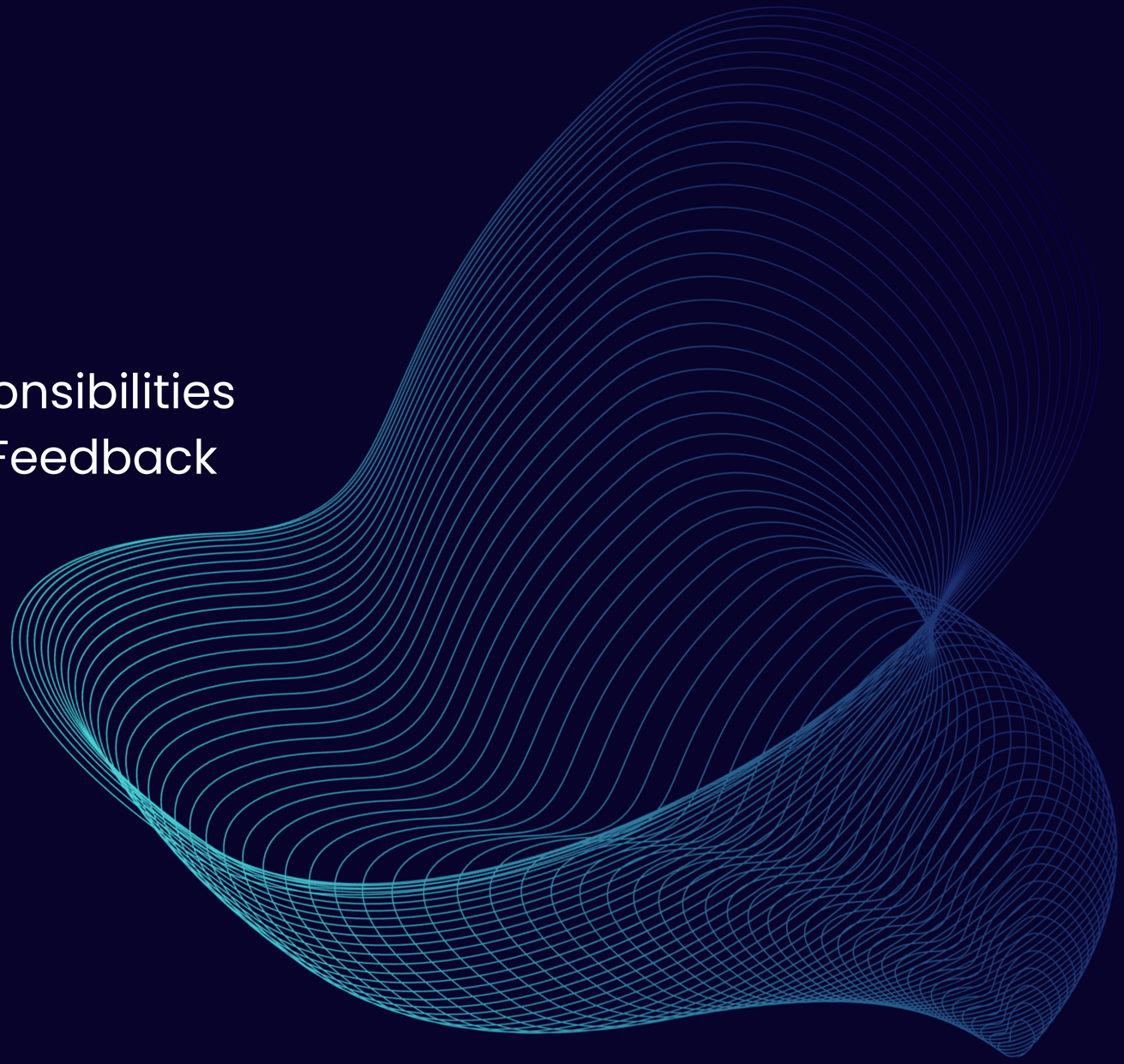
DestinEase

Travel advisor App

Team: Visionary Techs
CS-691-Capstone Project

AGENDA

- Introduction
- Team Member Roles and Responsibilities
- Improvements from Professor Feedback
- Project Description
- Personas
- MVP and Technologies
- Diagrams
- Product Backlog & Sprint 2
- Metrics & Retrospective
- Project Demo and Github Link



Roles and Responsibilities

Ramanjul Reddy Kotlo
Project Manager & Developer

Manish Chowdary Veeravalli
Developer and UI/UX Designer

Satheesh Bollineni
UI/UX Developer

Roles and Responsibilities

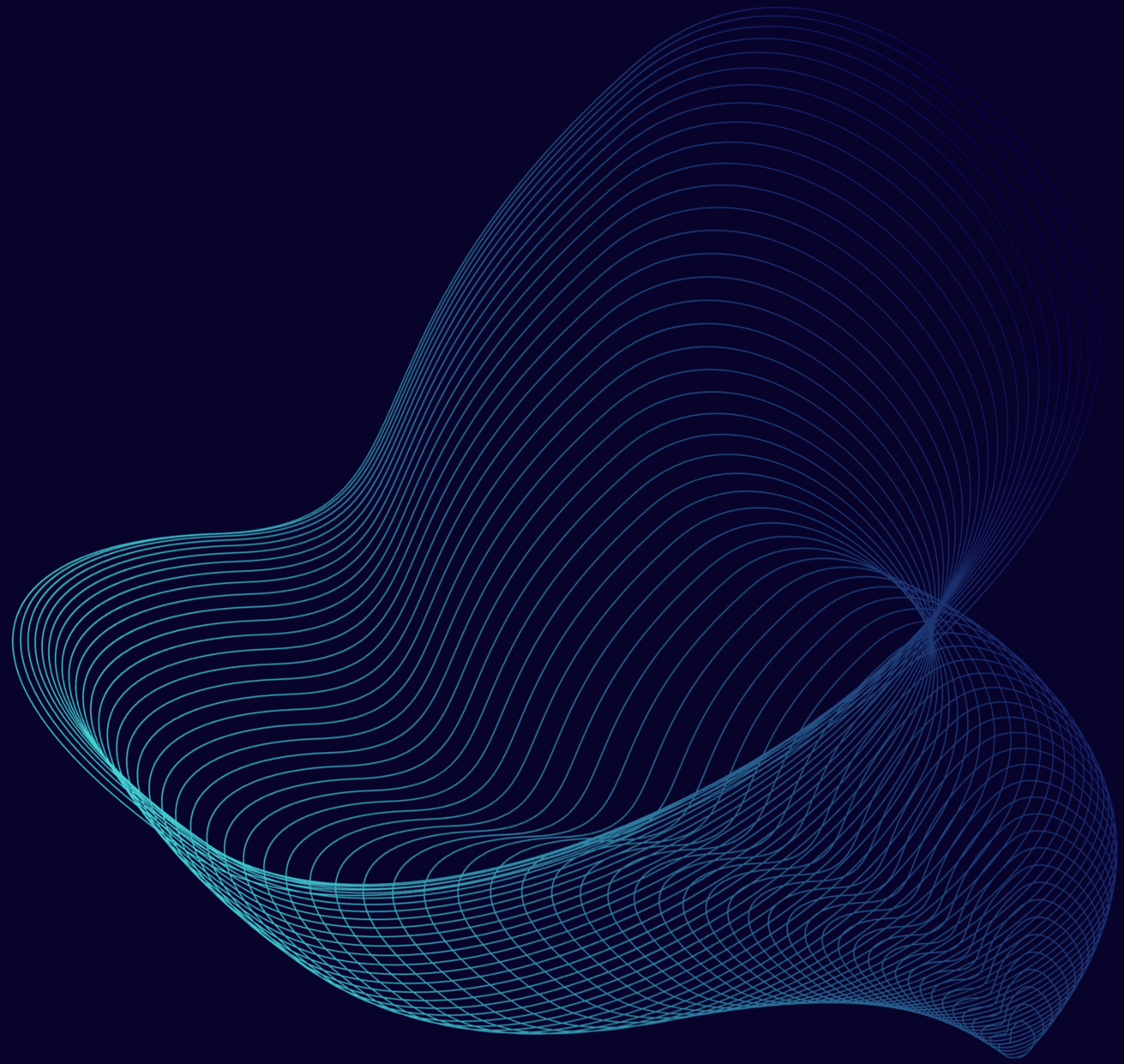
Siva Naga Mahesh Kadem
Quality Assurance (QA) Tester

Srija Vanka
Developer (Frontend)

Sandhya Sri
Developer(Backend)

Improvements

- Rewriting the user stories
- Commited to completed ratio
- Changing the ML Algorithm



Project Description

Project Name: DestinEase

Team: Visionary Techs

Project Description:

For **travel enthusiasts**
who **want personalized destination recommendations**,
DestinEase is a **travel recommendation platform**
that **uses artificial intelligence to analyze preferences such as budget, weather, and food interests, providing highly personalized destination suggestions**.
Unlike **manual travel research or generic travel platforms**,
our application **delivers real-time, up-to-date, and tailored recommendations, saving users time and effort in discovering ideal destinations**.

Benefit Outcomes:

- **Faster and more efficient travel planning** with personalized destination suggestions
- **Real-time data integration**, ensuring recommendations are always current (weather, pricing, etc.)
- **Enhanced user satisfaction** through tailored destination options that align with individual preferences

Github Link: https://github.com/htmw/2024F-Visionary-Techs/wiki

Team Working Agreement

TEAM WORKING AGREEMENT

Team Name: Visionary Techs

Team members:

1. Siva Naga Mahesh Kadem
2. Manish Chowdary Veeravalli
3. Srija Vanka
4. Sandhya Sri
5. Sateesh Bollineni
6. Ramanjul Reddy Kotlo

Roles and Responsibilities:

1. Ramanjul Reddy Kotlo – Project Manager & Developer
2. Manish Chowdary – Developer and UI/UX Designer
3. Srija Venka – Developer (Frontend)
4. Sandhya Sri – Developer (Bankend)
5. Sateesh Bollineni – Developer (ML Engineer)
6. Siva Naga Mahesh Kadem - Quality Assurance (QA) Tester

Terms of Agreement

Meetings and Communication

The team will collaborate with each other through various methods. For weekly meetings for meaningful team discussions, Zoom meetings will be used.

For Quick Comments, quick discussion, and emergencies are to be communicated through a WhatsApp app.

To share the sprint deliverables, resources sharing, and take notes, Google Docs will be used where all the team members can edit the document and also, we can use GitHub wiki page along with Google Docs for sharing recordings of weekly team meetings, Microsoft Word documents, and PowerPoints and others.

Work Distribution

All team members commit to sharing the workload equitably, ensuring that responsibilities are evenly distributed. In the event that any member feels overwhelmed, the team will promptly reassess and redistribute tasks to maintain balance and support each other's success.

Resolution Process

In the event of any disagreements regarding tasks or responsibilities, we will openly discuss the issue as a team and resolve it through a mutual agreement, ensuring that all opinions are considered and valid.

Timelines

We will establish clear and realistic timelines for each task to ensure steady progress throughout the project. All team members are expected to take ownership of their assigned tasks and commit to meeting these timelines, our collective commitment is to submit all deliverables on or before the agreed-upon timelines, ensuring that each member actively contributes their share. This collaboration fosters accountability and guarantees that the final outcome reflects the efforts and dedication of the entire team.

End-User Persona: The Practical Explorer

Maria Johnson

About

- **Age: 35 years**
- **Chicago, USA**
- **Female**
- **HR Manager**
- **Tech Savviness: Intermediate**

Travel Habits:

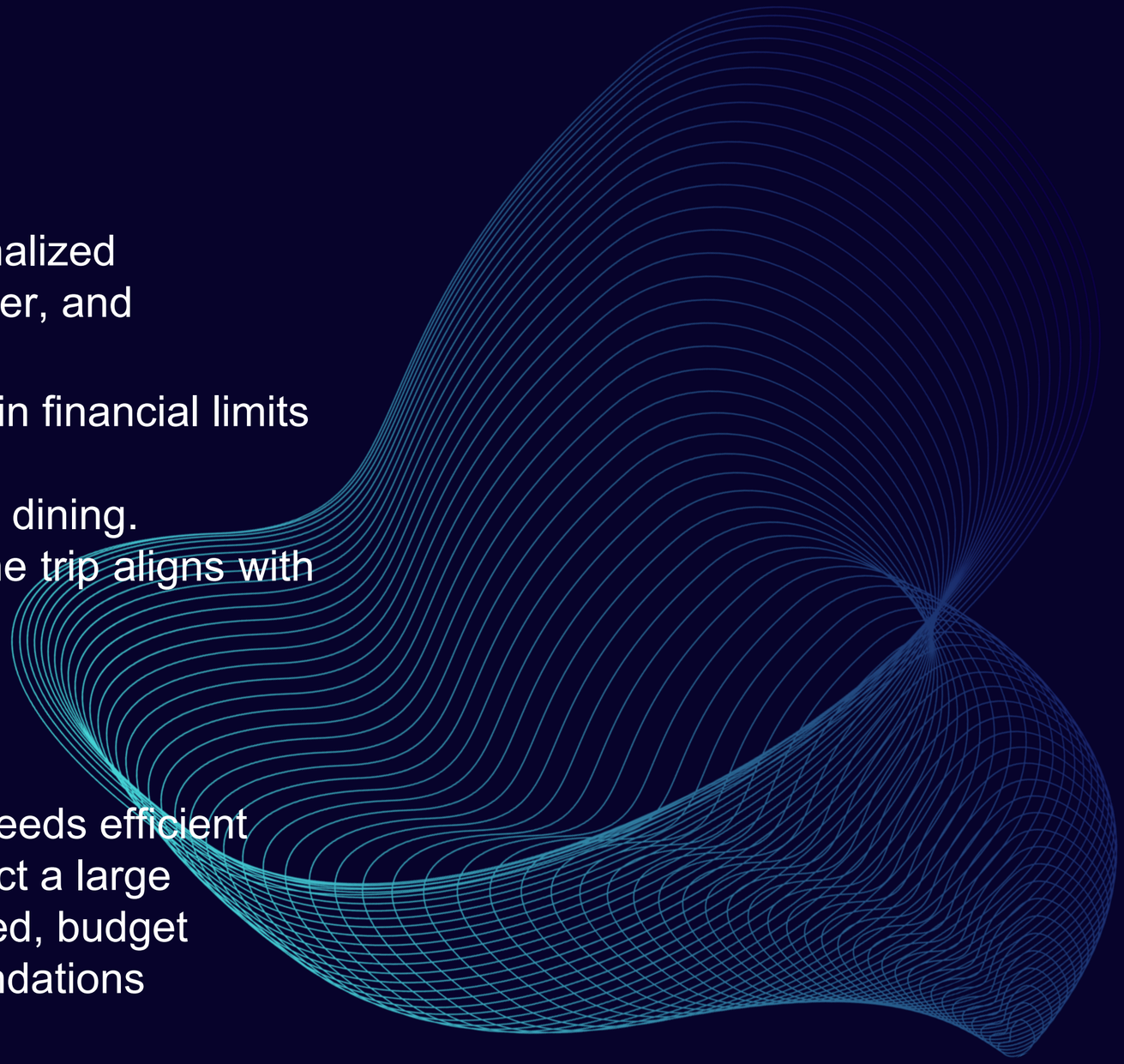
- Travels twice a year for leisure, seeking well-rounded vacations that balance adventure and relaxation.
- Prefers well-planned trips with detailed itineraries, comfortable accommodations, and reliable transportation.
- Often travels with family and friends, making group travel deals and suggestions important.
- Uses apps for convenience and values personalized recommendations based on preferences and budget.

What She Wants from the App:

- Simple, easy-to-use interface with personalized recommendations for destinations, weather, and activities.
- Budget tracking features to keep her within financial limits while planning a vacation.
- Family-friendly suggestions for travel and dining.
- Weather-based travel advice, ensuring the trip aligns with her preferred climate.

Why She Matters:

- She’s a practical, frequent traveler who needs efficient travel planning solutions. Her needs reflect a large segment of users who rely on personalized, budget conscious, and well-organized recommendations



End-User Persona: The Travel Vlogger

Isabella Cruz

About

- **Age: 29 Years**
- **Barcelona, Spain**
- **Female**
- **Travel Vlogger & Social Media Influencer**
- **Tech Savviness: Advanced**

Travel Habits:

- Travels frequently to exotic locations, documenting her experiences for her YouTube channel and Instagram followers.
- Seeks unique, off-the-beaten-path destinations to offer fresh content to her audience.
- Often collaborates with brands for sponsored trips, so she looks for destinations that are trendy and Instagrammable.
- Needs accurate weather information and affordable flights for planning content around seasonal events and festivals.

What She Wants from the App:

- Destination recommendations based on current trends and popular social media hashtags.
- Suggestions for visually appealing, photo-friendly places (e.g., natural landscapes, cultural landmarks).
- Real-time flight and accommodation deals to help plan last-minute trips.
- Ability to integrate with her social media platforms for easy sharing of reviews and recommendations.

Why She Matters:

- As a social media influencer, her use of the app can drive brand visibility, with her audience potentially becoming users. Her recommendations could help shape travel trends among her followers.

End-User Persona: The Impulse Traveler

Steve Miller

About

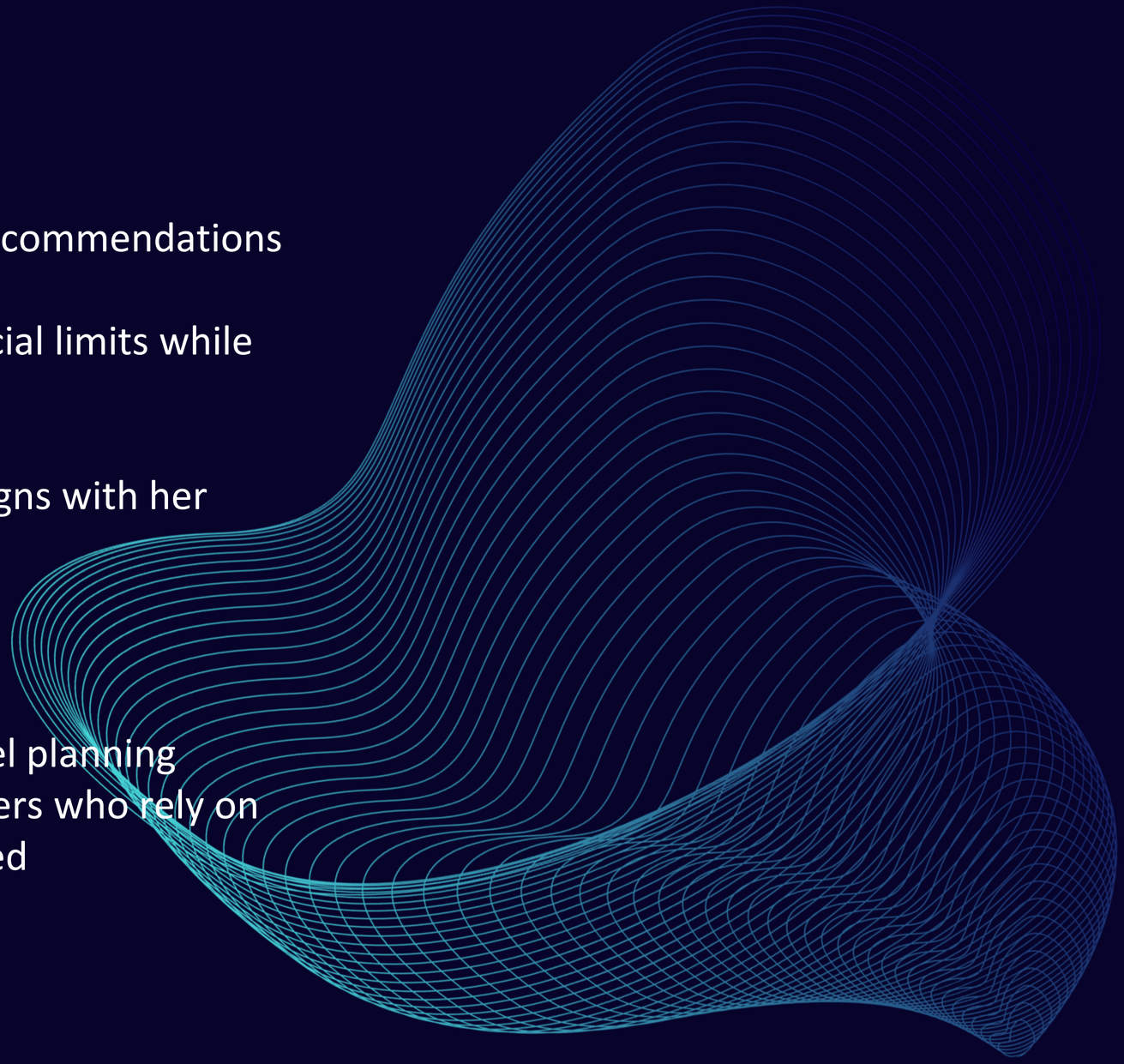
- **Age: 41 Years**
- **Dallas, USA**
- **Male**
- **Real Estate Broker**
- **Tech Savviness: Beginner**

Travel Habits:

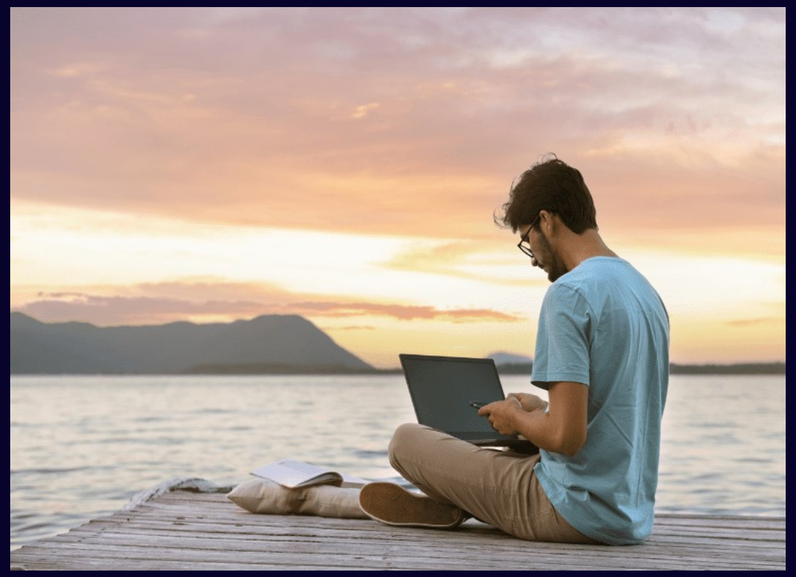
- Travels impulsively, usually deciding at the last minute without much planning.
- Prefers to book travel through a travel agent or simple online tools without much concern for research or reviews.
- Often makes spontaneous weekend trips without needing detailed itineraries or recommendations.
- Doesn't care much about flight prices, weather conditions, or specific local food options.

What He Wants from the App:
Simple, easy-to-use interface with personalised recommendations for destinations, weather, and activities.
Budget tracking features to keep her within financial limits while planning a vacation.
Family-friendly suggestions for travel and dining.
Weather-based travel advice, ensuring the trip aligns with her preferred climate.

Why He Matters:
He is a frequent traveler who needs efficient travel planning solutions. Her needs reflect a large segment of users who rely on personalized, budget conscious, and well-organized recommendations



End-User Persona: The Digital Nomad



Liam O’Connor

About

- **Age: 33 Years**
- **Dublin, Ireland**
- **Male**
- **Freelance Web Developer**
- **Tech Savviness: Advanced**

Travel Habits:

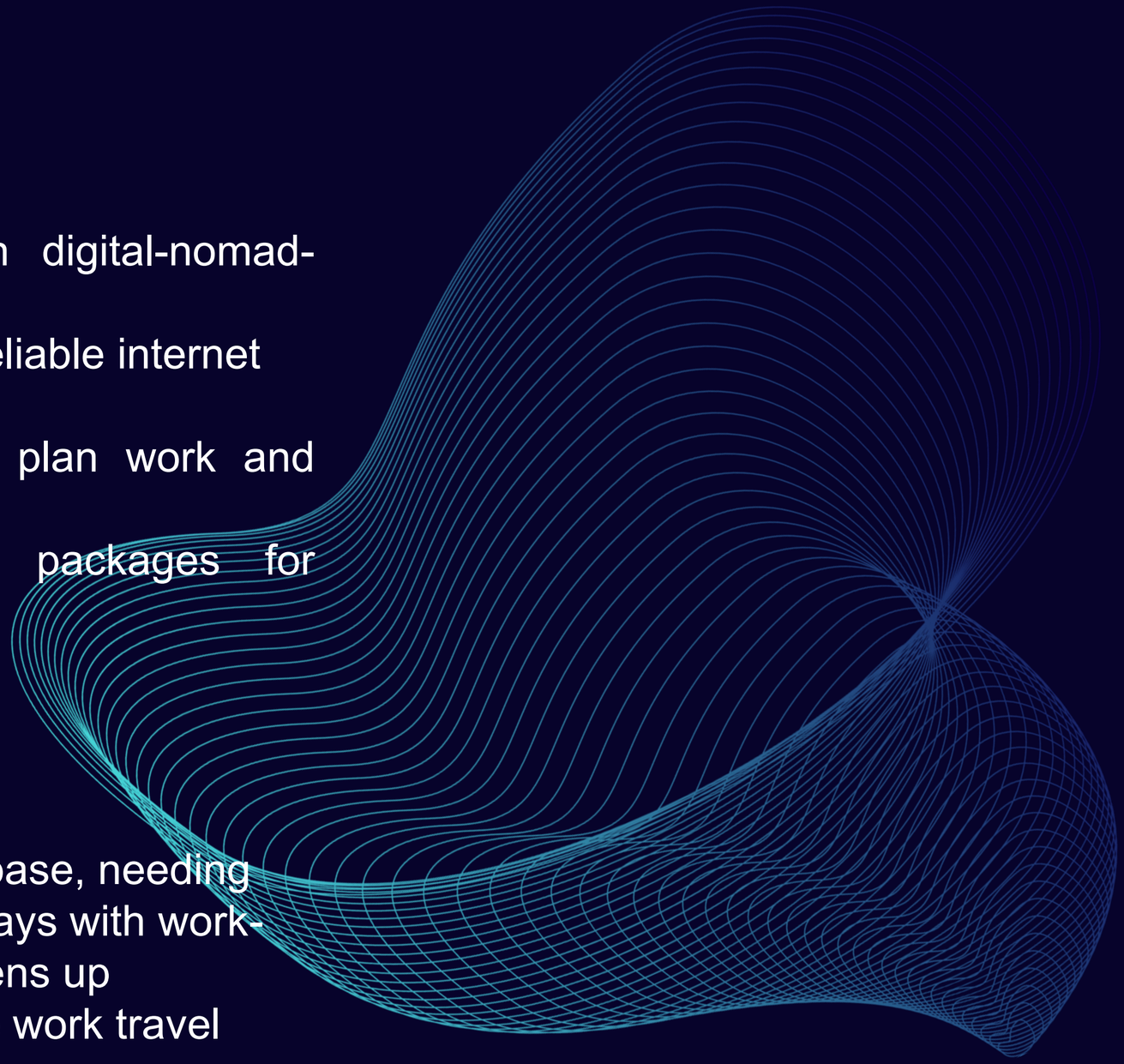
- Travels frequently while working remotely, staying in destinations for 2-3 months at a time.
- Values locations with reliable internet connectivity, affordable accommodations, and coworking spaces.
- Prefers to immerse himself in local culture, exploring offbeat locations, food, and activities during his downtime.
- Looks for flexible flight options and long-term accommodation deals

What He Wants from the App:

- Flexible, long-term stay suggestions in digital-nomad-friendly locations.
- Destination recommendations based on reliable internet access and remote work setups.
- Weather forecasts and local events to plan work and leisure activities.
- Affordable flight and accommodation packages for extended stays.

Why He Matters:

- Digital nomads represent a growing user base, needing specialized travel planning for long-term stays with work-friendly setups. Catering to their needs opens up opportunities for expansion into the remote work travel market.



MVP

User Registration and Profile Creation:

- Users can sign up and log in via email or social media accounts (Google, Facebook).
- Basic user profiles are created and stored securely.

Travel Preferences Input:

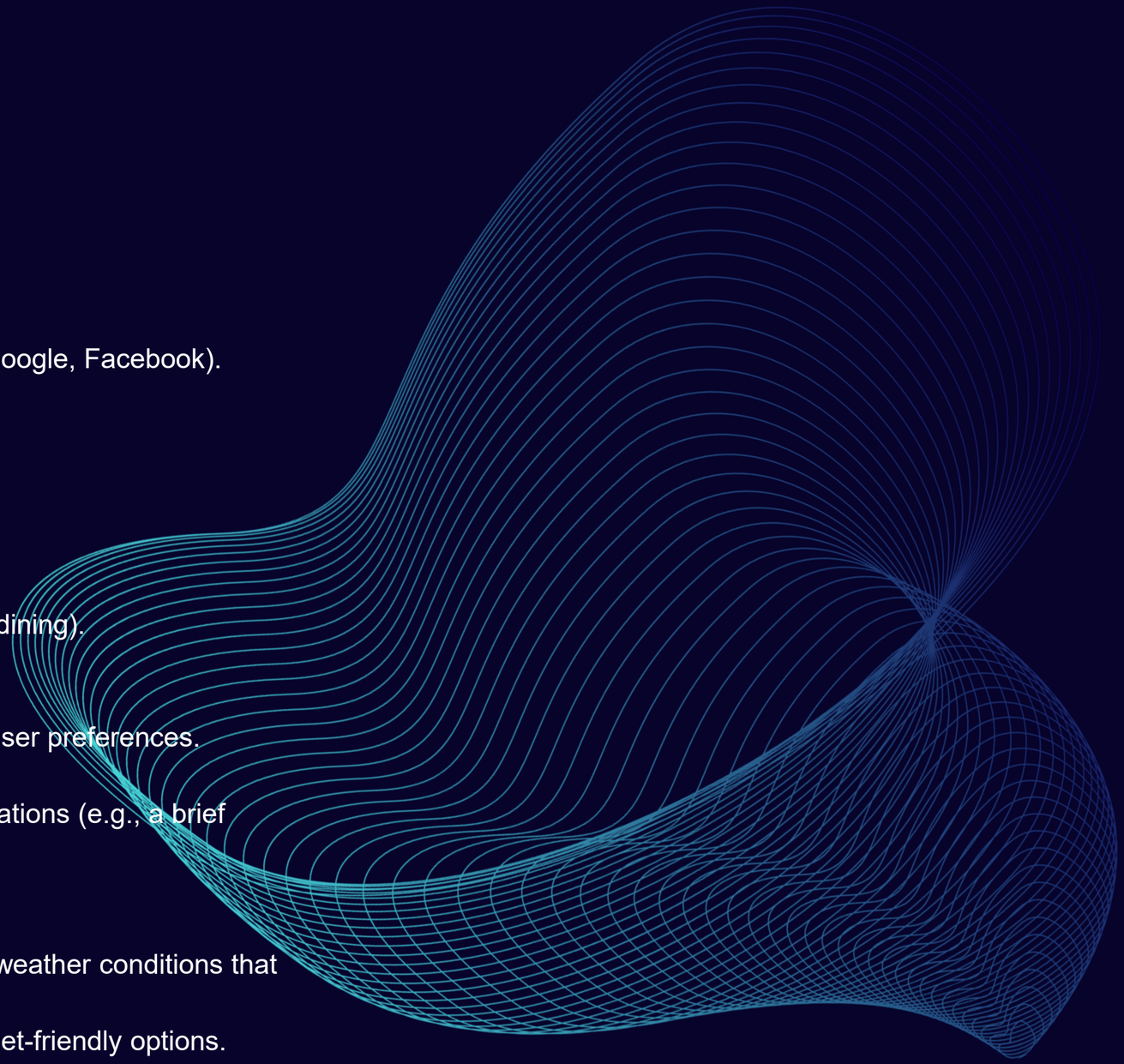
- Users can input key preferences:
  - Budget (low, medium, high).
  - Preferred weather conditions (e.g., warm, cold, moderate).
  - Food preferences (e.g., local cuisine, vegetarian options, fine dining).

Personalized Destination Recommendations:

- A recommendation engine suggests travel destinations based on user preferences.
- Suggestions adjust dynamically if preferences are updated.
- The system provides basic information about the suggested destinations (e.g., a brief description, key highlights).

Basic Real-Time Data Integration:

- Integration with weather APIs to suggest destinations with current weather conditions that match user preferences.
- Integration of basic flight and accommodation data to provide budget-friendly options.

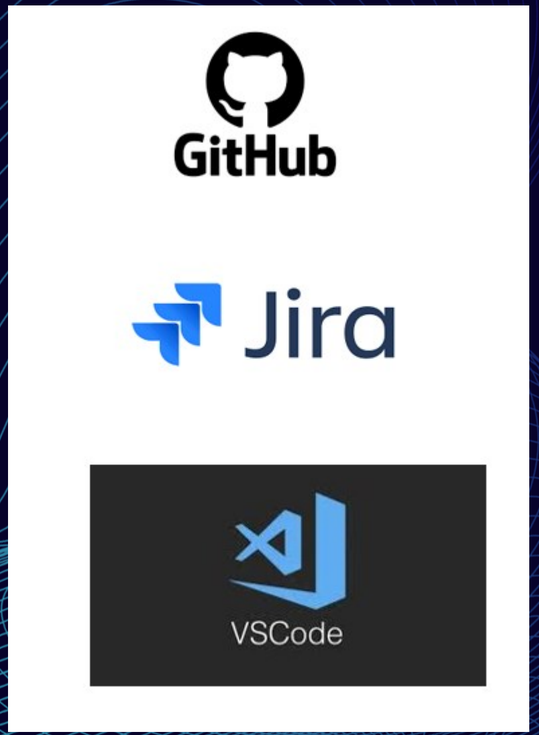


Tools and Technologies

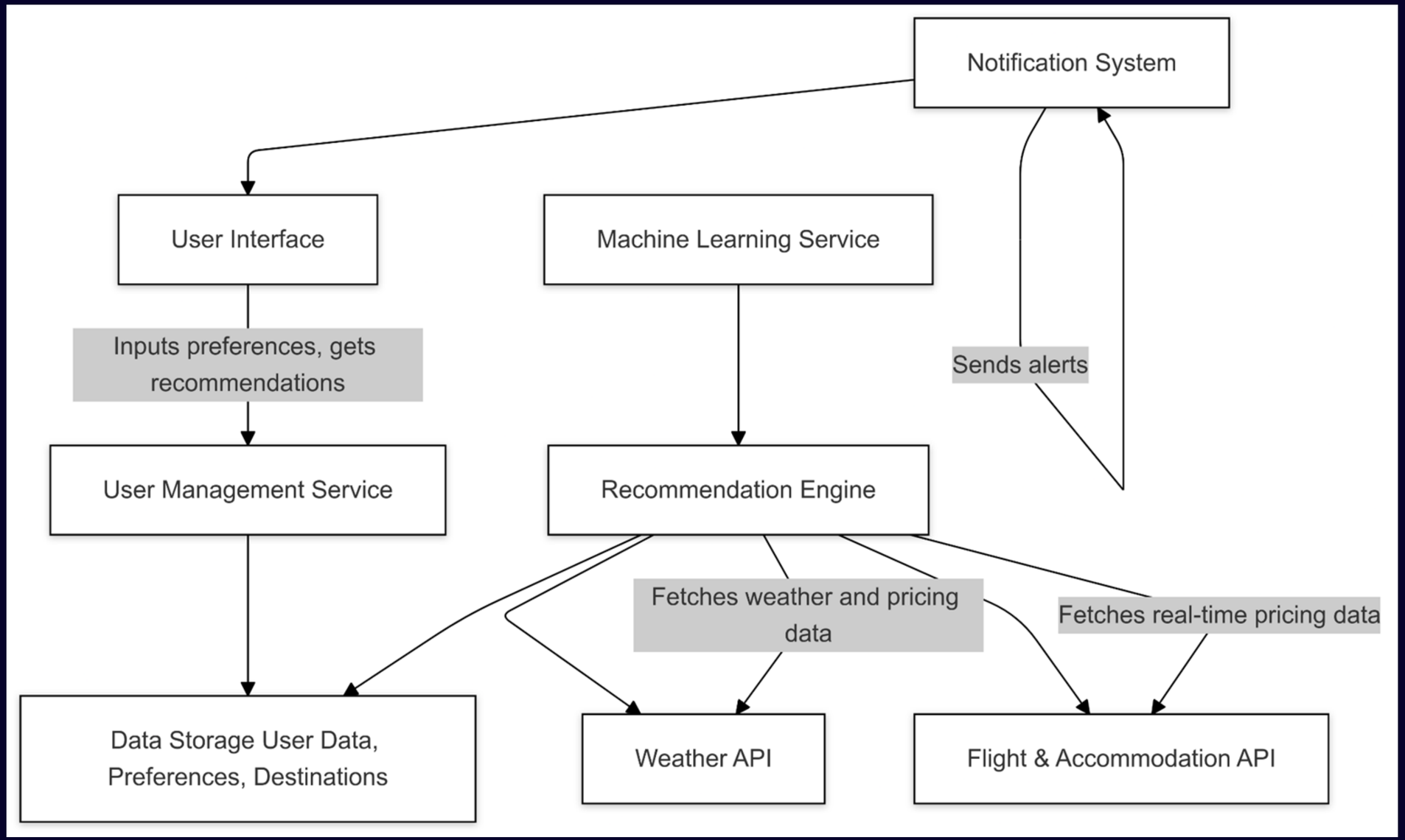
Programming Languages and Frameworks

Cloud and Database

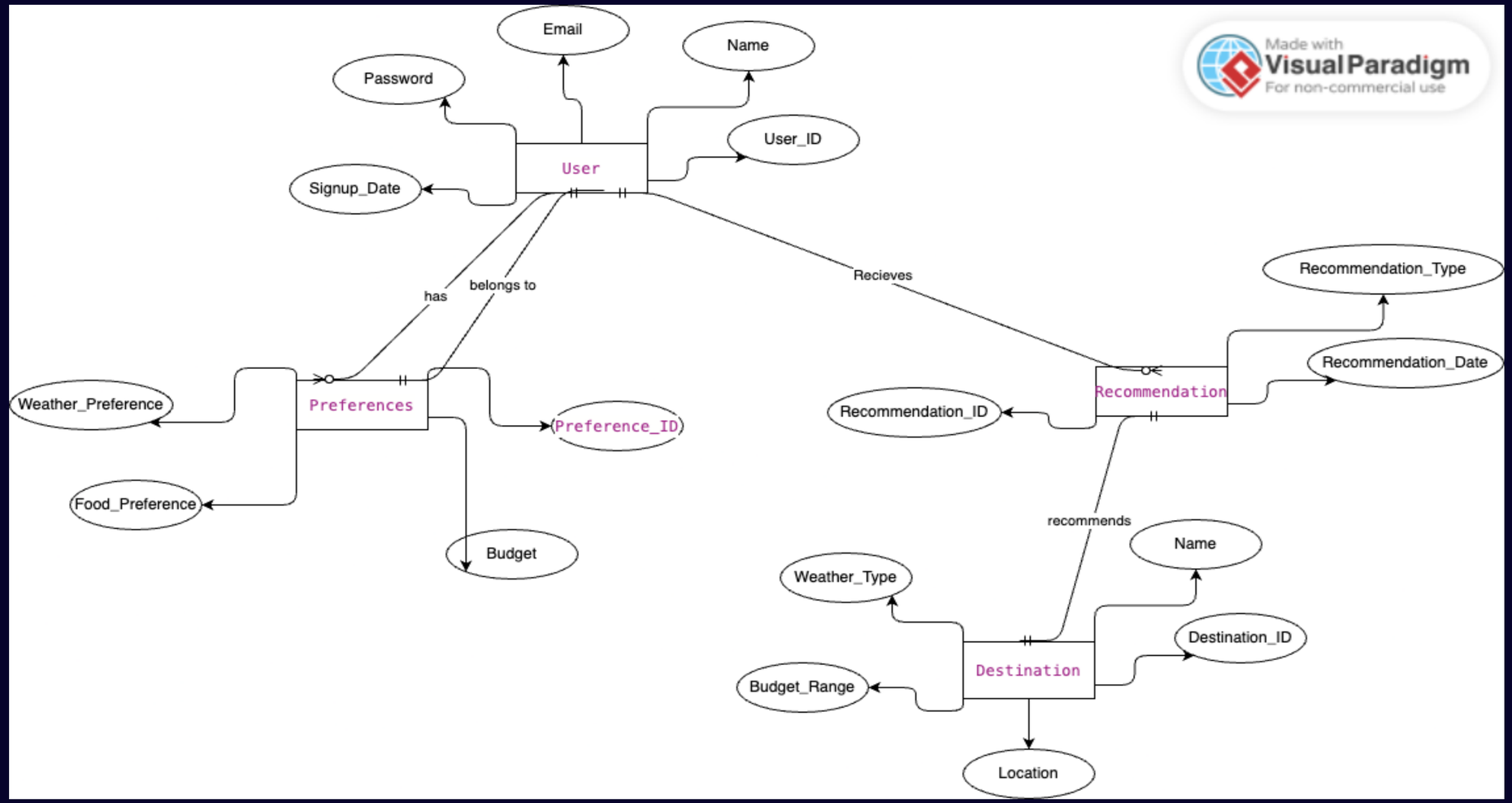
Other tools



Architecture Diagram



ER Diagram


Email
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Password
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Visual Paradigm
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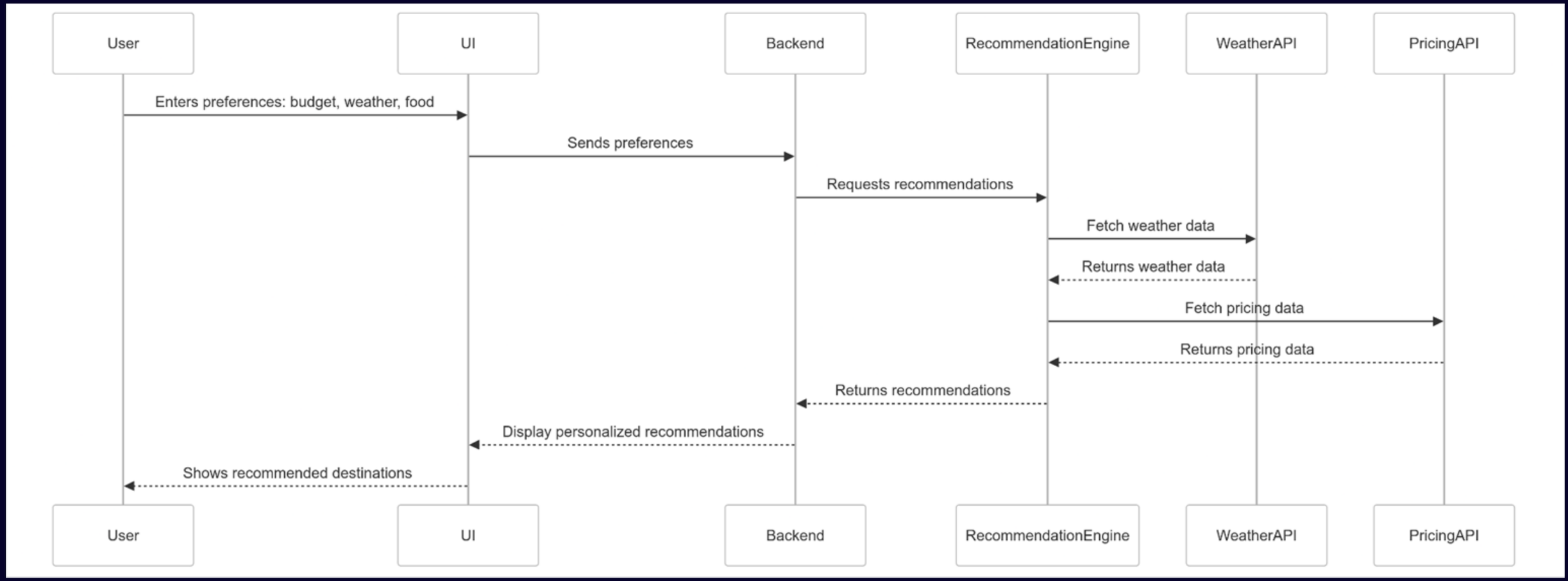
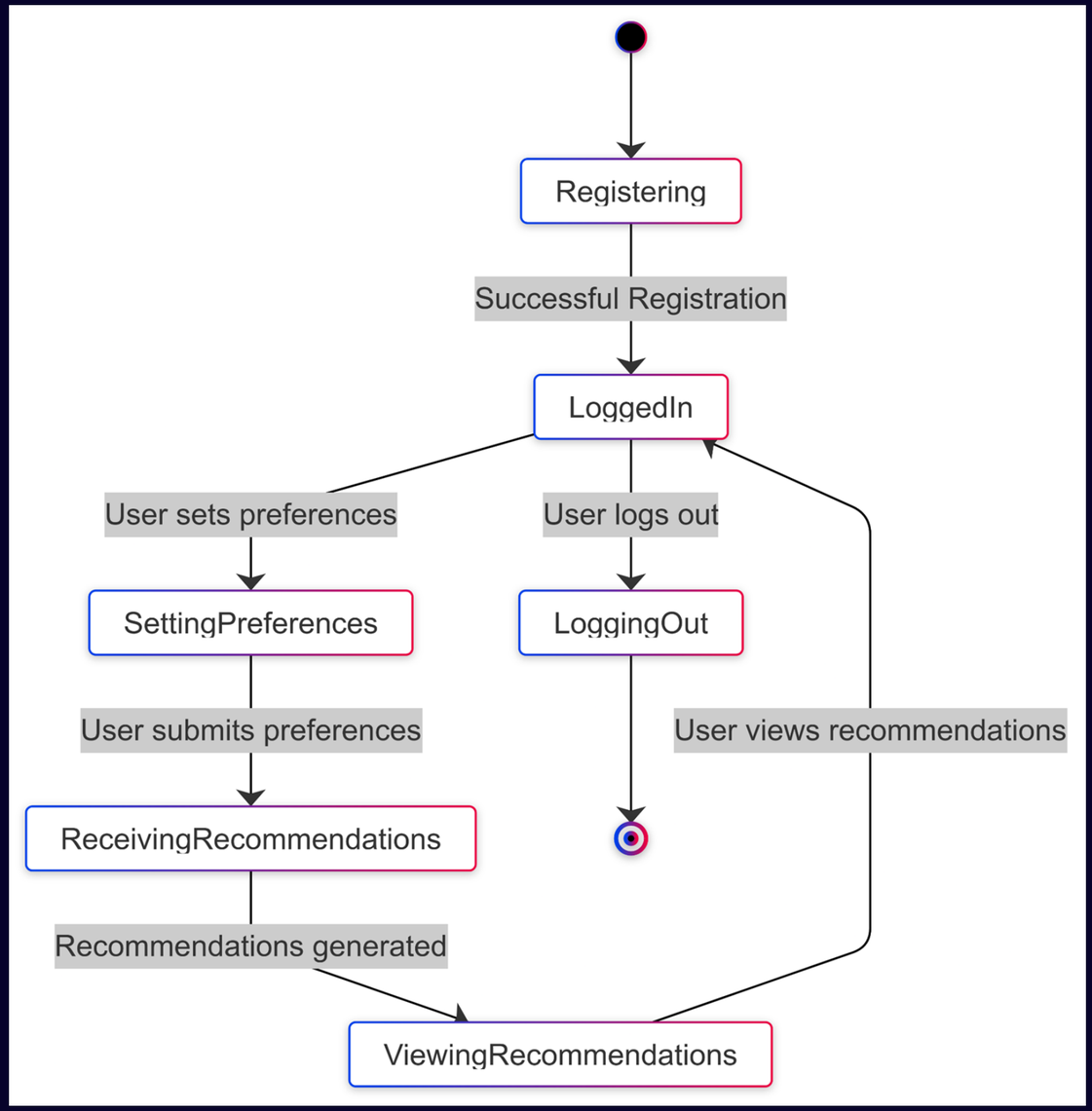
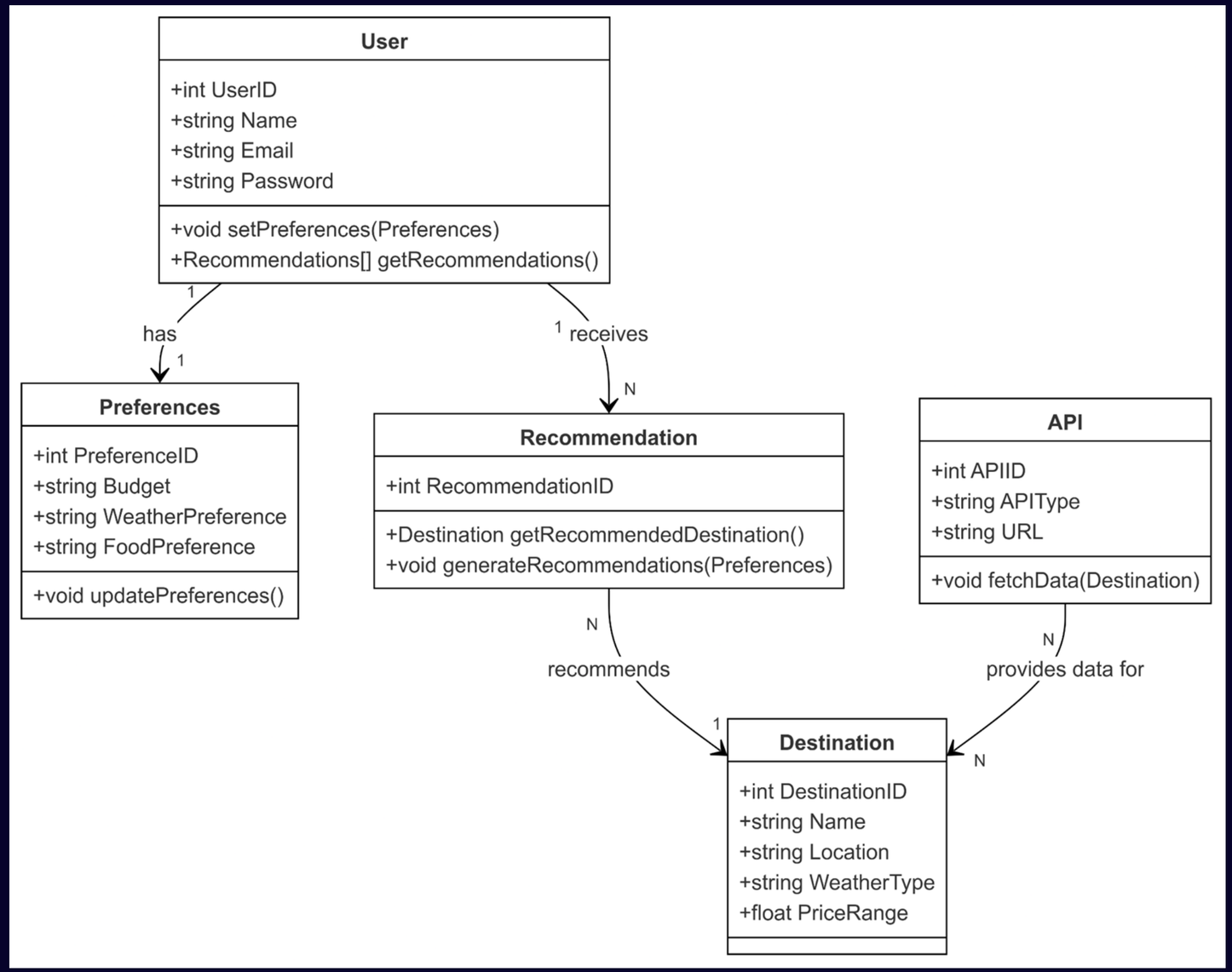
Sequence Diagram



State Diagram



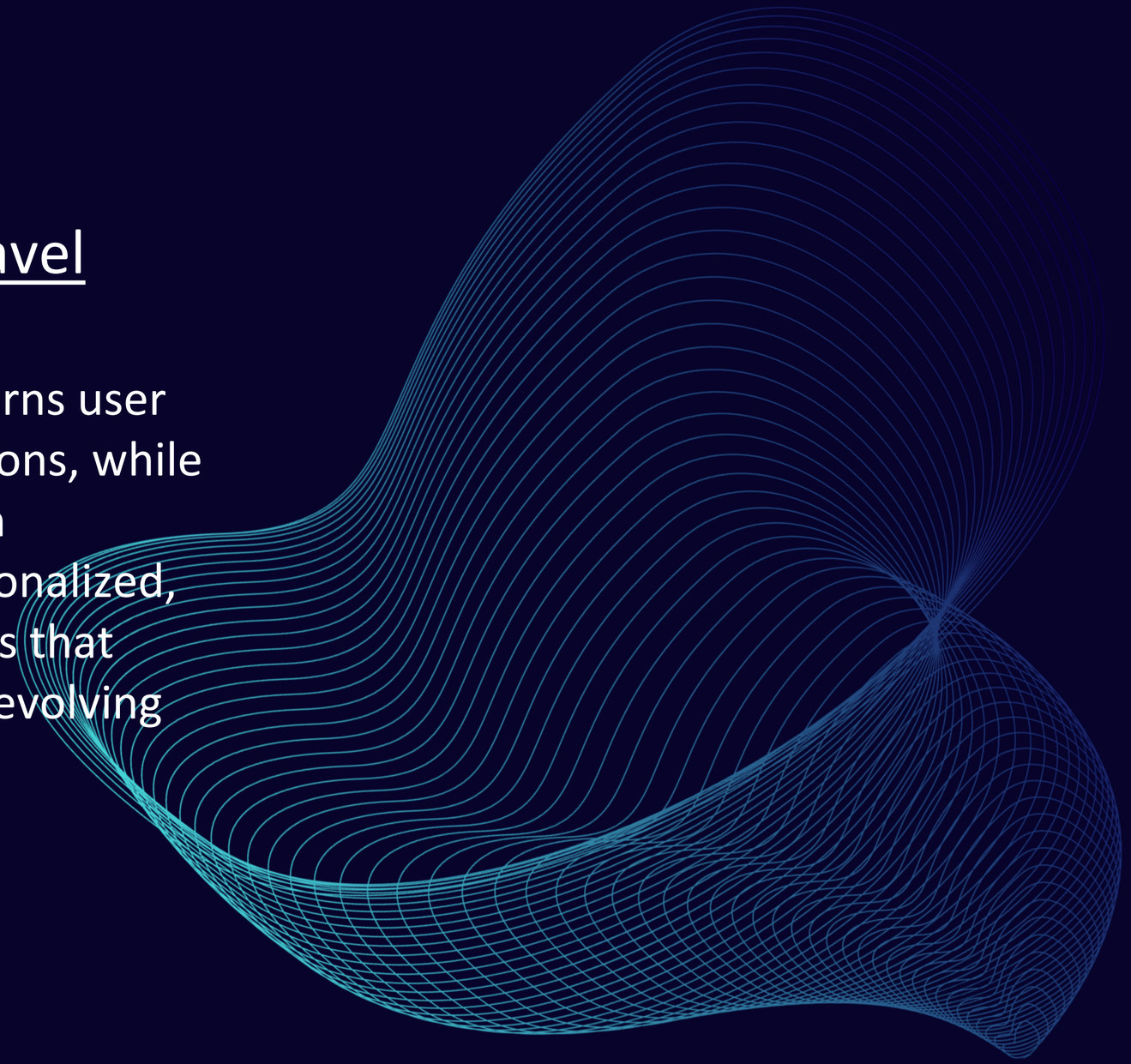
Class Diagram



Algorithms

NCF-BERT Hybrid for Smart Travel Recommendations

Neural Collaborative Filtering (NCF) learns user preferences by analyzing past interactions, while BERT extracts insights from destination descriptions. Together, they offer personalized, context-aware travel recommendations that adapt to both long-term interests and evolving preferences.



Product Backlog

ID	User Story / Technical Story	Description	Acceptance Criteria	Story Points	Priority	Sprint
US 1.1	User Story: Traveler Registration & Login	As a traveler, I want to sign up using email or social login and log in to access my account.	- Users can sign up using email and social login, Google. - Users can log in to the platform.	3	High	Sprint 1
US 1.2	User Story: Traveler Preference Setup	As a traveler, I want to set my budget, preferred weather conditions, and food preferences.	- Users can input a budget. - Users can set preferred weather conditions. - Users can select food preferences. - Data is saved in the user profile for future use.	5	High	Sprint 1
US 1.3	User Story: Basic Destination Recommendation Engine	As a traveler, I want the platform to recommend destinations based on my preferences.	- Platform suggests destinations based on user preferences. - Recommendations update if preferences change.	8	High	Sprint 1
TS 1.1	Technical Story: User Authentication	Implement secure user authentication and social login integration (Google).	- Authentication implemented with secure protocols. - Social login options integrate with the platform.	5	High	Sprint 1

Product Backlog

ID	User Story / Technical Story	Description	Acceptance Criteria	Story Points	Priority	Sprint
US 2.1	User Story: Real-Time Weather Integration	As a traveler, I want real-time weather data for my destination recommendations.	- Platform integrates weather APIs to provide real-time weather data. - Destination suggestions are filtered by user-preferred weather conditions.	5	Medium	Sprint 2
US 2.2	User Story: Budget-Friendly Destination Suggestions	As a budget-conscious traveler, I want to see destination suggestions based on real-time pricing for flights and accommodations.	- Platform provides destination suggestions based on real-time flight pricing. - Platform provides destination suggestions based on real-time accommodation pricing. - Recommendations adjust according to the user's budget input.	8	High	Sprint 2
TS 2.1	Technical Story: Weather API Integration	Integrate weather API to fetch and filter real-time weather data for destinations.	- Weather data fetched in real-time. - Filter destinations by user-preferred weather conditions.	5	Medium	Sprint 2

Product Backlog

ID	User Story / Technical Story	Description	Acceptance Criteria	Story Points	Priority	Sprint
TS 2.2	Technical Story: Real-Time Price Data Integration	Integrate flight and accommodation APIs to pull real-time price data for destinations.	- Real-time flight and accommodation prices fetched. - Budget-adjusted recommendations served.	8	High	Sprint 2
US 3.1	User Story: Machine Learning-Based Recommendation Engine	As a frequent traveler, I want personalized recommendations that improve over time based on my interactions.	- The system uses a machine learning model to refine recommendations. - Recommendations improve over time based on user interactions.	8	High	Sprint 3
US 3.2	User Story: Smart Filters	As a traveler, I want to apply filters to my recommendations, like food type, cost, weather, and proximity to landmarks.	- Users can apply filters for food type, cost, weather, and proximity to landmarks.	5	Medium	Sprint 3
TS 3.1	Technical Story: Notification System	Develop in-app notification system for price change alerts.	- Notifications appear for relevant price changes. - Real-time price tracking triggers notifications.	5	Medium	Sprint 3

Product Backlog

ID	User Story / Technical Story	Description	Acceptance Criteria	Story Points	Priority	Sprint
TS 3.2	Technical Story: Machine Learning Model Integration	Build and integrate an ML model to analyze user interactions and refine recommendations.	- ML model provides improved recommendations over time. - User interaction data is fed to the model.	8	High	Sprint 3
TS 3.3	Technical Story: Filter Logic Implementation	Implement filtering functionality for user recommendations.	- Recommendation list updates based on selected filters.	5	Medium	Sprint 3

Sprint 2 Stories

ID	User Story / Technical Story	Description	Acceptance Criteria	Story Points	Priority
US 2.1	User Story: Real-Time Weather Integration	As a traveler, I want real-time weather data for my destination recommendations.	- Platform integrates weather APIs to provide real-time weather data. - Destination suggestions are filtered by user-preferred weather conditions.	5	Medium
US 2.2	User Story: Budget-Friendly Destination Suggestions	As a budget-conscious traveler, I want to see destination suggestions based on real-time pricing for flights and accommodations.	- Platform provides destination suggestions based on real-time flight pricing. - Platform provides destination suggestions based on real-time accommodation pricing. - Recommendations adjust according to the user's budget input.	8	High
TS 2.1	Technical Story: Weather API Integration	Integrate weather API to fetch and filter real-time weather data for destinations.	- Weather data fetched in real-time. - Filter destinations by user-preferred weather conditions.	5	Medium

Sprint 2 Stories

ID	User Story / Technical Story	Description	Acceptance Criteria	Story Points	Priority
TS 2.2	Technical Story: Real-Time Price Data Integration	Integrate flight and accommodation APIs to pull real-time price data for destinations.	- Real-time flight and accommodation prices fetched. - Budget-adjusted recommendations served.	8	High

Test Cases Sprint 2

Test Case ID	Story/Task	Test Description	Expected Outcome	Actual Outcome	Pass/Fail
TC-2.1.1	US 2.1 Real-Time Weather Integration	Verify that real-time weather data is fetched for a selected destination.	Weather data for the selected destination is fetched in real-time and displays correctly on the platform.	Real-time weather data displayed as expected.	Pass
TC-2.1.2	US 2.1 Real-Time Weather Integration	Test filtering of destinations based on preferred weather conditions (e.g., sunny, cold).	Destination suggestions are filtered and only show locations meeting the specified weather preferences.	Only locations with preferred weather shown.	Pass
TC-2.1.3	US 2.1 Real-Time Weather Integration	Test the API response handling for cases when weather data is unavailable.	Platform displays a message indicating that weather data is currently unavailable for the destination.	"Weather data unavailable" message displayed.	Pass
TC-2.2.1	US 2.2 Budget-Friendly Destination Suggestions	Verify destination suggestions based on real-time flight pricing within the specified budget range.	Only destinations with flight prices matching the user’s budget are suggested.	Some destinations exceeded the budget.	Fail
TC-2.2.2	US 2.2 Budget-Friendly Destination Suggestions	Verify destination suggestions based on real-time accommodation pricing within budget.	Only destinations with accommodation prices within the specified budget are displayed in recommendations.	Accommodation prices exceeded the budget in some cases.	Fail

Test Cases Sprint 2

Test Case ID	Story/Task	Test Description	Expected Outcome	Actual Outcome	Pass/Fail
TC-2.2.3	US 2.2 Budget-Friendly Destination Suggestions	Test update of destination suggestions when the user changes budget preferences.	Recommendations update dynamically to show destinations within the new budget range.	Recommendations updated as expected.	Fail
TC-2.2.4	US 2.2 Budget-Friendly Destination Suggestions	Test platform behavior when no destinations are available within the set budget.	Platform displays a message indicating no destinations are available within the specified budget.	"No destinations available within budget" message displayed.	Fail
TC-2.1.4	TS 2.1 Weather API Integration	Test API integration by verifying that weather data is correctly retrieved from the external API.	The platform successfully retrieves and displays accurate weather data from the external API for a destination.	Data retrieval delay caused weather data to be outdated.	Pass
TC-2.2.5	TS 2.2 Real-Time Price Data Integration	Verify API connection to retrieve real-time flight price data.	Platform retrieves and updates flight prices in real-time, displaying them accurately in recommendations.	Real-time flight prices retrieved successfully.	Pass
TC-2.2.6	TS 2.2 Real-Time Price Data Integration	Verify API connection to retrieve real-time accommodation price data.	Platform retrieves and updates accommodation prices in real-time, displaying them accurately in recommendations.	Real-time accommodation prices retrieved successfully.	Pass

Test Cases Sprint 2

Test Case ID	Story/Task	Test Description	Expected Outcome	Actual Outcome	Pass/Fail
TC-2.2.7	TS 2.2 Real-Time Price Data Integration	Test platform handling when flight pricing API is unavailable.	Platform displays a message indicating that flight pricing data is currently unavailable for the selected destination.	"Flight pricing unavailable" message displayed.	Pass
TC-2.2.8	TS 2.2 Real-Time Price Data Integration	Test platform handling when accommodation pricing API is unavailable.	Platform displays a message indicating that accommodation pricing data is currently unavailable for the selected destination.	"Accommodation pricing unavailable" message displayed.	Pass

Sprint 2 Stories Completed

Story ID	Story/Task	Description	Outcome
US 2.1	Real-Time Weather Integration	As a traveler, I want real-time weather data for my destination recommendations.	All related test cases passed, feature fully functional and completed.
TS 2.1	Weather API Integration	Integrate weather API to fetch and filter real-time weather data for destinations.	API integration successful, data retrieval and display work as expected.
TS 2.2	Real-Time Price Data Integration	Integrate flight and accommodation APIs to pull real-time price data for destinations.	API connections for both flight and accommodation prices successful, feature completed

Sprint 2 Stories Not Completed

Story ID	Story/Task	Description	Outcome
US 2.2	Budget-Friendly Destination Suggestions	As a budget-conscious traveler, I want to see destination suggestions based on real-time pricing for flights and accommodations.	Some test cases failed due to destinations and accommodations exceeding budget limits; this story will carry over to the next sprint for further work.

Team Velocity

- **Story Points Committed**: 26
- **Story Points Completed**: 18 (69%) – US 2.2, valued at 8 points, was not completed and will carry over to the next sprint.
- **Team Velocity**: 18 story points
- **Committed-to-Completed Ratio**: 69%

Team’s Historical Velocity

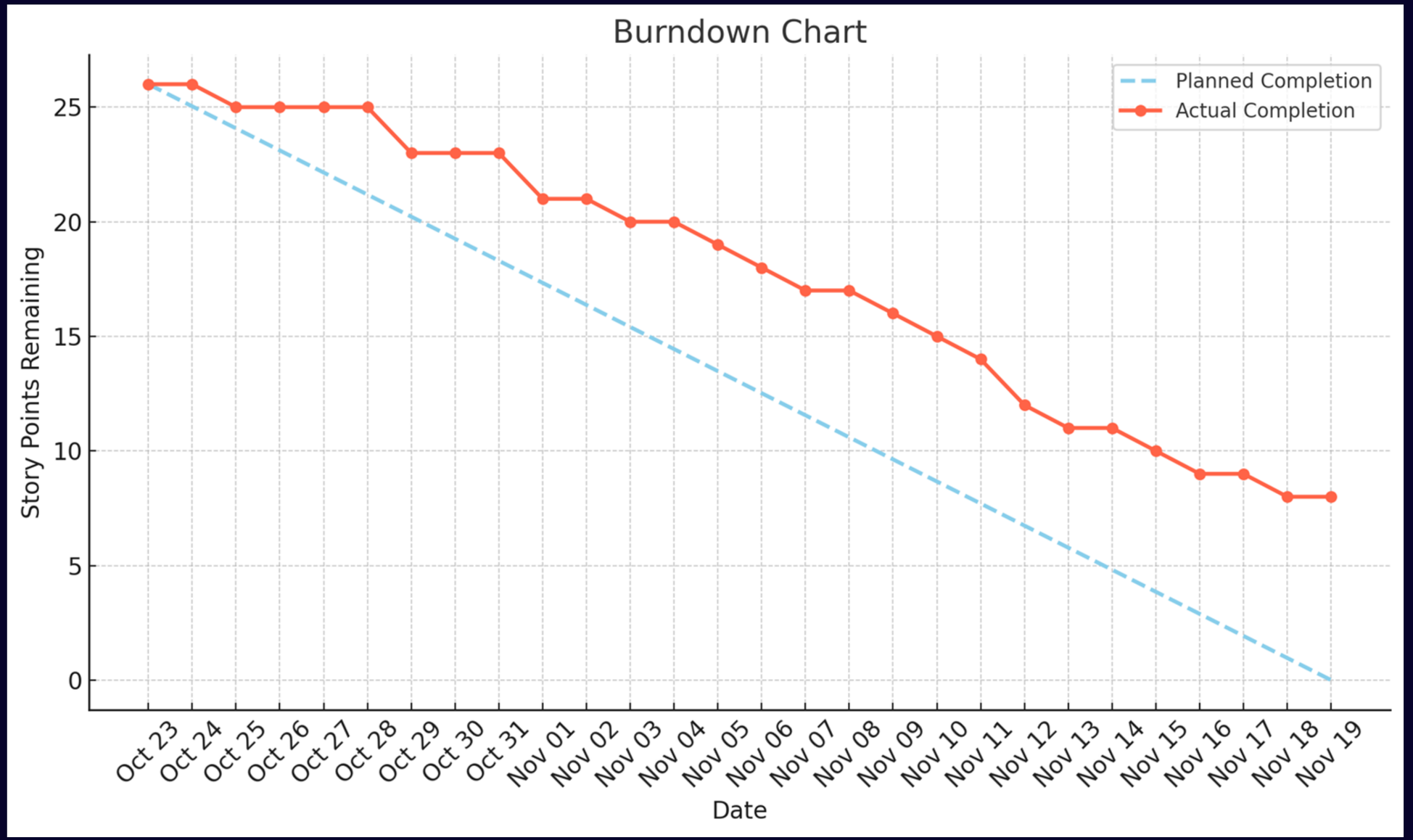
- **Sprint 1 Velocity**: 21 points (100% completed)
- **Sprint 2 Velocity**: 18 points (69% completed)

Average Velocity = (Sprint 1 Velocity + Sprint 2 Velocity) / 2
Average Velocity = (21 + 18) / 2
Average Velocity = 19.5 points

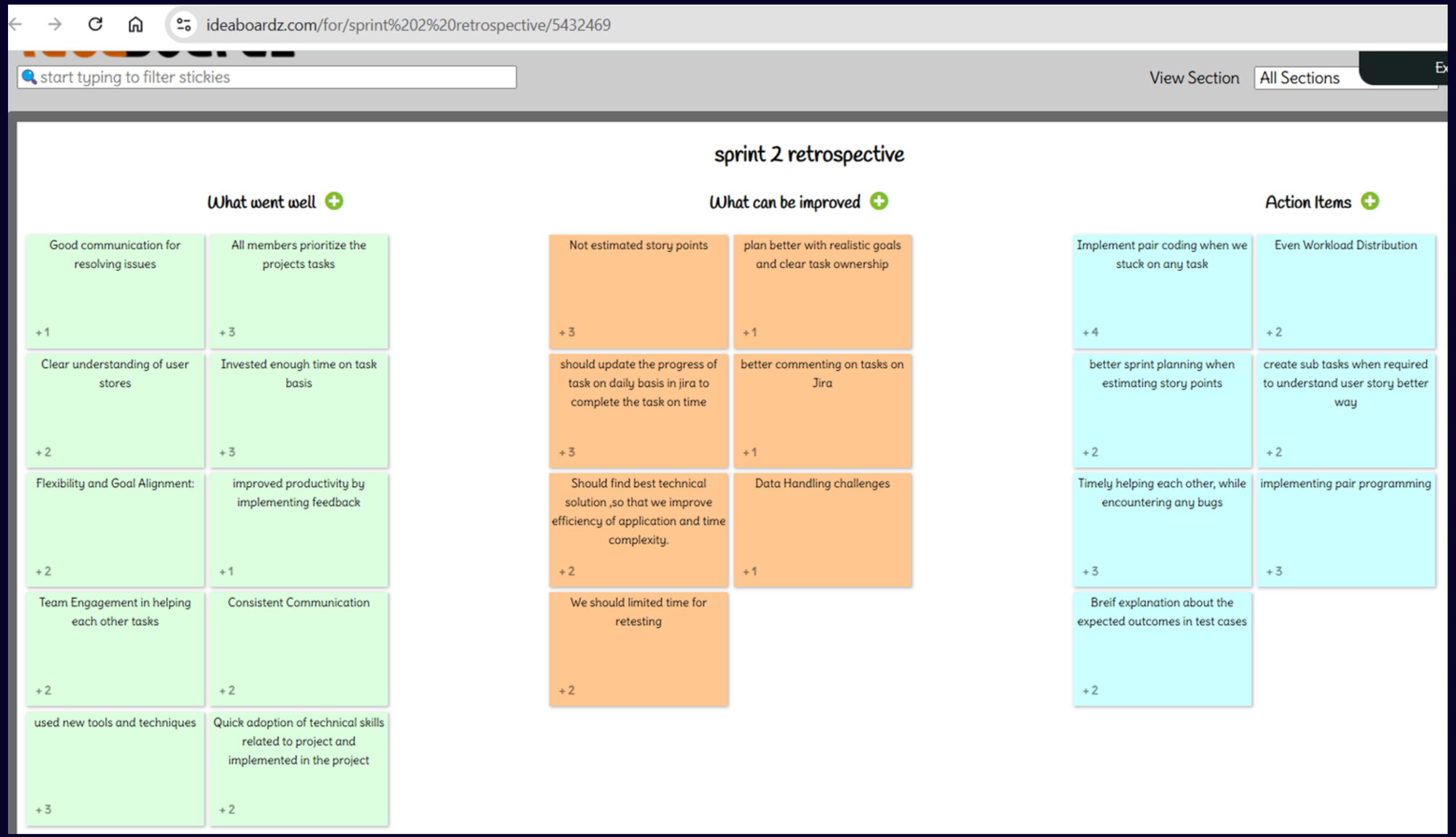
Team’s Historical Velocity

The team’s historical velocity (average) is **19.5 story points** across Sprint 1 and Sprint 2.

Burndown Chart



Retrospective



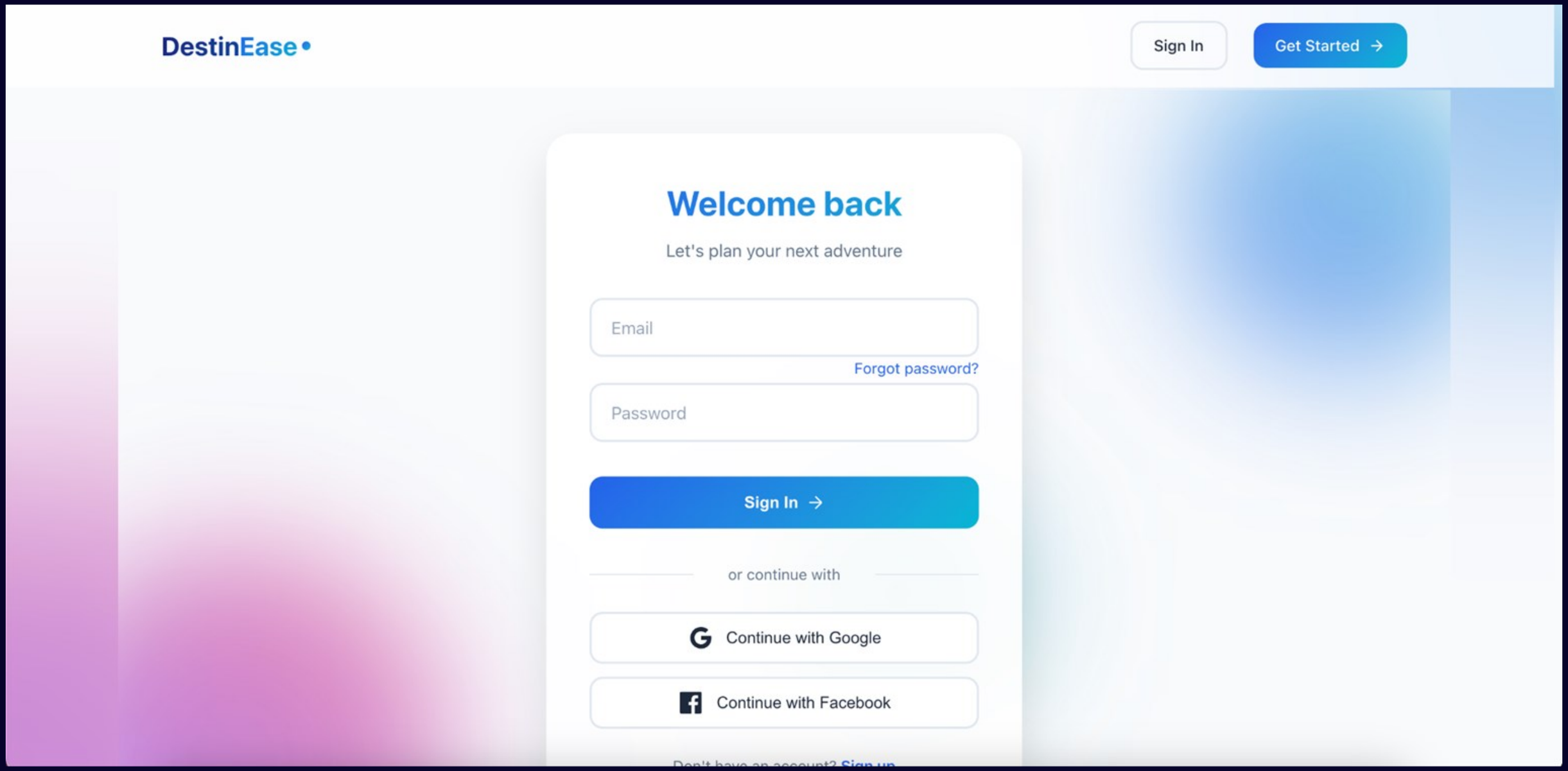
Sprint 3

ID	User Story / Technical Story	Description	Acceptance Criteria	Story Points	Priority
US 3.1	User Story: Machine Learning-Based Recommendation Engine	As a frequent traveler, I want personalized recommendations that improve over time based on my interactions.	- The system uses a machine learning model to refine recommendations. - Recommendations improve over time based on user interactions.	8	High
US 3.2	User Story: Smart Filters	As a traveler, I want to apply filters to my recommendations, like food type, cost, weather, and proximity to landmarks.	- Users can apply filters for food type, cost, weather, and proximity to landmarks.	5	Medium
TS 3.1	Technical Story: Notification System	Develop in-app notification system for price change alerts.	- Notifications appear for relevant price changes. - Real-time price tracking triggers notifications.	5	Medium
TS 3.2	Technical Story: Machine Learning Model Integration	Build and integrate an ML model to analyze user interactions and refine recommendations.	- ML model provides improved recommendations over time. - User interaction data is fed to the model	8	High

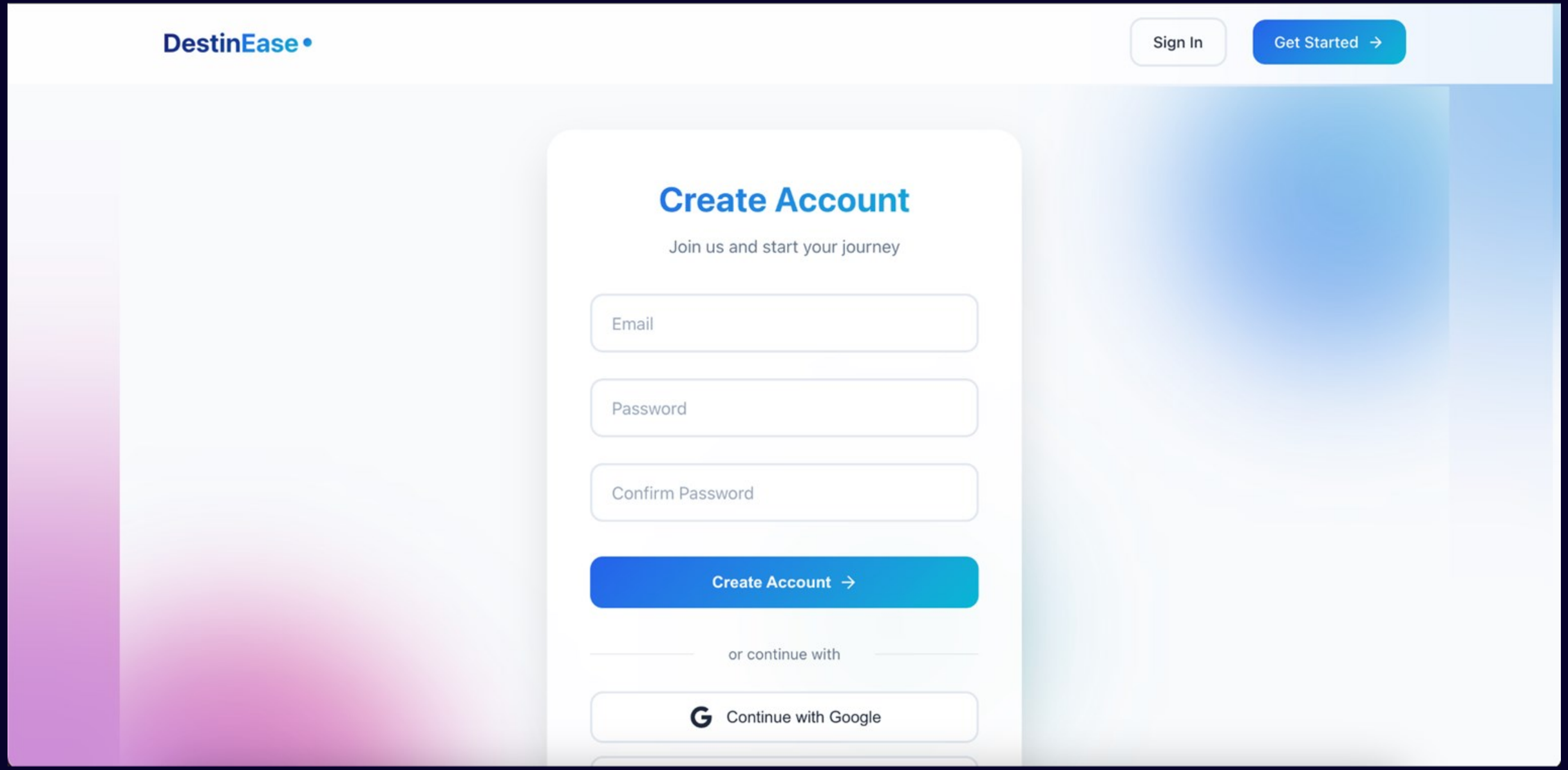
Sprint 3

ID	User Story / Technical Story	Description	Acceptance Criteria	Story Points	Priority
TS 3.3	Technical Story: Filter Logic Implementation	Implement filtering functionality for user recommendations.	- Recommendation list updates based on selected filters.	5	Medium
US 2.2	User Story: Budget-Friendly Destination Suggestions (Carry Over)	As a budget-conscious traveler, I want to see destination suggestions based on real-time pricing for flights and accommodations.	- Platform provides destination suggestions based on real-time flight pricing. - Platform provides destination suggestions based on real-time accommodation pricing. - Recommendations adjust according to the user's budget input.	8	High

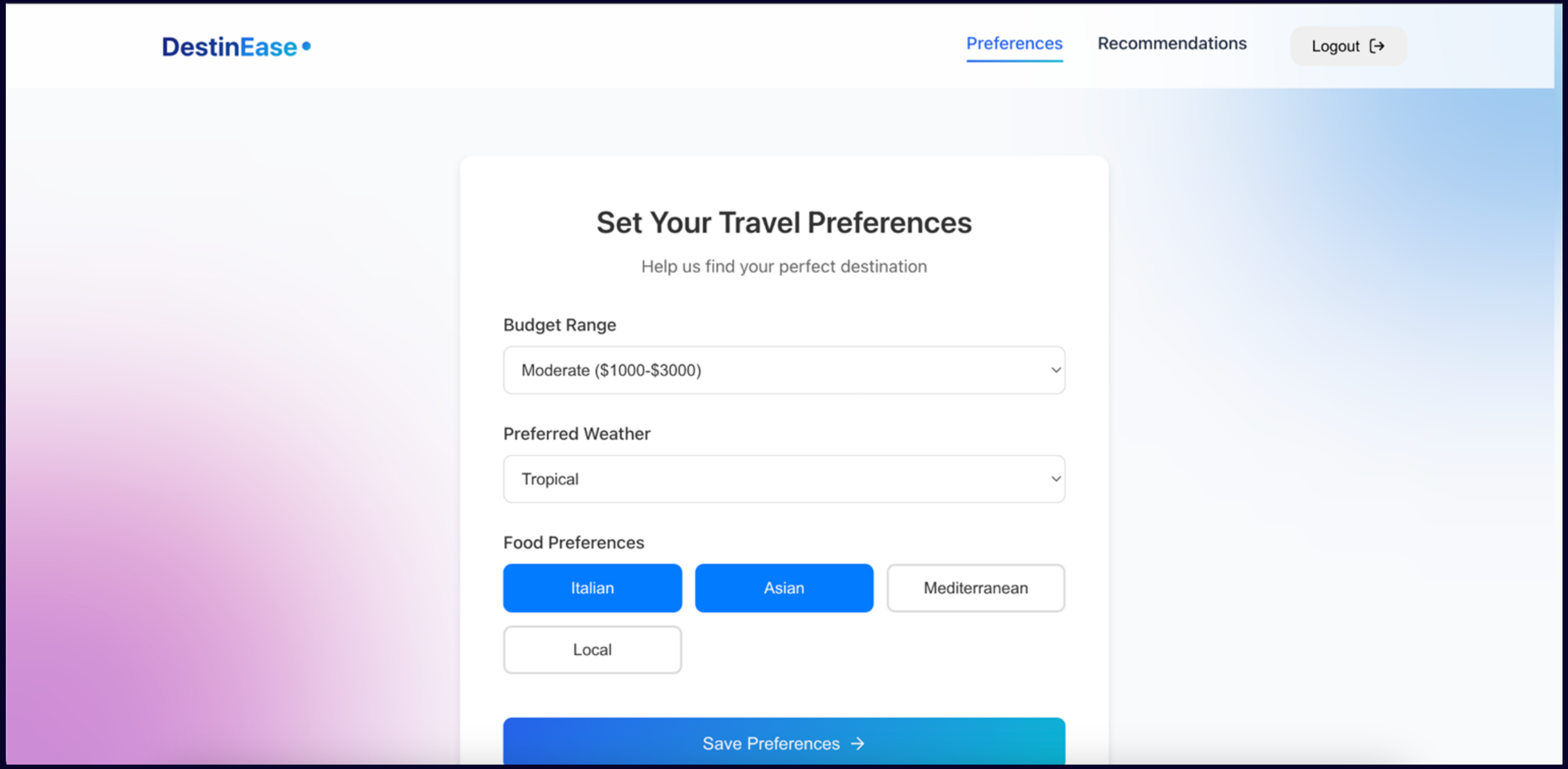
Application Screenshots - Log in



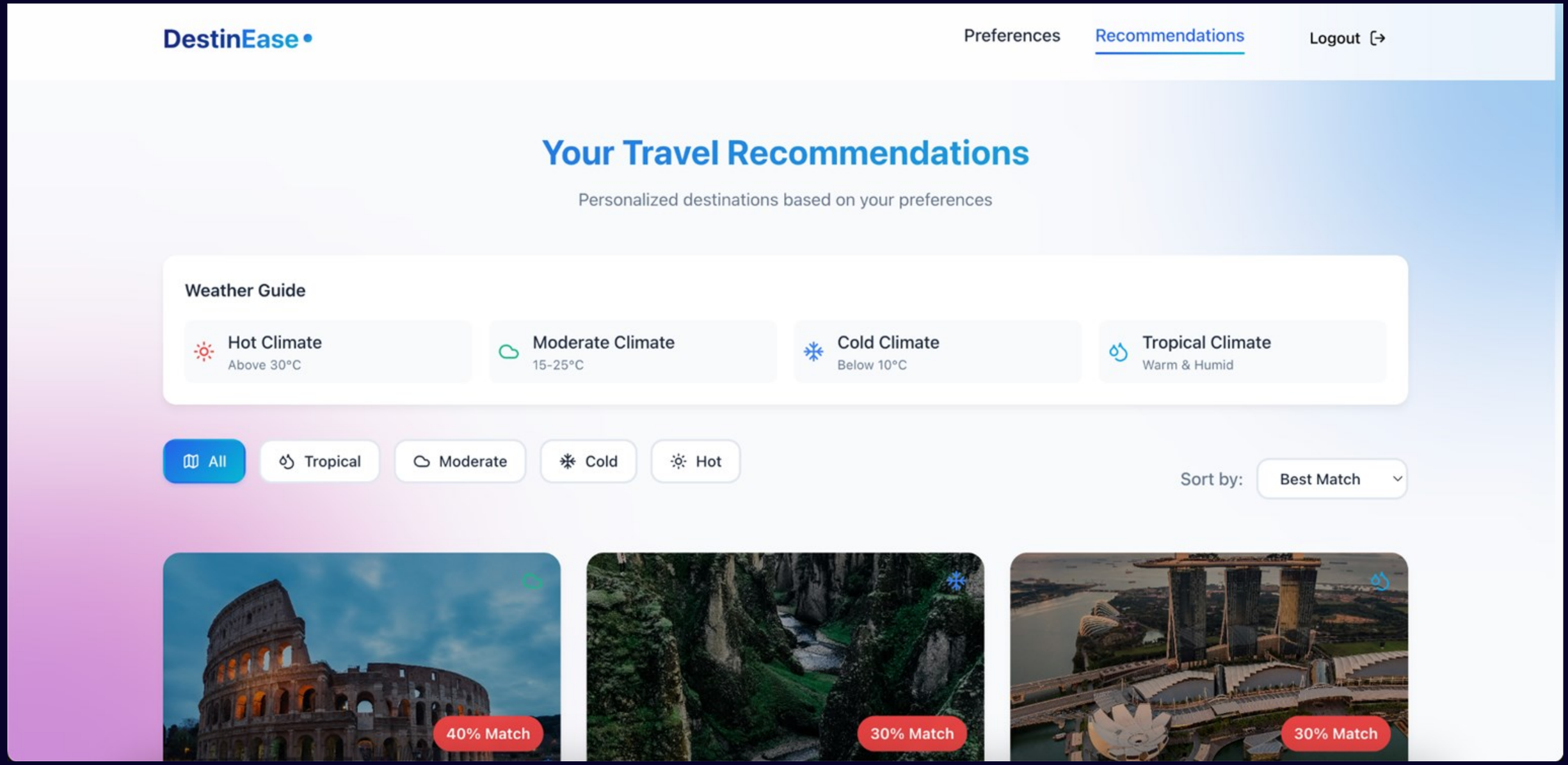
Application Screenshots - Sign Up



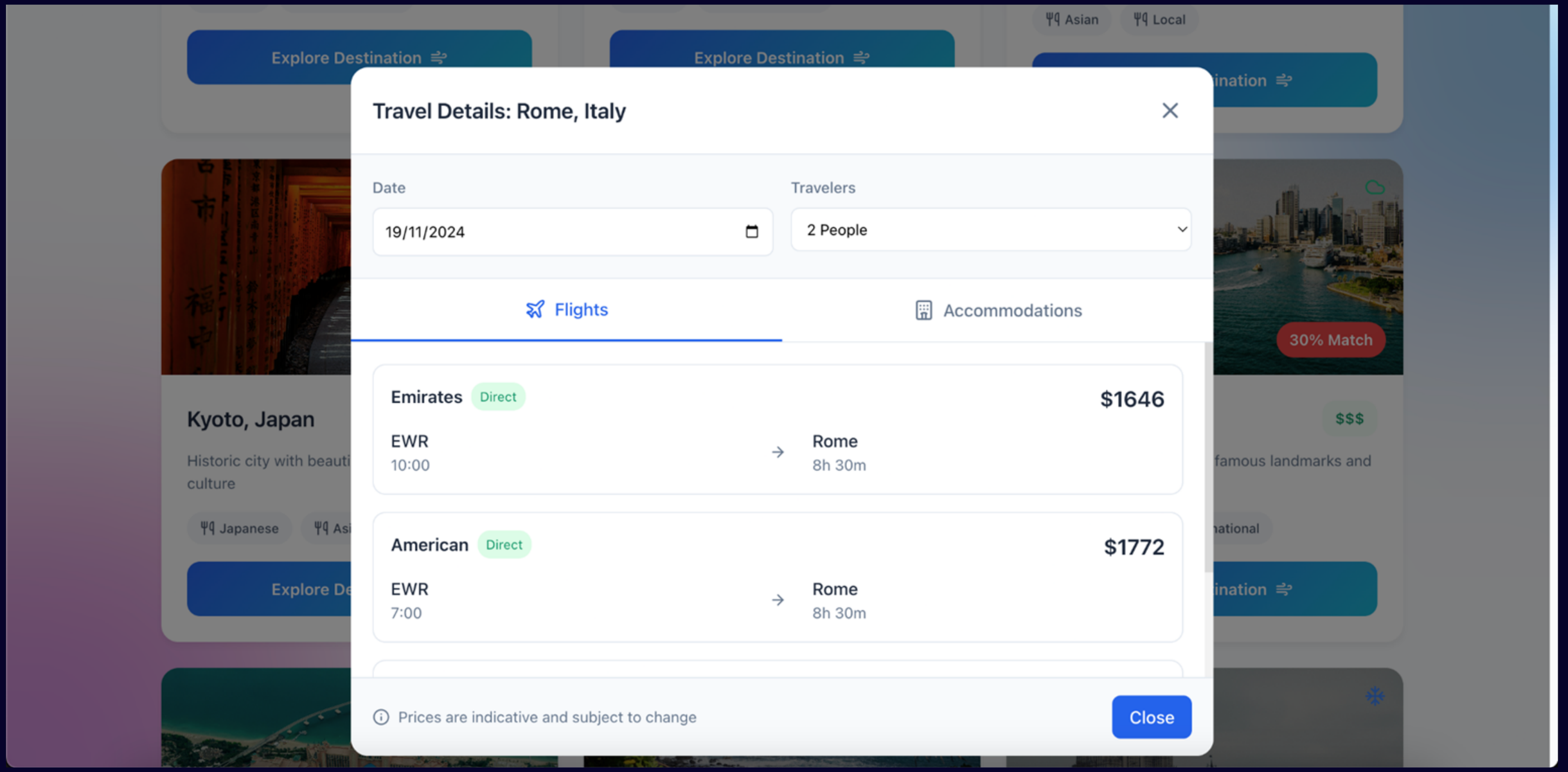
Application Screenshots - Preference



Application Screenshots: Basic Recommendations and weather



Application Screenshots- Flight data



API

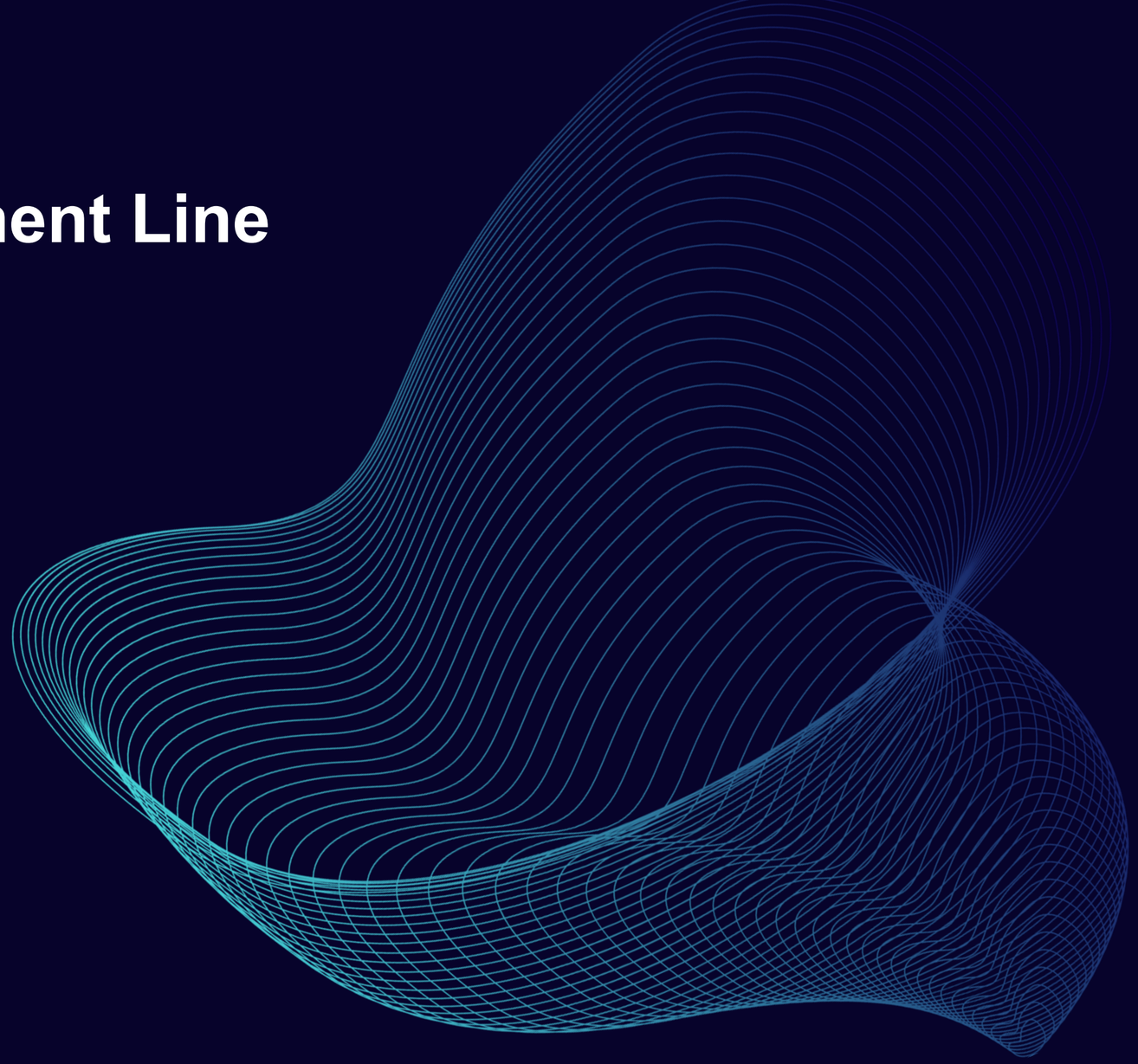
Creating an Account:
API: curl -X POST http://localhost:5980/api/register -H "Content-Type: application/json" -d '{"email": "test@example.com", "password": "password123"}'
Response:
{"token":"eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJpZCI6MSwiZW1haWwiOiJ0ZXN0QGV4YW1wbGUuY29tIiwiaWF0IjoxNzI5NjA0NDMwfQ.Q1F7soUck4FqmqaPYOMXu8eHPTvPWebOVvH2uItrWuA","user":{"id":1,"email":"test@example.com"}}%

Setting Preference
API: curl -X POST http://localhost:5980/api/preferences -H "Content-Type: application/json" -H "Authorization: Bearer eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJpZCI6MSwiZW1haWwiOiJ0ZXN0QGV4YW1wbGUuY29tIiwiaWF0IjoxNzI5NjA0NDMwfQ.Q1F7soUck4FqmqaPYOMXu8eHPTvPWebOVvH2uItrWuA" -d '{"budget": "moderate", "weather": "tropical", "foodPreferences": ["Asian", "Local"]}'
Response:
{"userId":1,"budget":"moderate","weather":"tropical","foodPreferences":["Asian","Local"]}%

Wiki page link and Deployment Line

Github Wiki

Deployment Link



Live Demo