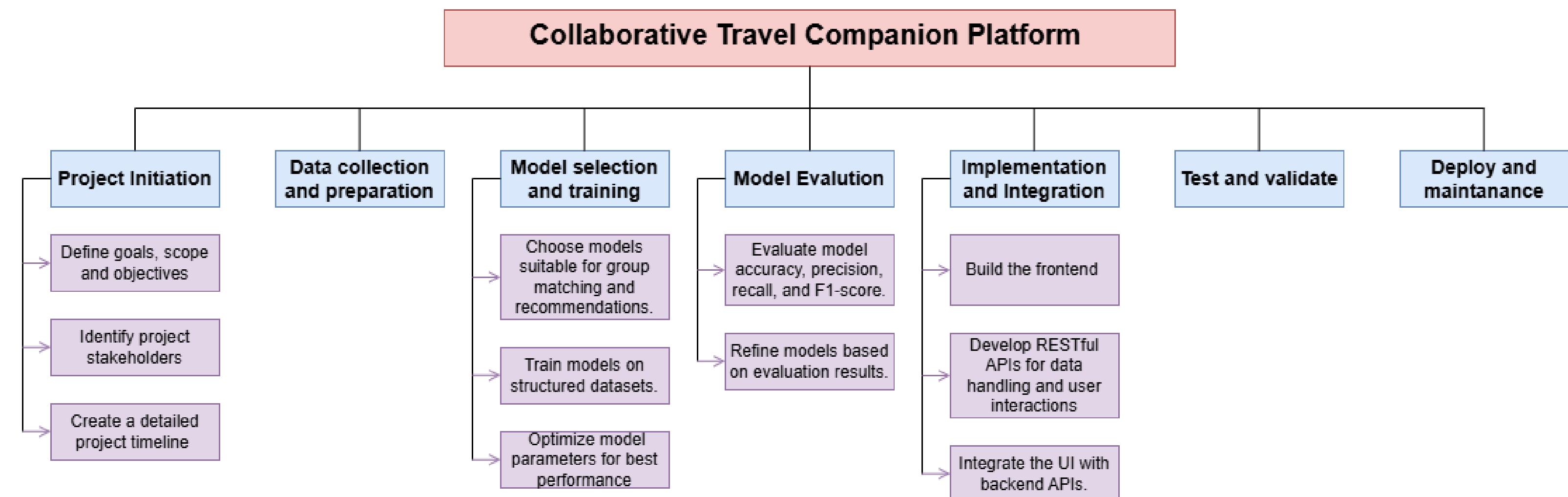
FUNCTIONAL

- Gather and Manage Dataset
- User Matching & Recommendations
- Trip Planning and Collaboration
- Real-Time Communication
- Feedback Collection & Analysis
- Platform Implementation

NON-FUNCTIONAL

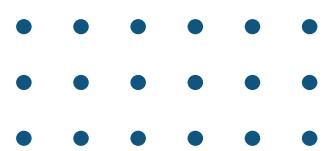
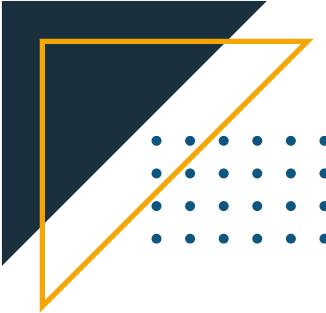
- Performance
- Scalability
- Reliability
- Usability
- Security
- Maintainability

WORK BREAKDOWN STRUCTURE



GANTT CHART

Tasks	2024		2025									
	November	December	January	February	March	April	May	June	July	August	September	October
Research topic selection												
Feasibility Study												
Evaluate feasibility and background study												
Topic evaluation												
Requirement gathering												
Background survey												
Literature review												
Requirement analysis												
Software requirement specification												
Functional and non functional requirements												
Project charter												
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Software design												
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Integration Testing												
Deployment and maintenance												
Final presentation and Viva												



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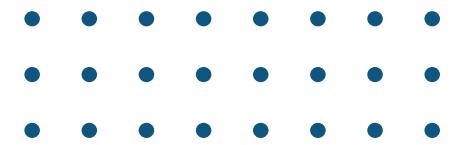
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 - [2] A. Smith and J. Lee, "Machine Learning Applications in Travel Itinerary Planning," *Travel Tech Review*, vol. 58, no. 2, pp. 112–129, 2020.
 - [3] H. Zhang and Y. Wang, "Sentiment Analysis for Travel Recommendations: A Review," *International Journal of Tourism Research*, vol. 23, no. 4, pp. 468–482, 2020.
 - [4] M. Kumar and R. Ranjan, "Real-time Communication in Group Travel: Challenges and Opportunities," *Tourism Management Perspectives*, vol. 35, no. 1, pp. 121–134, 2020.
 - [5] S. Chen and T. Zhou, "Sustainable Tourism and AI: Bridging the Gap," *Eco-Tourism Journal*, vol. 45, no. 5, pp. 215–230, 2021.
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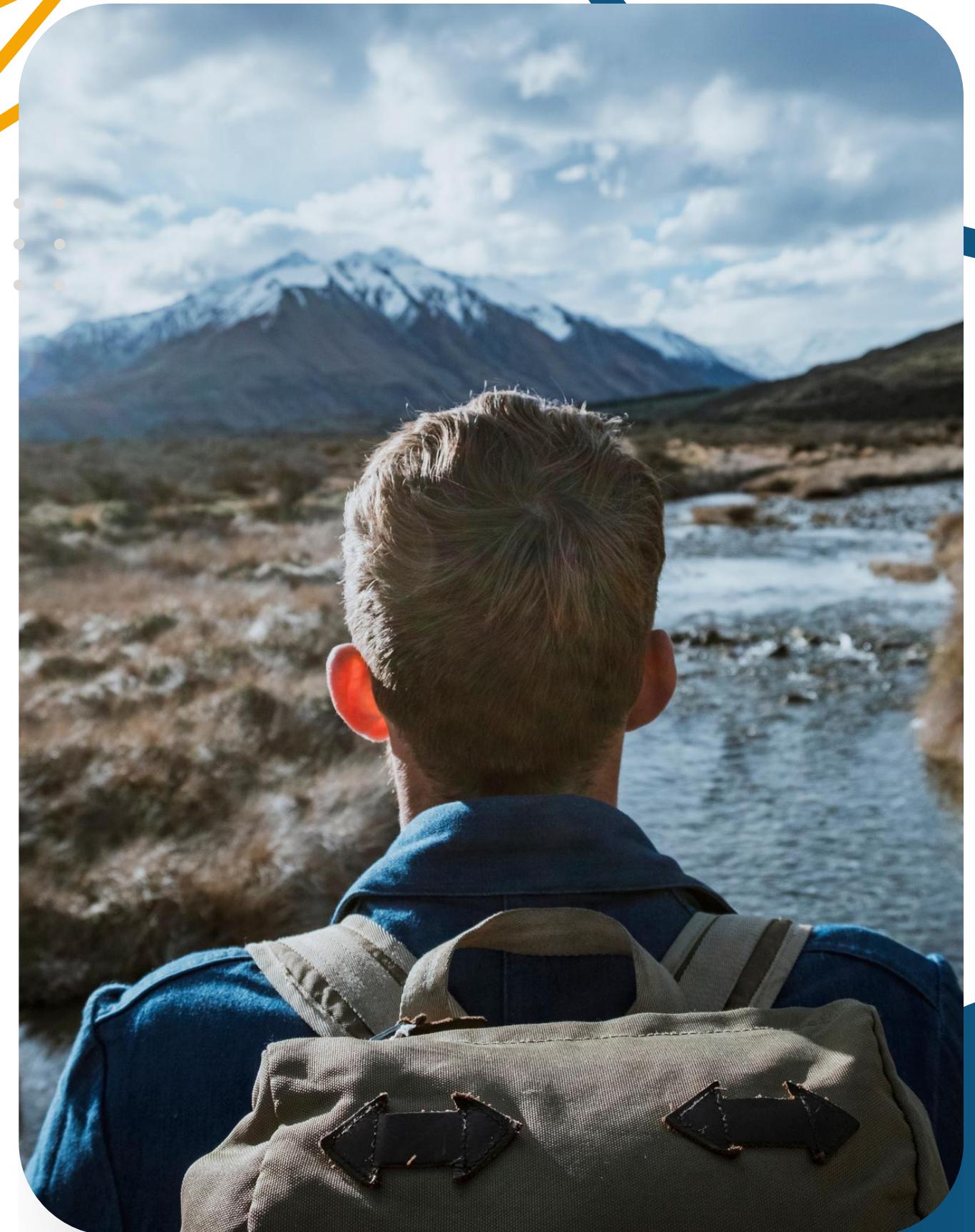


BACKGROUND

Travel platforms struggle to provide tailored recommendations that align with individual preferences and travel styles.

Current systems lack effective itinerary planning tools that adapt to users' dynamic interests and constraints.

Limited use of advanced AI techniques, like collaborative filtering and NLP, to process user reviews and preferences for better personalization.



RESEARCH QUESTIONS

01

How can AI-driven techniques like collaborative and content-based filtering improve personalized travel recommendations?

02

What methods can be implemented to generate adaptive itineraries that cater to diverse user preferences and constraints?

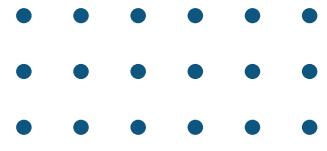
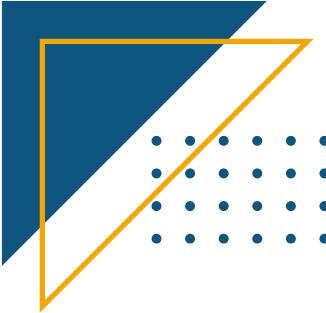
03

How can natural language processing (NLP) effectively extract user sentiments and preferences from textual reviews to enhance the recommendation process?

04

How can a dynamic itinerary planner optimize travel plans by integrating user preferences, travel constraints, and available locations?





RESEARCH GAP

01

Existing systems rely on either location-based or collaborative filtering methods, which are limited in precision.

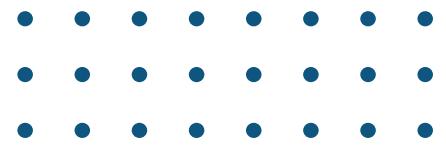
02

Current platforms and solutions lack the capability to provide the itinerary planning features users require, often forcing them to make manual adjustments.

03

Other platforms do not offer the ability to create or share interest-based plans with individuals who have similar preferences.

OBJECTIVES



Ensure System
Performance and Scalability

Suggest Nearby Attractions
and Activities



Provide Real-Time Dynamic
Itinerary Adjustments

Generate Personalized
Recommendations

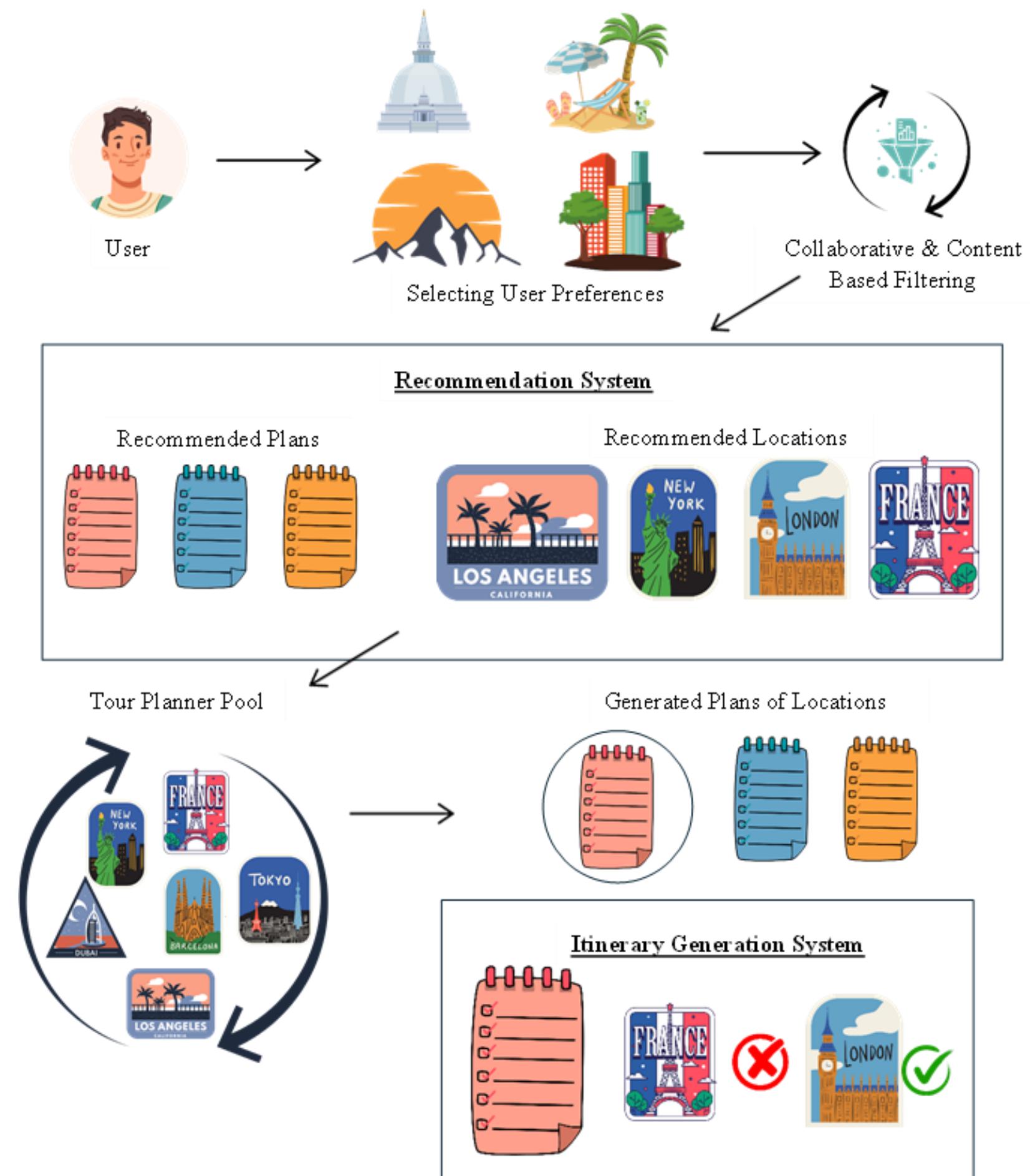
Enhance User Interaction
and Engagement



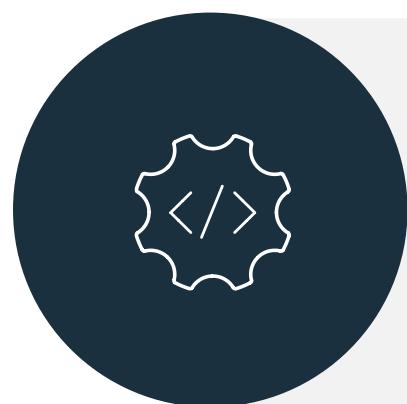
METHODOLOGY

- 01** SYSTEM DIAGRAM
- 02** TOOLS AND TECHNOLOGIES
- 03** REQUIREMENTS
- 04** WORK BREAKDOWN STRUCTURE
- 05** GANTT CHART

SYSTEM DIAGRAM

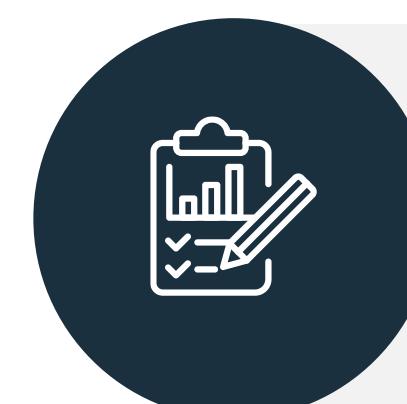


TOOLS AND TECHNOLOGIES



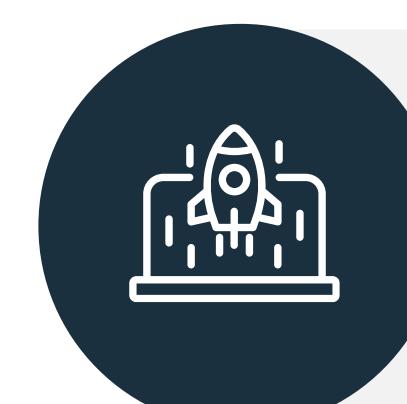
Programming Languages

TypeScript,
Python



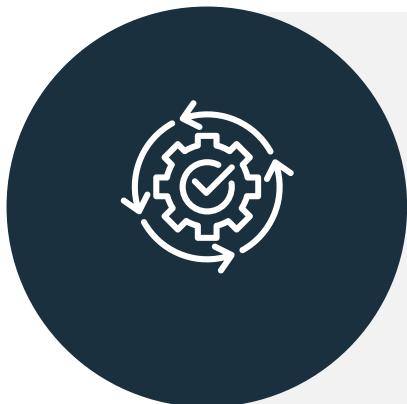
Project Management

Jira



Database

MongoDB



Frameworks & Libraries

Pandas, Spacy, React,
Scikit-learn, TensorFlow



Other Tools

Git , Draw.io Postman,
Docker, Kubernetes

REQUIREMENTS

FUNCTIONAL

- Registration and user profile management.
- Preference collection, including destinations, interests, and budgets.
- Real-time recommendation generation based on user inputs.
- Drag-and-drop functionality for itinerary planning.
- Ability to finalize and save travel plans.

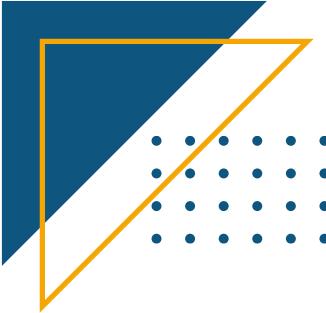
NON-FUNCTIONAL

- Real-time performance and low response times.
- Scalability to handle large datasets and high user traffic.
- Secure storage and transmission of sensitive user data.

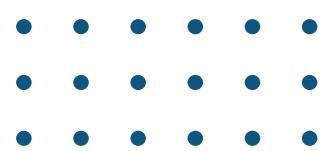


GHANNT CHART

Task List	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Research Topic Selection												
Feasibility Study												
Evaluation Feasibility & Background Study												
Topic Evaluation												
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Progress Presentation 01												
Research Paper												
Unit Testing												
Progress Presentation 02												
Software Integration												
Integration Testing												
Deployment & Maintanance												
Final Presentation & Viva												



REFERENCES



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- [4] <https://wttc.org/LinkClick.aspx?fileticket=2VluL2e-nAA%3D&portalid=0&utm>
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AGENDA

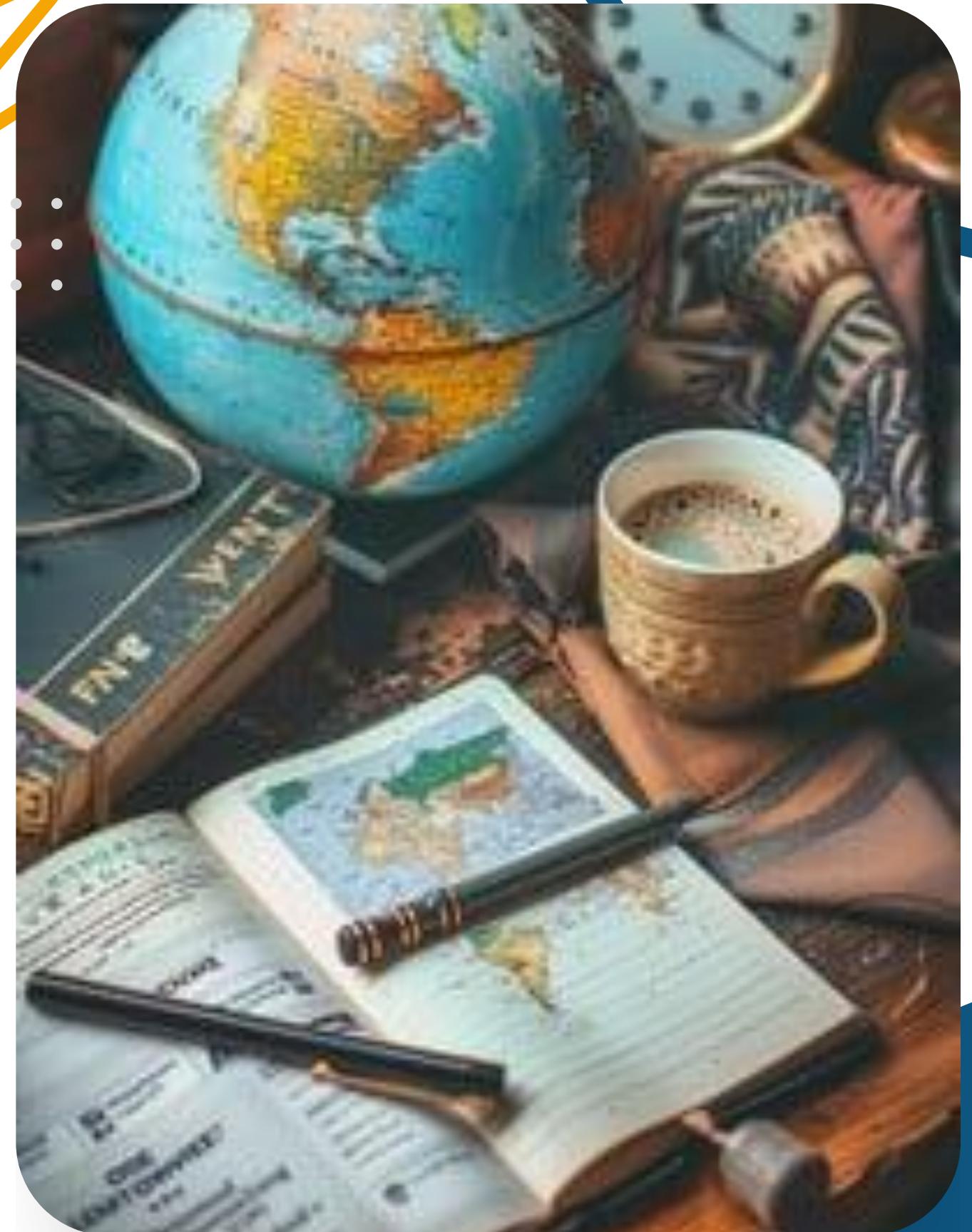
- 01** BACKGROUND
- 02** RESEARCH QUESTIONS
- 03** RESEARCH GAP
- 04** MAIN AND SUB OBJECTIVES
- 05** METHODOLOGY

BACKGROUND

Traditional travel budgeting tools rely on static data and manual processes, which don't adapt to changing expenses or preferences.

Current systems often provide generalized recommendations, making them unsuitable for travelers with unique needs or dynamic plans.

Advancements in machine learning, real-time data integration, and user-centric design provide opportunities for personalized, adaptive budgeting tools with improved engagement and accessibility.



RESEARCH QUESTIONS

01

What are the limitations of current tools for travel budget allocation?

02

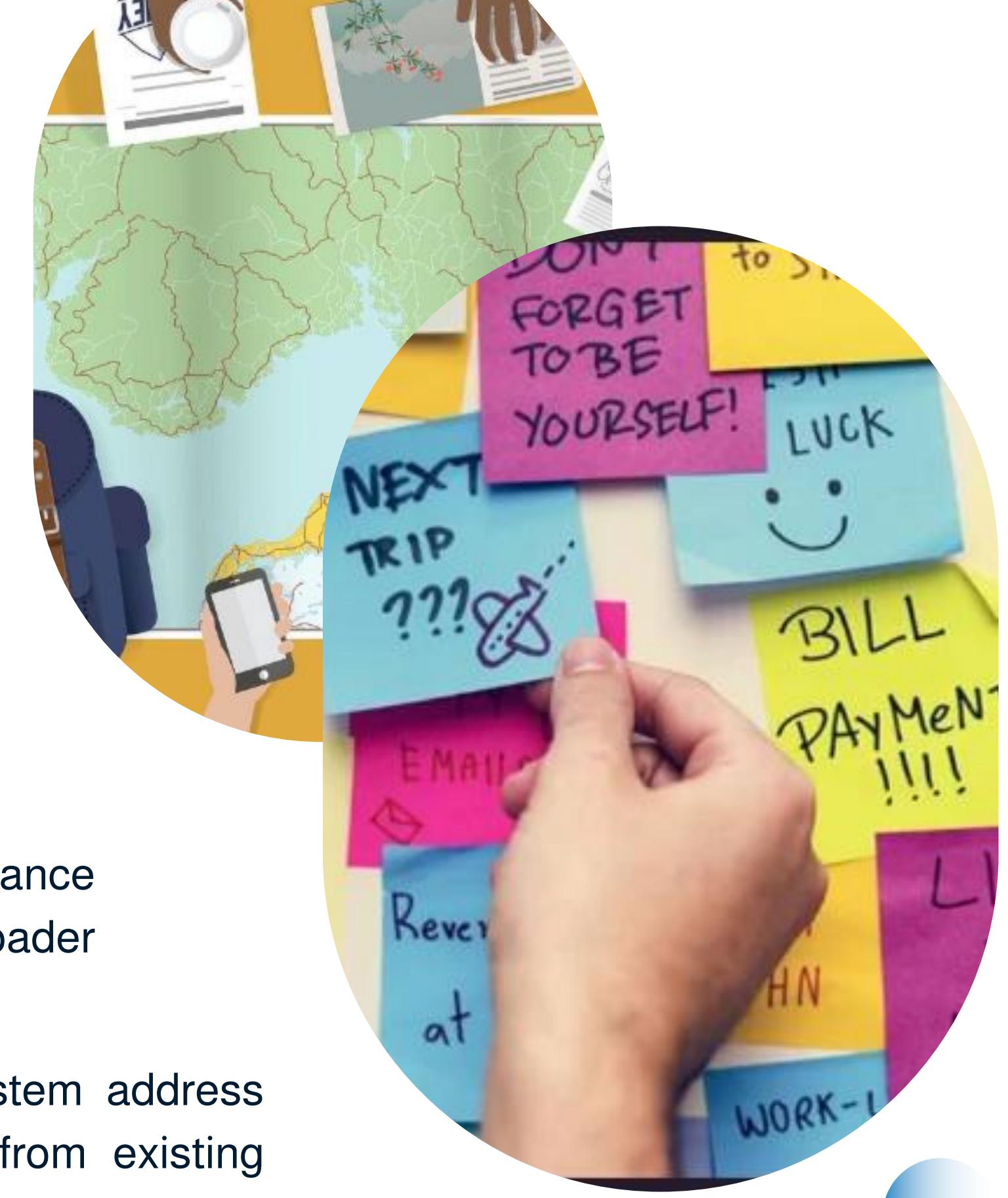
How can predictive algorithms and real-time data improve the accuracy and reliability of travel budgeting?

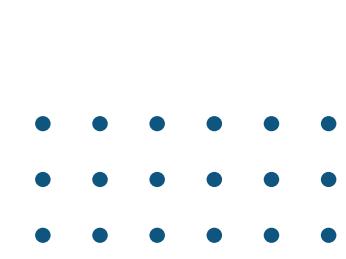
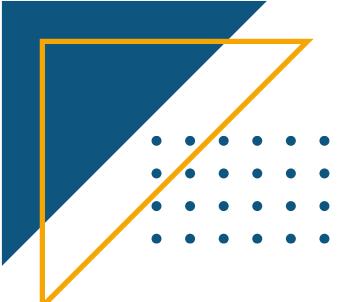
03

How can user-centric design enhance accessibility and usability for a broader audience?

04

How does the proposed system address these gaps and stand out from existing solutions?





RESEARCH GAP

01

Current budgeting tools use static data and generic recommendations, while the proposed solution integrates real-time data and predictive algorithms for personalized, accurate budgeting.

02

Integrates real-time data and predictive algorithms for accurate cost forecasting, offering personalized recommendations based on travel style, budget, and destination.

03

Delivers an adaptive, user-friendly system that helps travelers optimize budgets and avoid overspending.



OBJECTIVES

- Develop a Dynamic Budget System

Create an intelligent Travel Budget Allocation System that adapts to real-time data and user preferences, offering personalized and accurate budget recommendations.

- Design a User-Centric Interface

Build an intuitive interface allowing travelers to customize budget preferences and receive tailored recommendations based on their travel style and goals.

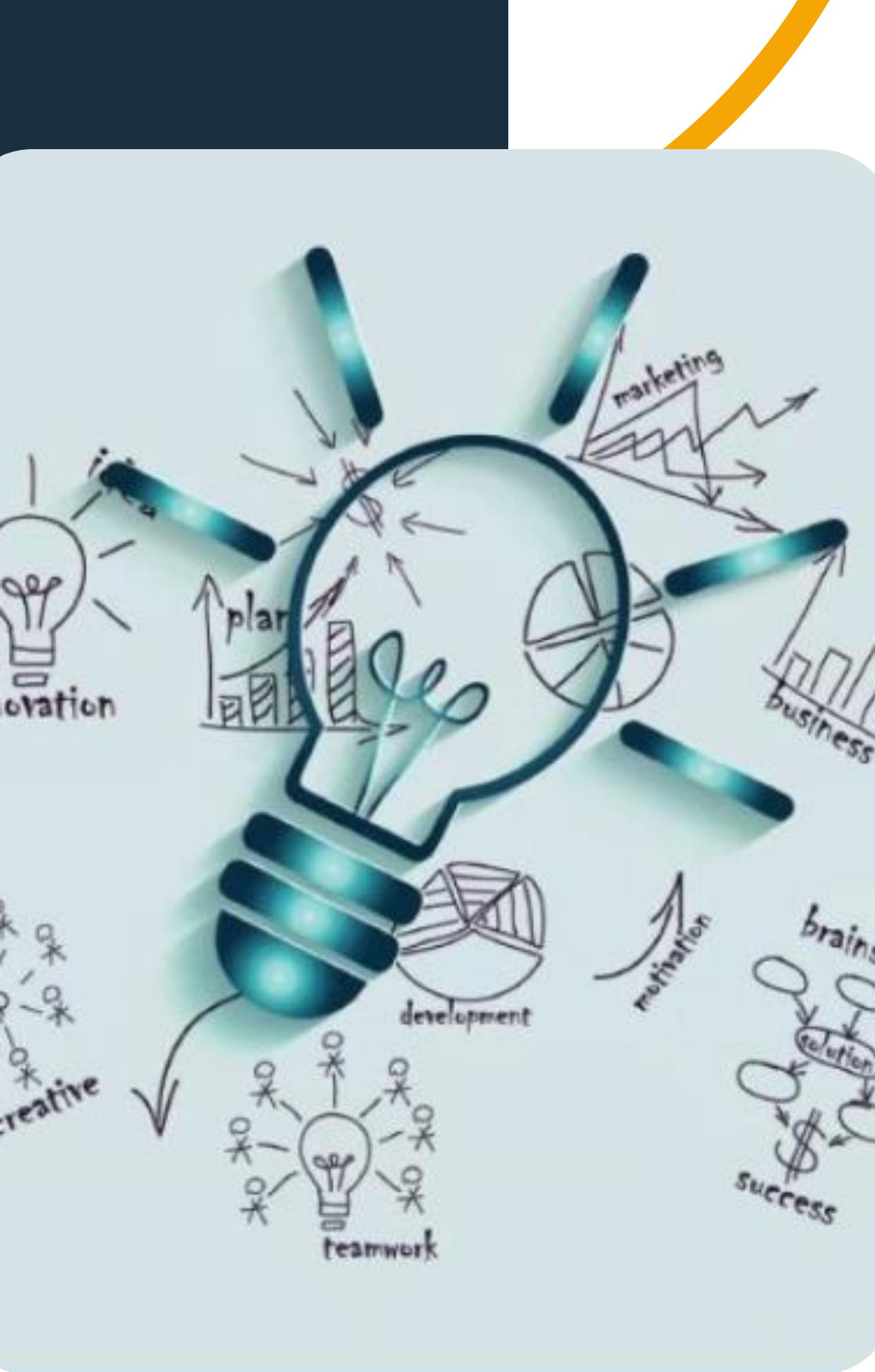
- Implement Predictive Algorithms

integrate predictive models to estimate travel costs (accommodations, transport, meals) using historical data and real-time inputs for accurate forecasts.

- Integrate APIs & Validate System

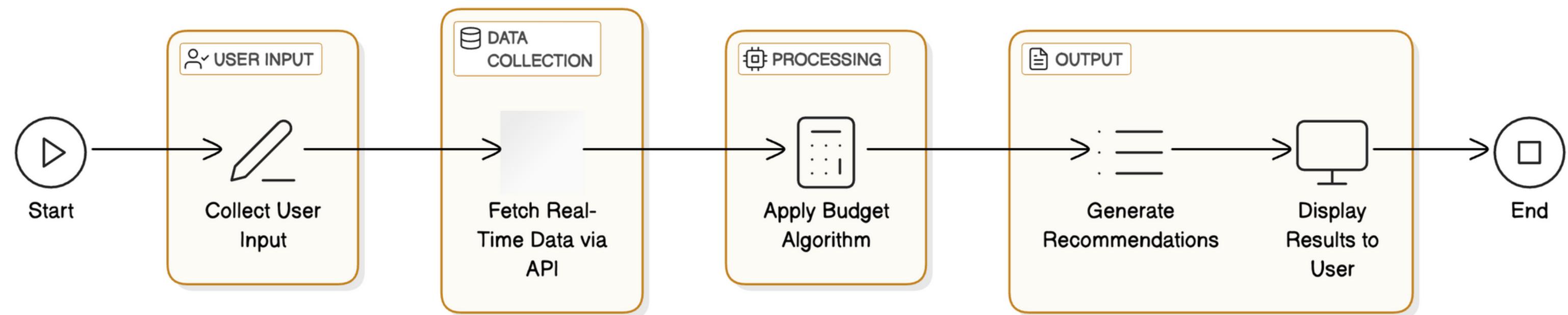
Integrate external APIs for real-time cost data and conduct rigorous testing to ensure system accuracy, reliability, and adaptability to changing market conditions and user needs.

METHODOLOGY

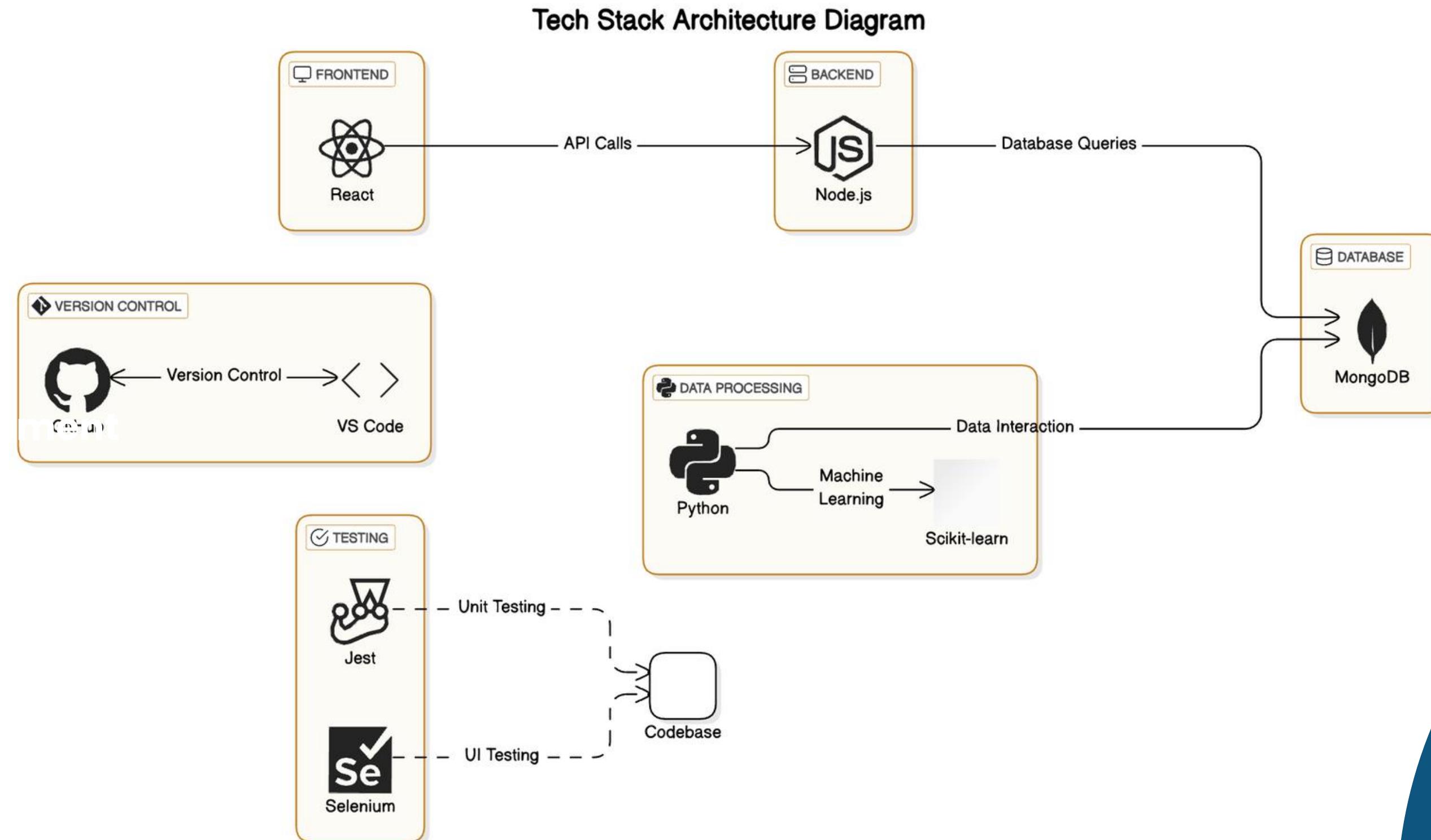


- 01** SYSTEM DIAGRAM
- 02** TOOLS AND TECHNOLOGIES
- 03** REQUIREMENTS
- 04** WORK BREAKDOWN STRUCTURE
- 05** GANTT CHART

SYSTEM DIAGRAM



TOOL AND TECHNOLOGIES



REQUIREMENTS

FUNCTIONAL

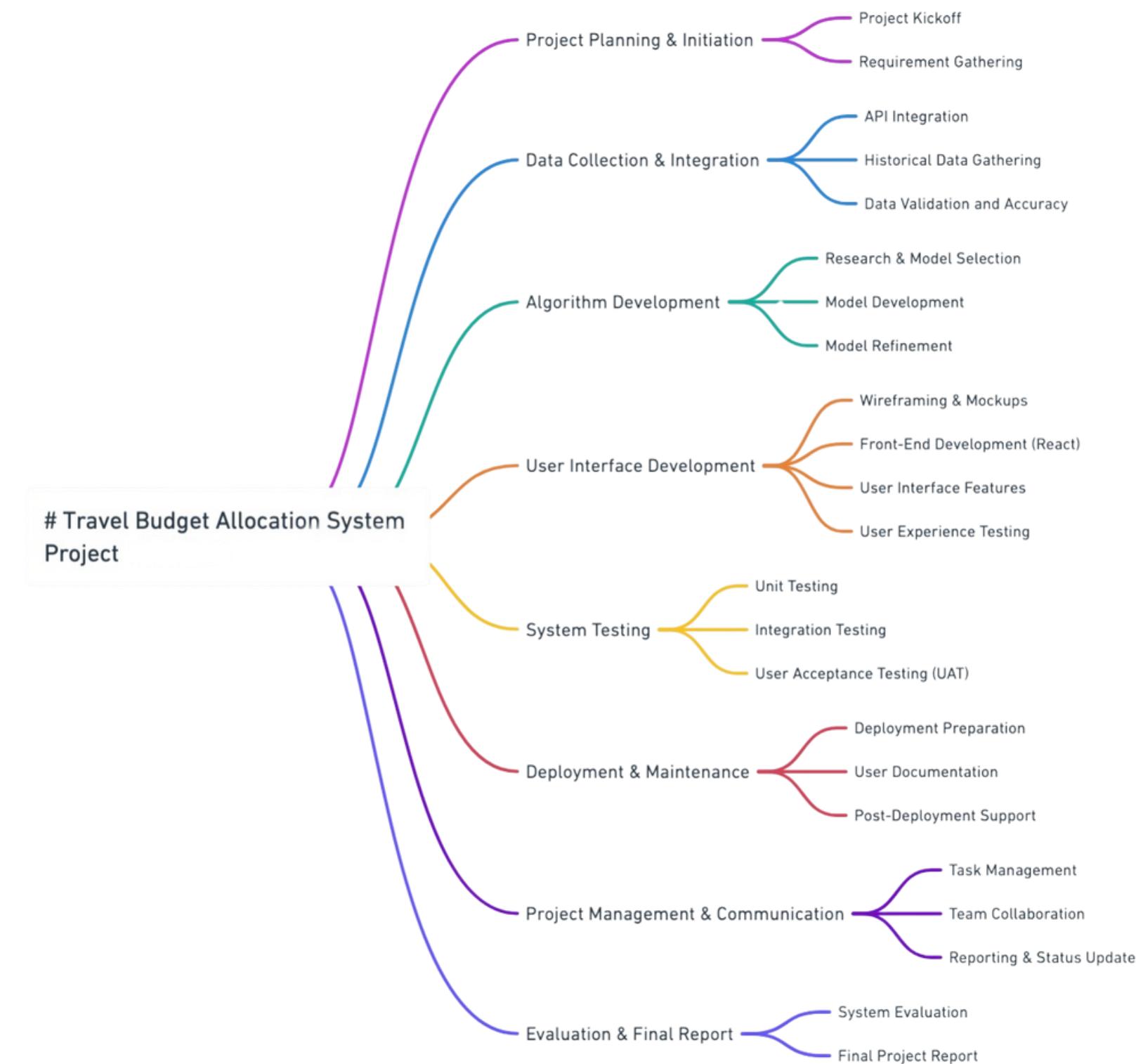
- Real-Time Data Integration
- Accurate Predictions
- Customizable Suggestions
- Notification System
- Collaboration

NON-FUNCTIONAL

- Reliability of Predictions
- Fast Response Times
- User-Friendly Interface
- Maintainability
- Localization

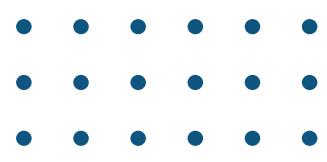
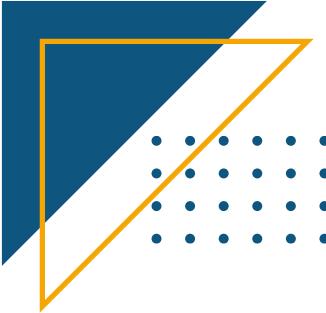


WORK BREAKDOWN STRUCTURE

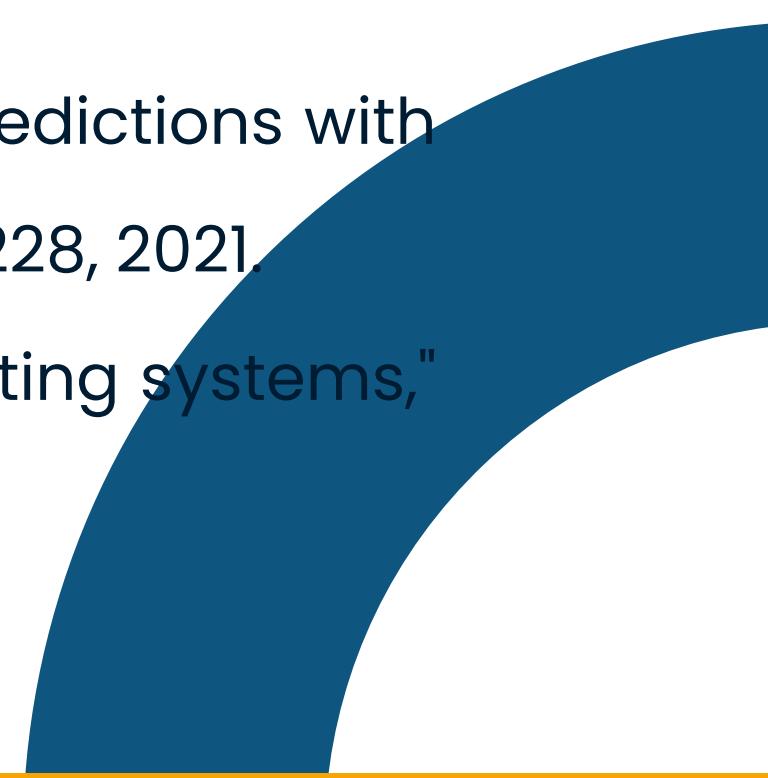


GANNT CHART

Task	Start Date	End Date	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25
Research topic selection	Nov 2024	Nov 2024												
Feasibility study	Nov 2024	Nov 2024												
Evaluating feasibility and background study	Nov 2024	Nov 2024												
Topic evaluation	Dec 2024	Dec 2024												
Requirement gathering	Dec 2024	Dec 2024												
Background survey	Dec 2024	Dec 2024												
Literature review	Dec 2024	Dec 2024												
Requirement analysis	Dec 2024	Dec 2024												
Software requirement specification	Dec 2024	Jan 2025												
Functional and Non-Functional requirements	Jan 2025	Jan 2025												
Project charter	Jan 2025	Jan 2025												
Proposal presentation	Jan 2025	Jan 2025												
Project proposal report	Jan 2025	Jan 2025												
Software Design	Feb 2025	Feb 2025												
Designing wireframes	Feb 2025	Feb 2025												
ML Component development	Feb 2025	Apr 2025												
Frontend development	Feb 2025	Apr 2025												
Progress presentation - 1	May 2025	May 2025												
Research paper	May 2025	Jun 2025												
Unit testing	Jul 2025	Jul 2025												
Progress presentation - 2	Aug 2025	Aug 2025												
Software integration	Aug 2025	Aug 2025												
Integration testing	Aug 2025	Sep 2025												
Deployment and maintenance	Sep 2025	Oct 2025												
Final presentation and viva	Oct 2025	Oct 2025												



REFERENCES

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 - [4] J. Smith and K. Thomas, "Machine learning for travel budgeting: Enhancing cost predictions with predictive algorithms," *Journal of Artificial Intelligence in Tourism*, vol. 16, no. 3, pp. 215–228, 2021.
 - [5] M. Green and D. Turner, "Real-time data integration: A new frontier in travel budgeting systems," *Journal of Travel Technology*, vol. 21, no. 1, pp. 50–65, 2020.
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SPECIALIZING - SOFTWARE ENGINEERING





AGENDA

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- 05 METHODOLOGY**

BACKGROUND

Visitors are often unfamiliar with the local environment, a natural sense of alienation can arise.

Prioritizing their safety and well-being is essential to fostering positive experiences and sustaining the growth of the tourism sector.

TripAdvisor and Google Maps provide general information, but their safety-centric capabilities remain limited.



RESEARCH QUESTIONS

01

How AI agents can assist tourists with their safety concerns?

02

How can a tourist avoid circumstances like protests to enjoy his travels without a headache?

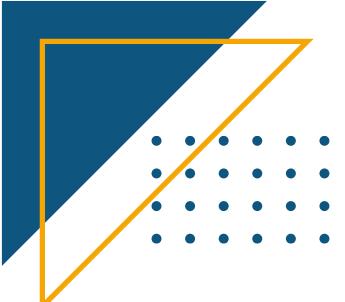
03

The possible risks a tourist may face and whether early warnings help avoid any unfavorable incidents

04

can use of Retrieval Augmented Generation (RAG) provide relevant and mutable information





RESEARCH GAP

1

Lack of existing research on safety concerns expressed by tourists both in local and global context

2

Unavailability of a service to inform tourists on current events like protests, and other other movements

3

Lack of a tool to inform tourists based on the location to give them region-specific information

OBJECTIVES

Collect Data Related to Popular
Tourist Destinations and connect the
AI agent

Research and create a safety
measurement profile

Develop the real-time monitoring tool

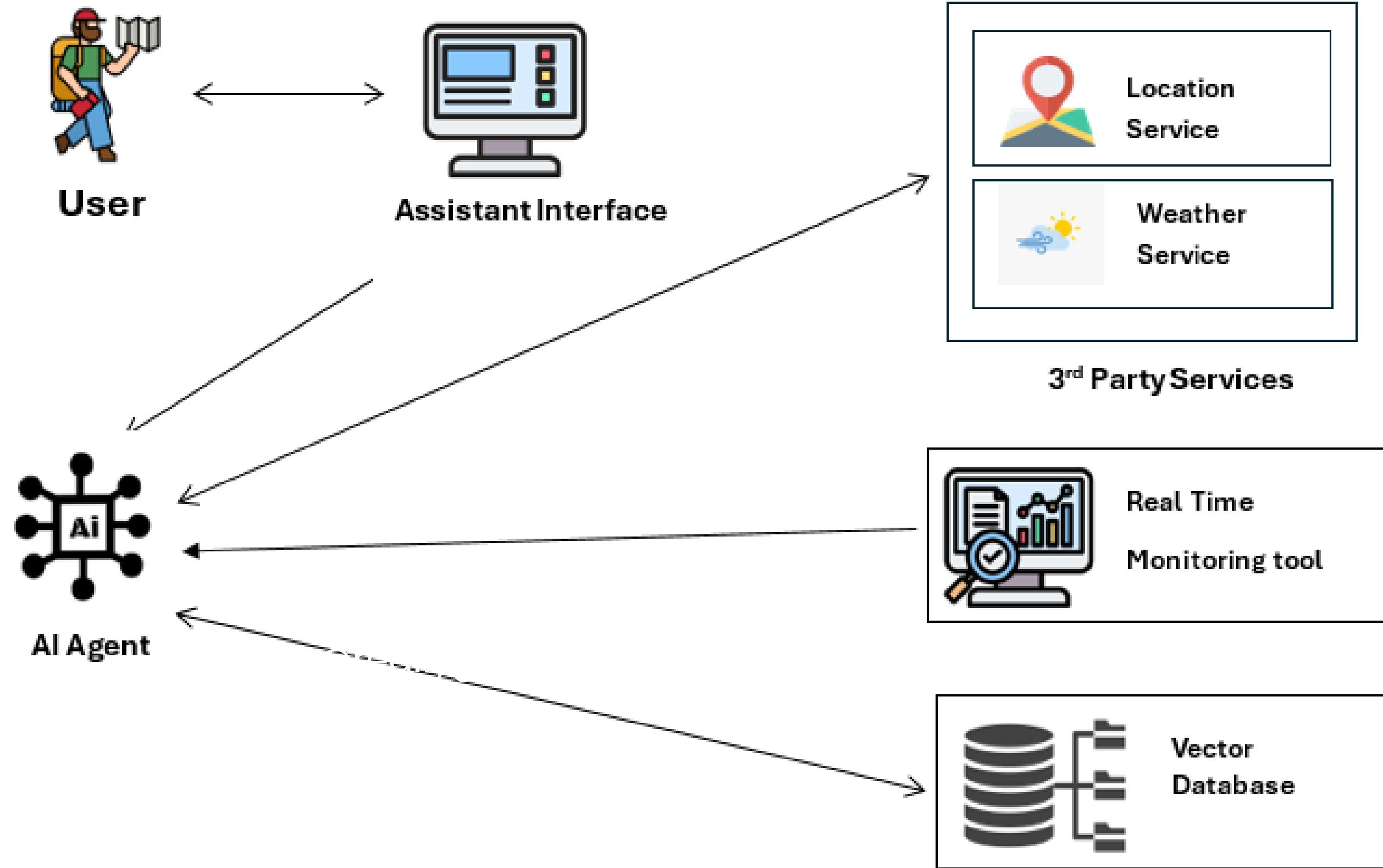
Integrate the above tools and Provide
an interface



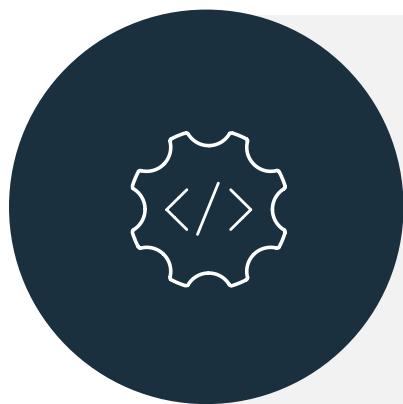
METHODOLOGY

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SYSTEM DIAGRAM

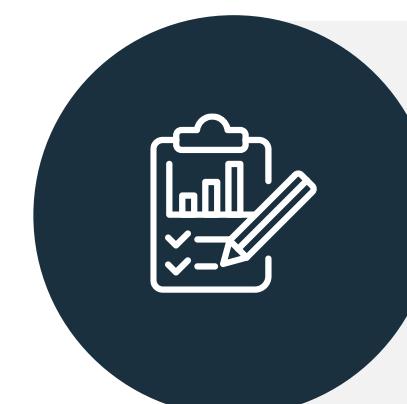


TOOL AND TECHNOLOGIES



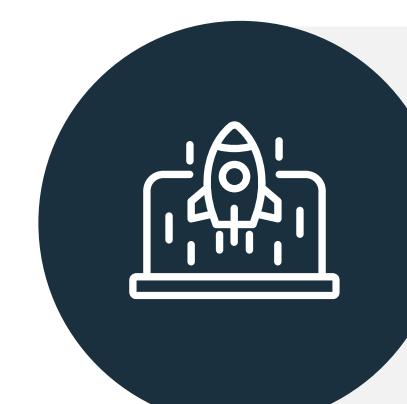
Programming Languages

Python ,
Javascript



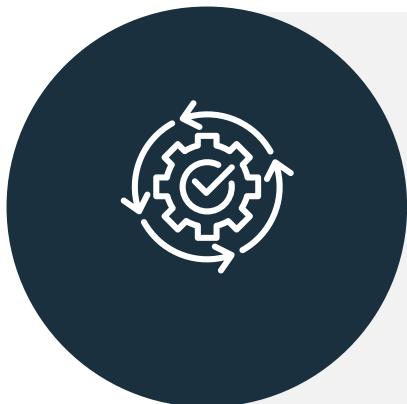
Project Management

Jira



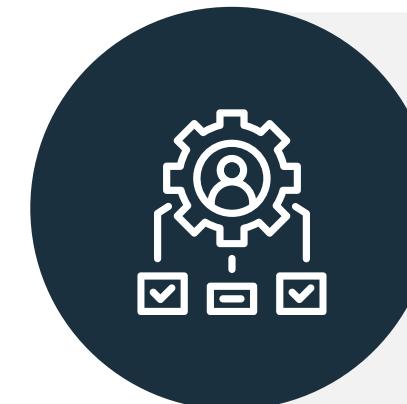
Database

Vector DB ,
MongoDB



Frameworks & Libraries

Langflow, RAG, Streamlit,
OpenAI gpt4o model API,
Google Services, GeoJS



Other Tools

Git , Draw.io Postman,
Docker, Kubernetes

REQUIREMENTS

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FUNCTIONAL

- Provide safety related information to the traveler based on location.
- Provide information on real-time incidents like protests to the traveler.
- Provide actionable insights based on safety concerns.
- Identify the user location correctly.

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-

NON-FUNCTIONAL

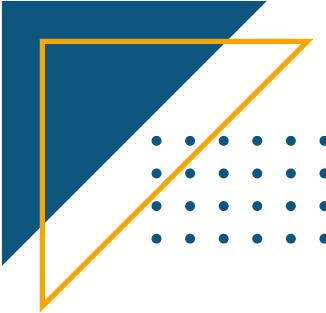
- High accuracy and relevancy
- High availability
- User friendly interface

WORK BREAKDOWN STRUCTURE



Tasks	2024		2025									
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Research Topic Selection												
Feasibility study												
Evaluate feasibility and background study												
Topic evaluation												
Background survey												
Literature Review												
Requirement analysis												
Project Charter												
Proposal Presentation												
Proposal Report												
Software Design												
Designing wireframes												
AI agent development												
Front end development												
Progress Presentation 1												
Research Paper												
UAT testing												
Progress Presentation 2												
Software integration												
Integration testing												
Deployment and maintenance												
Final Presentation and Viva												





REFERENCES



- [1] https://www.sltda.gov.lk/storage/common_media/Tourism-Growth-Trends-1985-2023.pdf
- [2] Lo, A., Law, R., & Cheung, C. (2011). Segmenting Leisure Travelers by Risk Reduction Strategies. *Journal of Travel & Tourism Marketing*, 28, 828-839.
<https://doi.org/10.1080/10548408.2011.623044>
- [3] https://www.sltda.gov.lk/storage/common_media/AirportSurveyReport2017_464182481.pdf



**THANK
YOU**

