

## Smart location-based recommendation mechanism with route planner.

### Novelty

*The novelty in the combined recommendation approach lies in the integration of multiple recommendation techniques and data sources, including individual user preferences, community preferences, and unexpected or lesser-known locations. By combining these diverse elements, the system introduces novelty by suggesting recommendations that align with the user's preferences, have social validation from the community, and include unique and unexpected places. The combination ensures a more comprehensive and intelligent recommendation experience, offering personalized suggestions while introducing new and exciting options that users may not have discovered on their own.*

### Histomind

**HistoMind** is a mobile application.

Target audience is **tourists**.

Research area is,

**All the historical places in Sri Lanka.**

**All the tourist attracted places in Sri Lanka.**

**Lesser-known places, but still worth visiting.**

### Features

1. **User authentication and profile.**
2. **Location-based recommendation system.**

This recommendation is divided into 3 aspects.

1. **Location -based recommendation based on single user preference.**

- This recommendation is based on **historical places** in Sri Lanka.
  - Get user inputs based on their preferences.
  - User preferences can be utilized via a **form** which includes selections, drop downs, input fields, etc.
  - User inputs can be categorized.

Example: 🖐️

- What type of places user wish to visit, the places located in Countryside, Beach side, etc.
  - The places according to the accessibility.
  - The places based on landmarks.
  - The places are historically significant.
  - The places based on facilities.
  - The places based on time restrictions and other restrictions like dress code restrictions, photography restrictions.
  - Make sure to add necessary places with categories.
  - Develop a **content-based recommendation** algorithm for model training.
  - No matter where you are in Sri Lanka, the system can fetch the current location and **recommend a list of places** based on the above-mentioned user inputs.
  - The list is **ordered according to the current location**.
  - Places are ordered according to the **distance to the user**.
- Example: 🖐️ The most nearby place should be displayed first.

*Note: The result is not visible to the user. Backend only.*

## 2. **Location -based hybrid recommendation based on community preference. (Ratings/Reviews)**

3. This recommendation is also based on **historical places** in Sri Lanka.

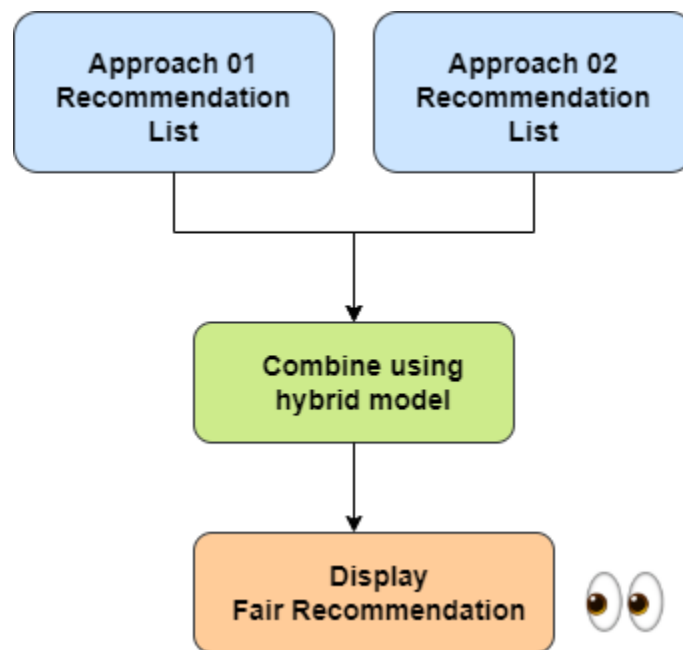
- Fetch the user's current location.
- By default, the system provides recommendations within the **user's current province**.
- We offer a user-friendly interface where users **can adjust the range or distance** for recommendations.
- Collect ratings/reviews for the places from Google review.
- Develop a **hybrid recommendation algorithm**.
- Combine **collaborative filtering (based on community ratings/reviews)** with **content-based filtering (based on location and historical attributes)** to generate recommendations.
- Recommend the list of places based on above ratings/reviews.

- The list is also **ordered according to the current location**.
- Places are ordered according to the ratings.  
Example: 👉 The most rated place should be displayed first.

*Note: This result is also not visible to the user. Backend only.*

#### 4. Combined recommendation.

- Obtain recommendations from the above 2 approaches.
- Assign weights to the recommendations.
- Combine the above 2 recommendation approaches using a hybrid model.
- The hybrid model can be a machine learning model, such as an ensemble model, a neural network, or a combination of different algorithms.



Fair recommendation also provides a **list of recommended places**, and those places are ordered according to the **distance to the user**.

Example: 👉 The most nearby place should be displayed first.

*Note: This is the output that user can see through the mobile app.*

### 5. Location -based unexpected recommendation.

- This recommendation is activated once the user is moving with the mobile phone.
- This recommendation is based on nearby tourist attracted places which are lesser known but visiting worthy places in Sri Lanka.
- This is another recommendation mechanism which runs parallel with the above combined recommendation mechanism.
- This is isolated from the above combined mechanism, and this generates nearby lesser known places.
- As mentioned above, users can expand the range for the recommendation, by default it consider within the province.
- Users should get the notifications once user is near to particular lesser-known place.

*Note: This output is also user visible.*

### 3. Route planner

- The map should be integrated into the app.
- On the map different categories (historical places, nearby attractive places, lesser-known places) should be displayed in different symbols and markers with different colors.
- When users tap on a marker, a pop-up or card should display details about the selected place, including its name, description, and category.
- Users can select the desired places on the map. (Vertices)
- Once the several places are selected on the map the shortest path should be displayed covering those places.
- The shortest path should be optimized using the A\* algorithm.
- A\* considers distances, travel times and real time traffic data.
- Display the optimized path on the map.
- Trip dashboard: In a separate UI user can visit the created routes in separate cards called "Trip Cards".
- Users can edit or delete them.