Travel Discovery - Redefining Travel Planning And Exploration with Advanced Technology

24-25J-289

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Agenda

- Project Description
- Research Question
- Main Objectives
- Specific Objectives
- System Overview Diagram
- Technologies
- Individual Components Section
- Requirements
- Gannt Chart
- Commercialisation Aspects
- Q & A
- Thank You

RESEARCH QUESTION

- Travel planning is fragmented and lacks personalization?
- Organizing trips and adapting to changes is difficult for users?
- Discovering local attractions and managing unexpected alterations is challenging?
- Limited opportunities for community interaction and sharing travel experiences?
- Travelers struggle to find immediate assistance in emergency situations?

Introduction

Our research aims to create a personalized travel planning solution that enhances user experience through comprehensive trip planning, 3D attraction discovery, Travel experience sharing with community suggestion, real-time suggestions, including emergency assistance.

1) Comprehensive Personalized Travel Planning

2) Travel Experience Sharing and Social Connectivity

3) 3D Models and Interactive Maps

4) Travel Managing and Emergency Services

OBJECTIVES

Main Objective

Provide mobile application based solution for personalized travel planning, 3D attraction discovery, experience sharing, and real-time suggestions. Users earn points, get group and place recommendations, and receive emergency assistance.

Technologies

Mobile Application

- Cross Platform

Database

Firebase

Middle Ware Technologies

- Python •REST API Fast, API Flask API

Algorithms

- Cosine Similarity • Clustering algorithms • TF-IDF Vectorization

Technical Concepts

- •Machine Learning
- •Firestore & Firebase Auth

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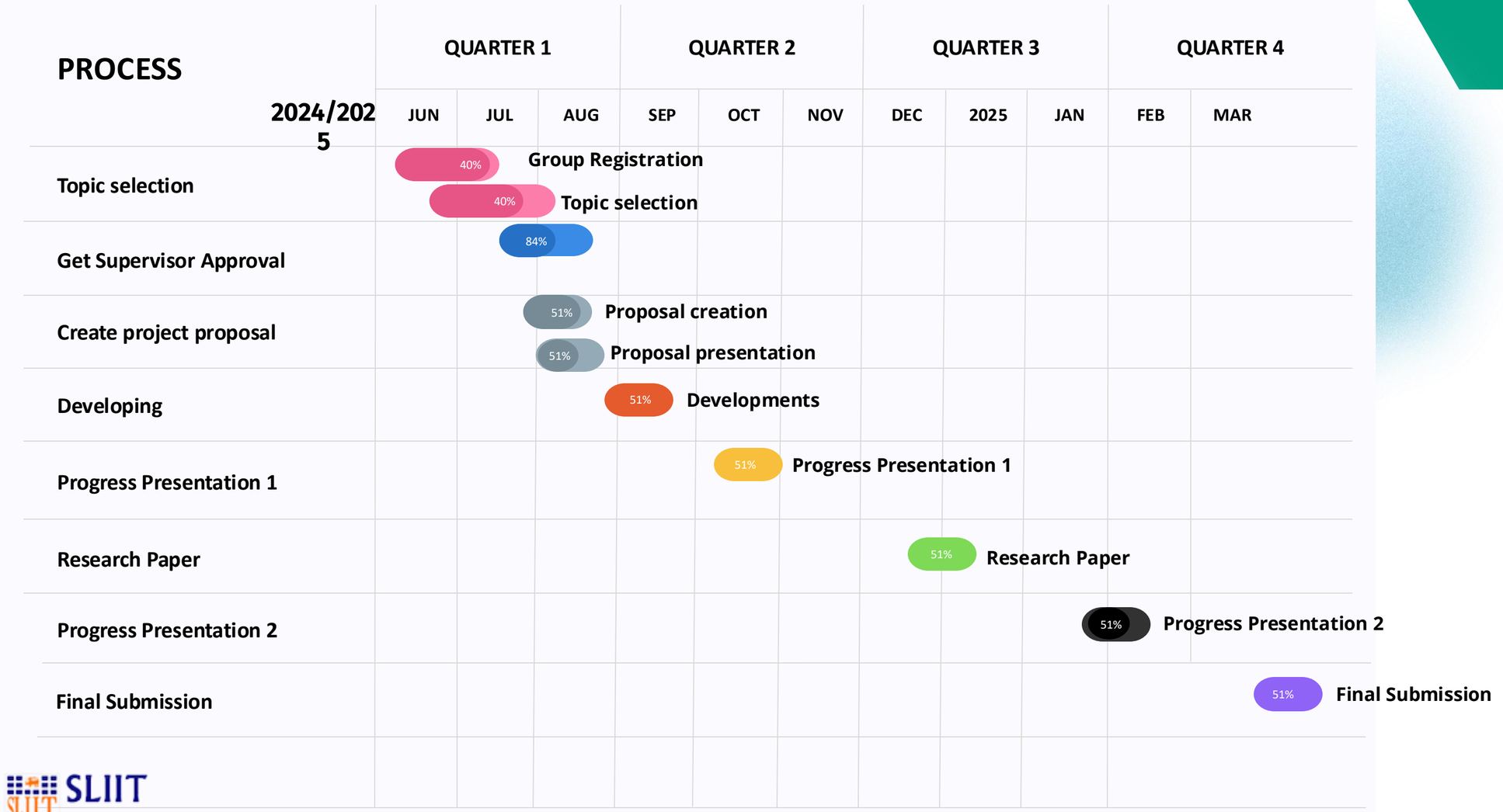
Gannt Chart



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Commercialisation Aspects

✅ Market Opportunity

- Growing travel app market ($1.9B by 2026)
- High demand for AI-driven personalized travel experiences
- Targets millennials, solo travelers, corporate users

✅ Revenue Model

- Freemium Model (Basic free, premium features)
- Affiliate Commissions (Hotels, airlines, tour operators)
- In-App Purchases (Guides, AI features, offline access)
- Advertisements & Partnerships (Travel brands, insurance)
- Data Insights (Anonymous user analytics for businesses)

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Identified Problem

How to provide mobile application based solution to

- Travelers face difficulty in finding personalized and flexible travel plans.
- Current apps provide generic suggestions, lack predictive capability, and do not adapt to user-specific inputs
- Most existing platforms do not dynamically suggest accommodations or nearby destinations based on context.

Current Implementation Limitations

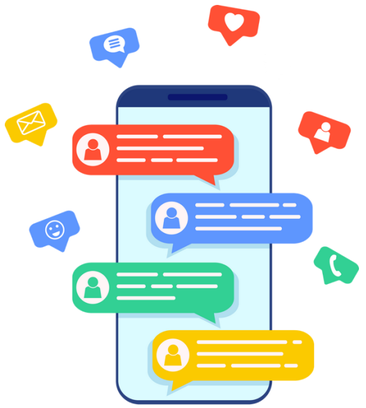
Users receive generic recommendations regardless of interest, travel type, or history

Travelers cannot specify destinations, travel duration, or preferences and get tailored results.

Lack of real-time suggestions for accommodations and attractions

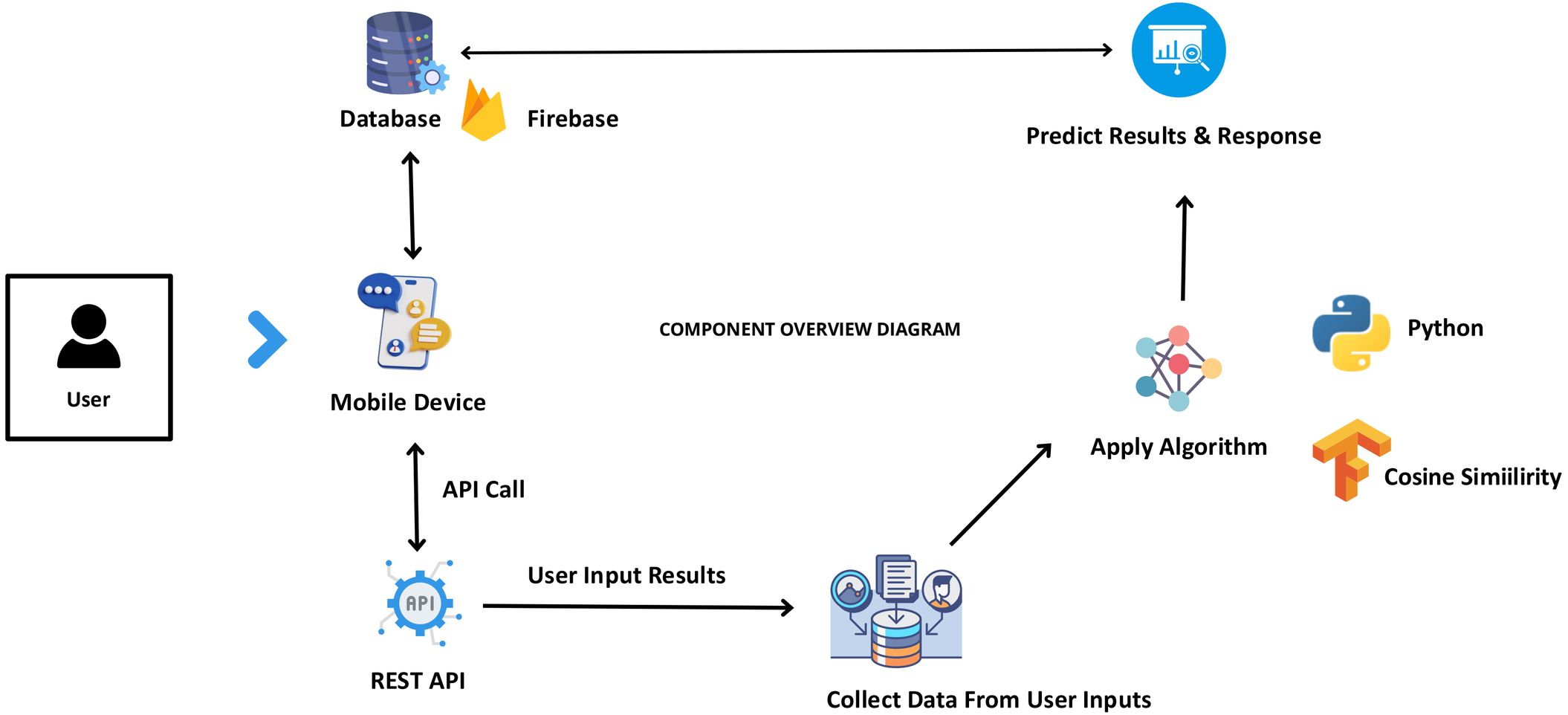
Most existing systems do not support planning based purely on user inputs.

Our Solution



Identify the user inputs & behavior to plan a tour based on user input and predict tours by analyzing user behavior with suggesting travel destinations with accommodations

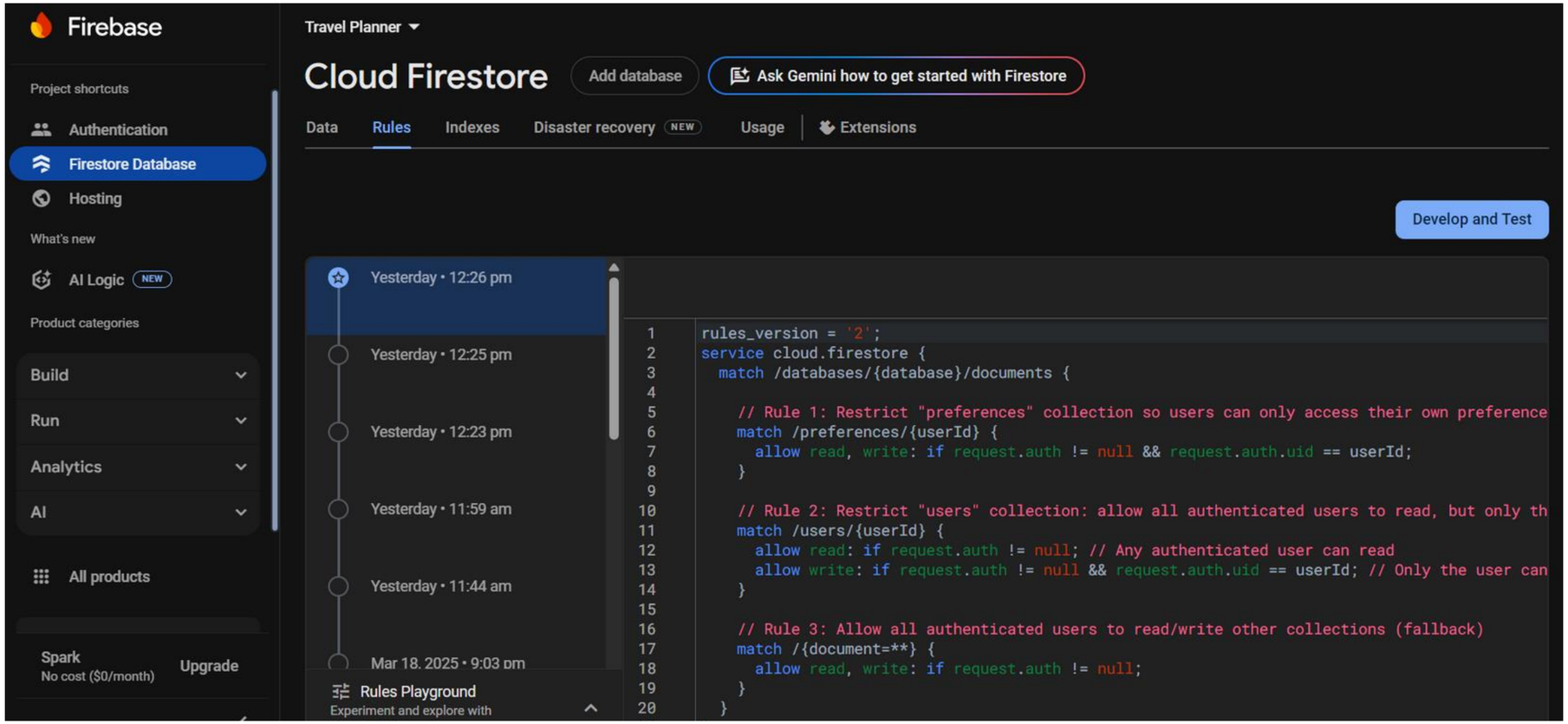
Methodology



Key Pillars


Cosine Similarity
A
B
θ
x
NLP
TF*IDF
TERM FREQUENCY
INVERSE DOCUMENT FREQUENCY
Machine Learning
Shift

Standards
Secure Firebase rules



- Role-based access controls
- Only authenticated users can access their data
- Ensures data privacy & security

Standards
UI Interfaces

- **Clean and consistent UI using React Native**
- **Follows Material Design standards**

Non-functional Requirements

Requirement	Approach
Performance	Optimized ML & Lazy Load
Security	Firebase Hosting
Reliability	Firestore + Realtime DB
Security	Firebase Auth & Rules
Scalability	Firebase Hosting + Firestore auto-scaling

Legal, Ethical, Security Compliance

HTTPS & Encryption

All app requests go through HTTPS

Firebase backend uses encrypted connections

- **Tokens and login credentials secured with Firebase Auth**

Profile Protection

Firestore rules ensure users can only read/write their own data

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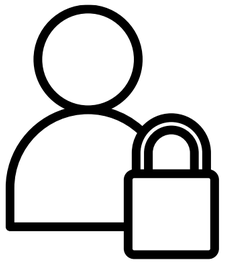

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Identified Problem

- **Gap in Comprehensive Itinerary Sharing**
- **Lack of Predictive Analytics for Personalized Recommendations**
- **Need for Community-Driven Travel Planning**
- **Generalized and Anonymous Reviews**

Current Implementation Limitations

- Limited Integration of Social Connectivity and Travel Planning
- Lack of Personalized Travel Recommendations and reviews
- Underutilization of Machine Learning for Predicting Travel Groups
- Limited use of gamification

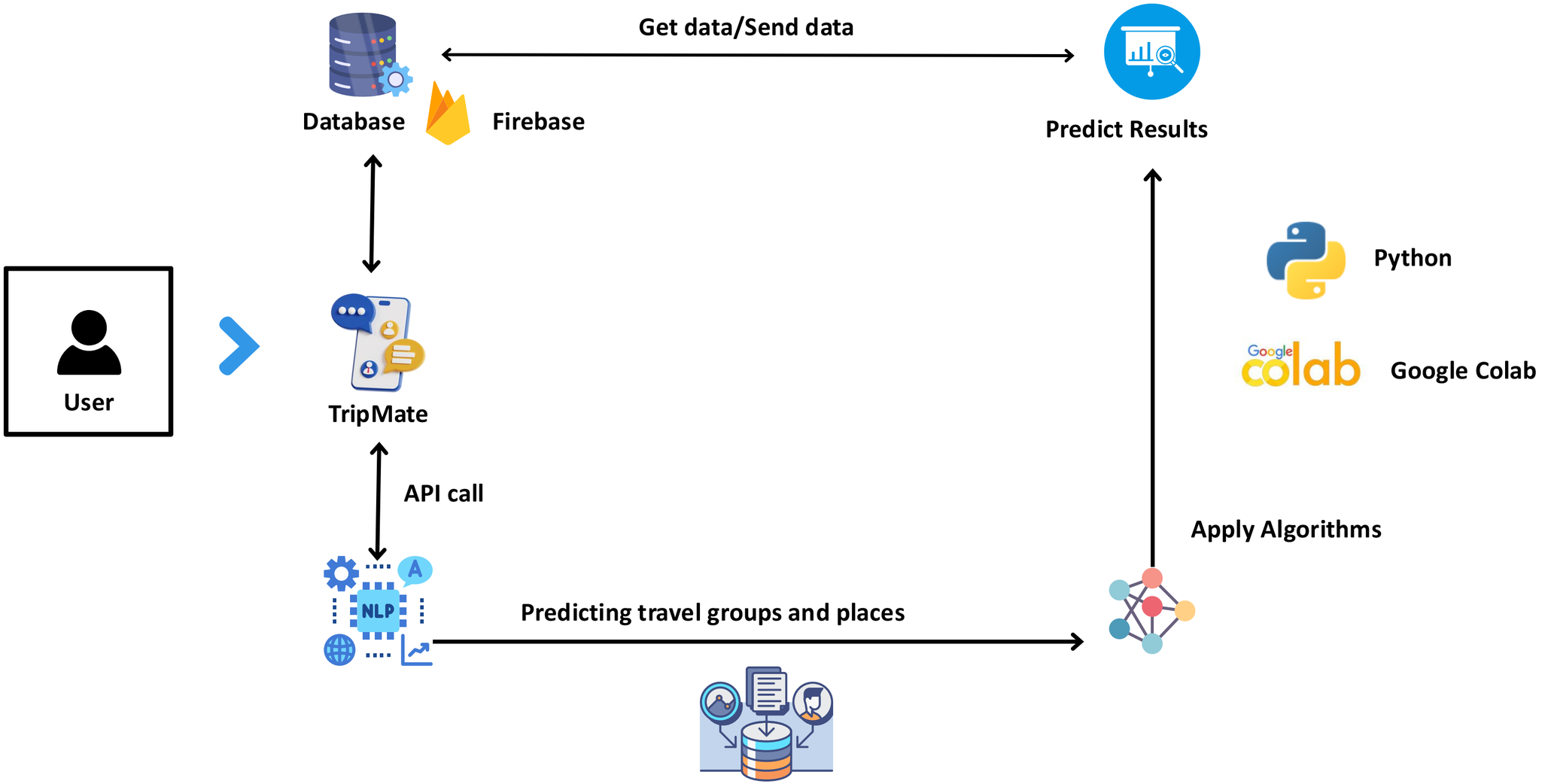
COMPONENT 02

Share travel plans and experiences, predict travel groups and plan places by analyzing user profiles and introduce challenges to earn points

Our Solution

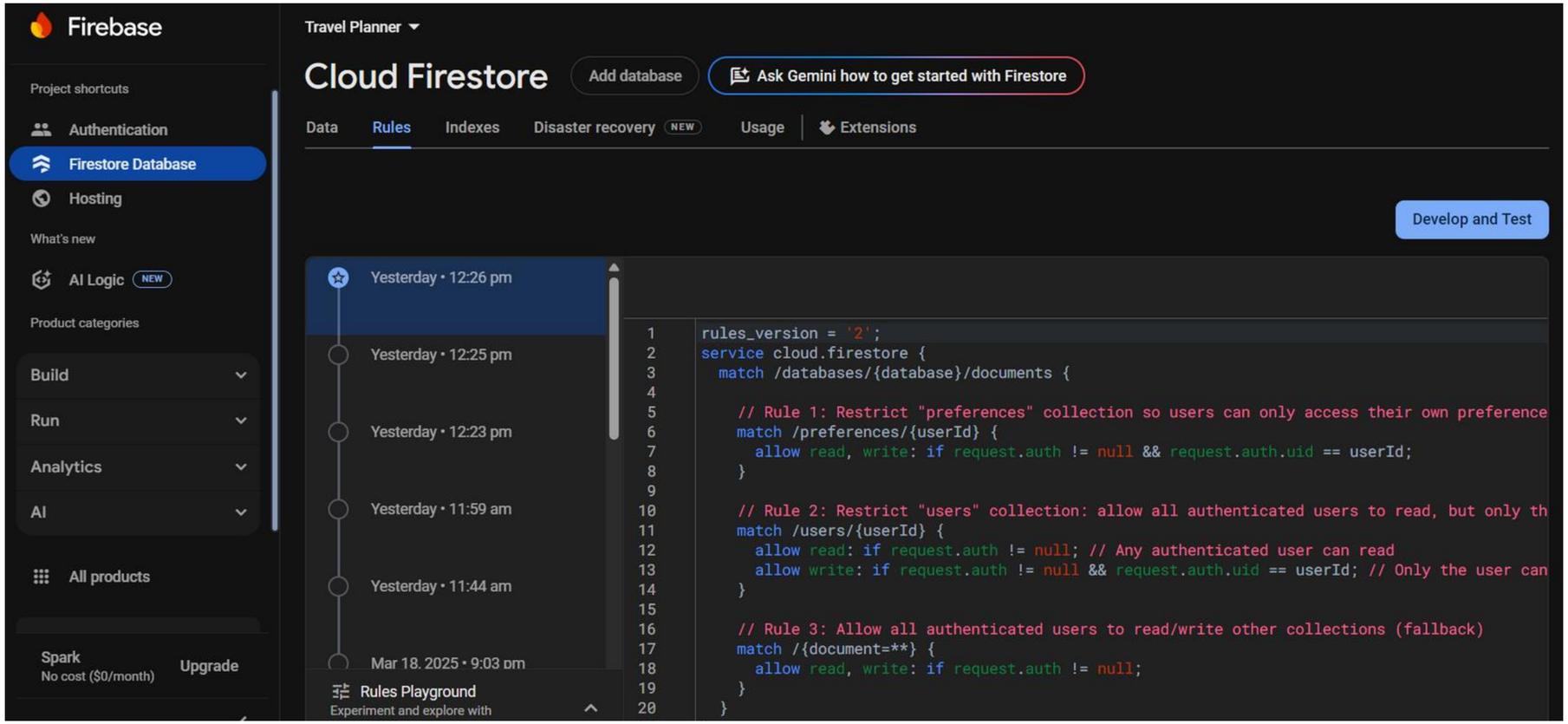
- Connect with fellow travelers
- Share travel experiences and itinenaries
- Suggest same interest travel groups with places
- Complete goals and earn rewards

Methodology



Key Pillars

Standards
Secure Firebase rules



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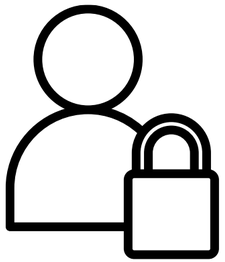

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[4] IBM, "Using Predictive Analytics to Enhance User Profiles in Mobile Apps," 2022. [Online]. Available: https://www.ibm.com/analytics/predictive-analytics. [Accessed: Aug. 6, 2024].

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Identified Problem

- How can 3D models and personalised recommendation systems be utilized to enhance user engagement, satisfaction, and overall experience in exploring local attractions through interactive maps, taking into account user preferences, behaviors, and feedback?

Current Implementation Limitations

Limited Integration of 3D Models with Interactive Maps

Inadequate Use of Advanced Algorithms for Personalization

Limited Real-time Interaction and Adaptation

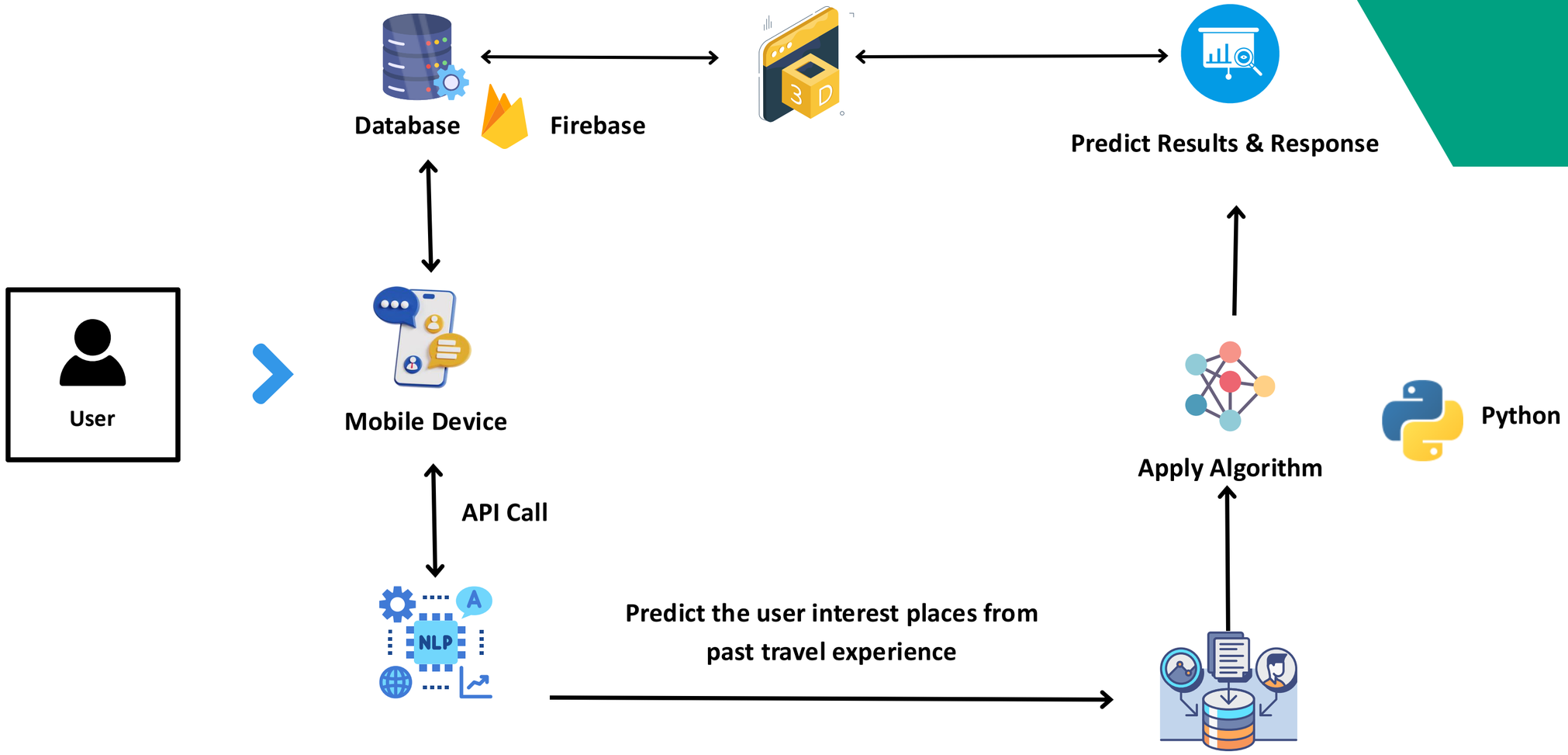
COMPONENT 03

View 3D models of local attractions directly on the map and get personalized recommendations

Our Solution

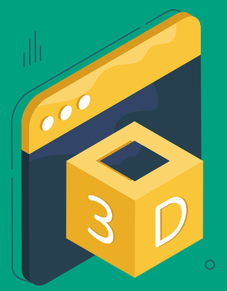
- **3D models on maps offer a personalised, immersive exploration of local attractions.**
- **Personalised recommendations enhanced by collaborative filtering and sentiment analysis.**

Methodology

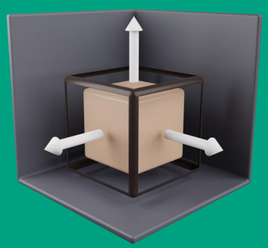


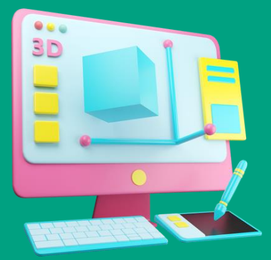
Key Pillars

Machine Learning



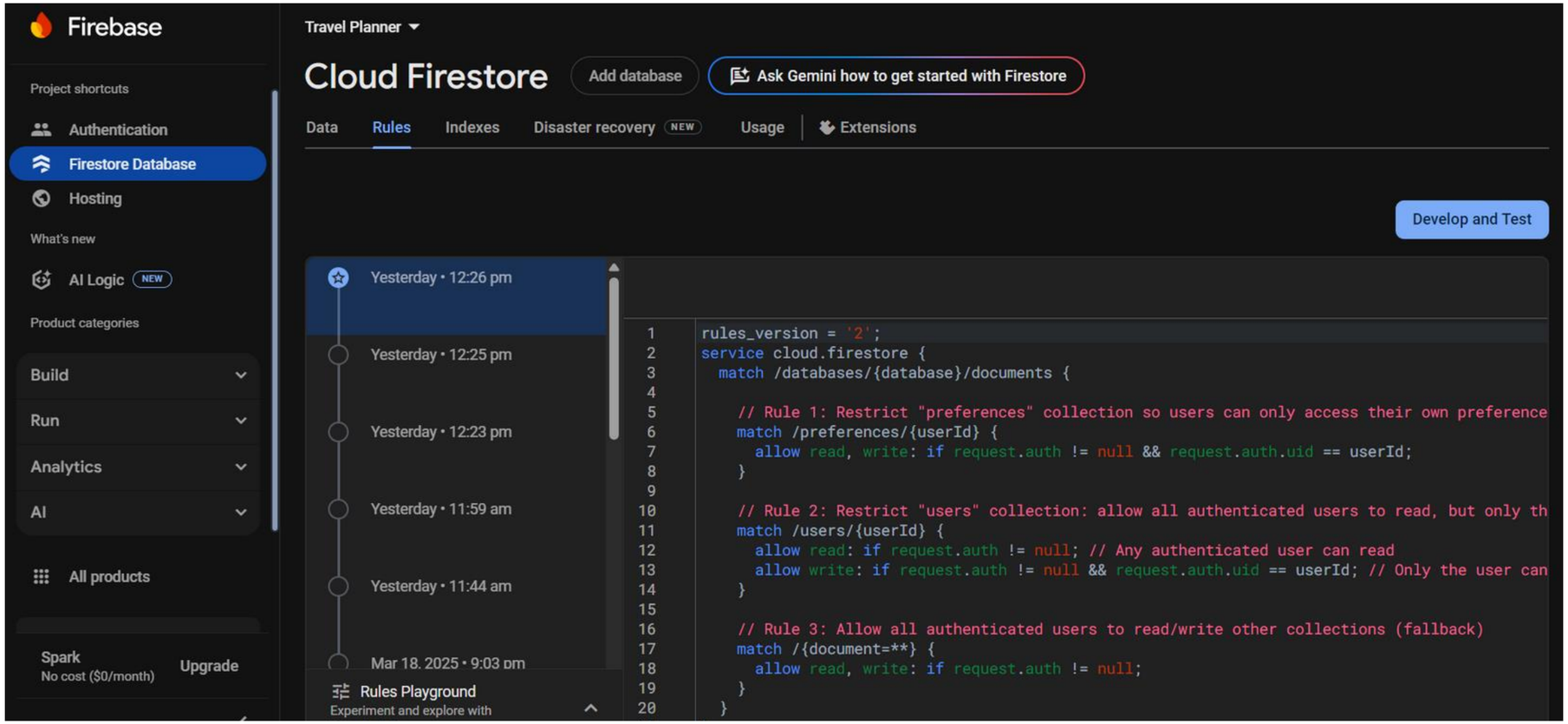
Develop 3D Models





Data Collection

Standards
Secure Firebase rules



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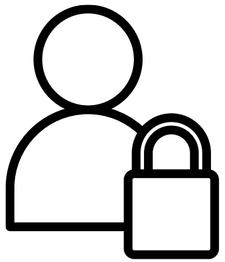

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Identified Problem

- How can real-time itinerary adjustments and emergency service integrations enhance user experience and safety in a travel management app, by providing personalized travel suggestions and immediate access to local emergency services based on user preferences, behaviors, and real-time data?

Current Implementation Limitations

- Lack of Real-Time Adaptive Itinerary Adjustments
- Limited Personalized Recommendations
- Insufficient Emergency Support Integration
- Inadequate Combination of Features

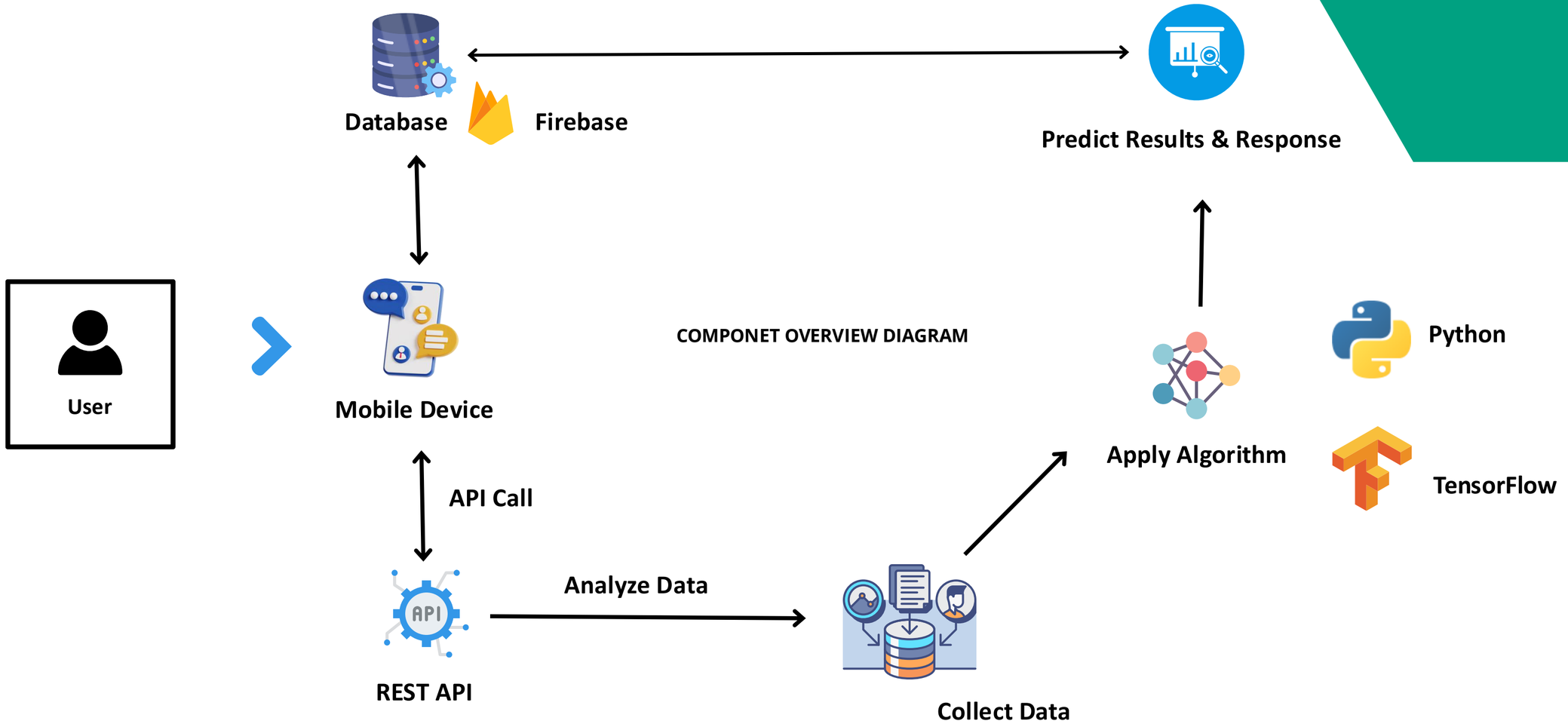
COMPONENT 04

Provide timely and relevant suggestions for alternative places to visit when travel users original plans changed

Our Solution

- **Real-time itinerary adjustments suggest alternative destinations when time constraints arise.**
- **Instant emergency contact access with location-based precision for swift assistance.**
- **Personalized travel recommendations using user preferences and machine learning.**

Methodology



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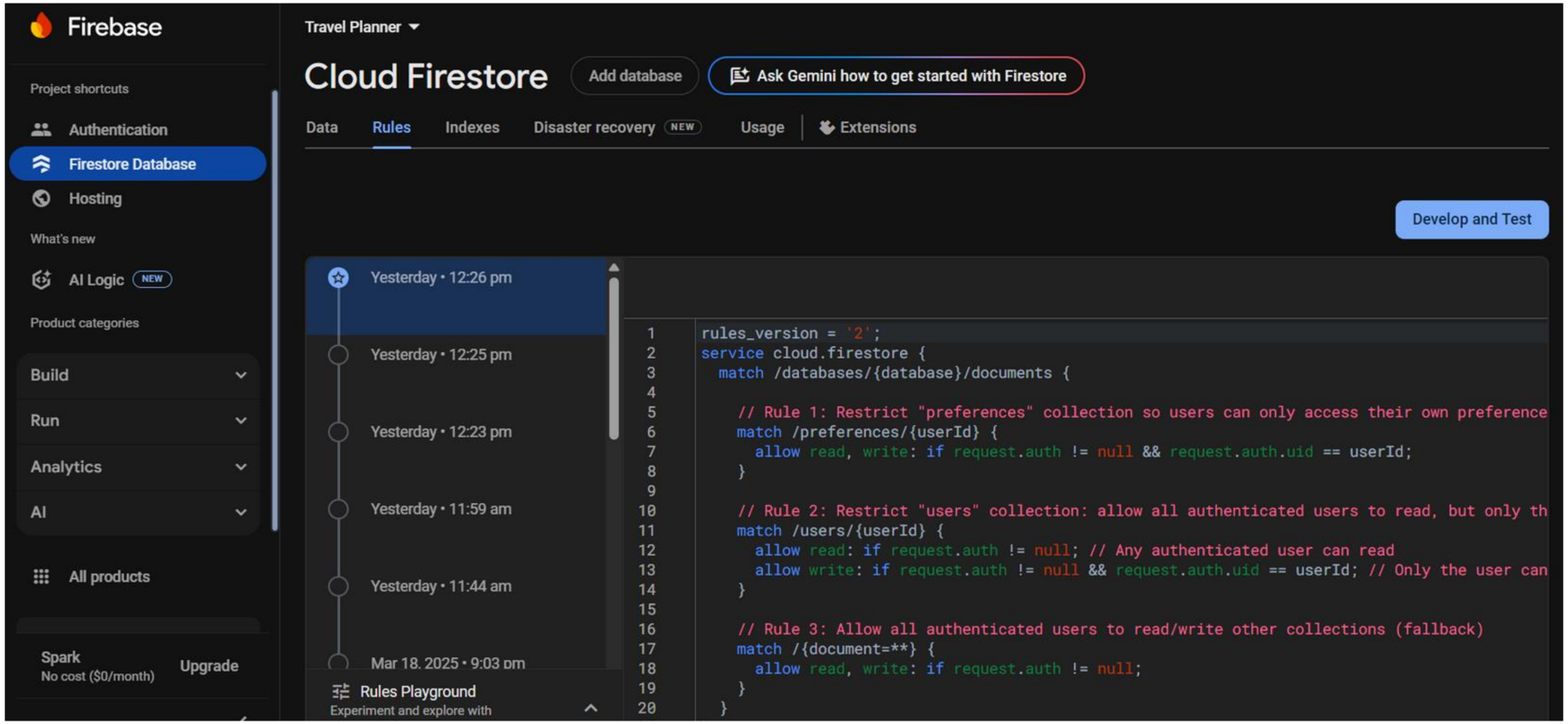

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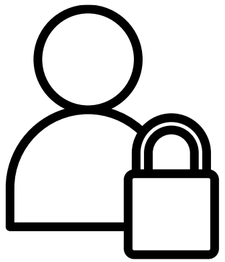
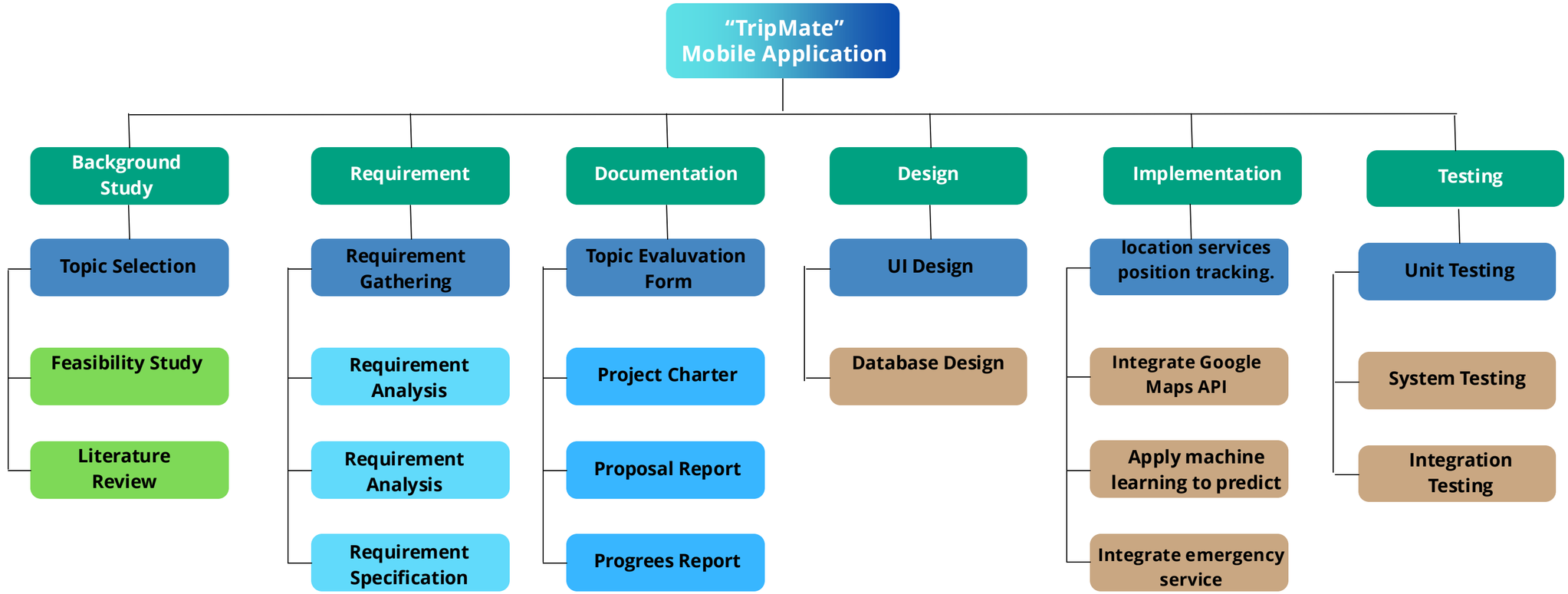


Work Breakdown Chart



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Q & A

THANK YOU !