Visual Analysis of Travel Route Recommendation

System Description

Travel Route Recommendation

- Travel route recommendation problems involve a set of points-of-interest (POIs) in a city.

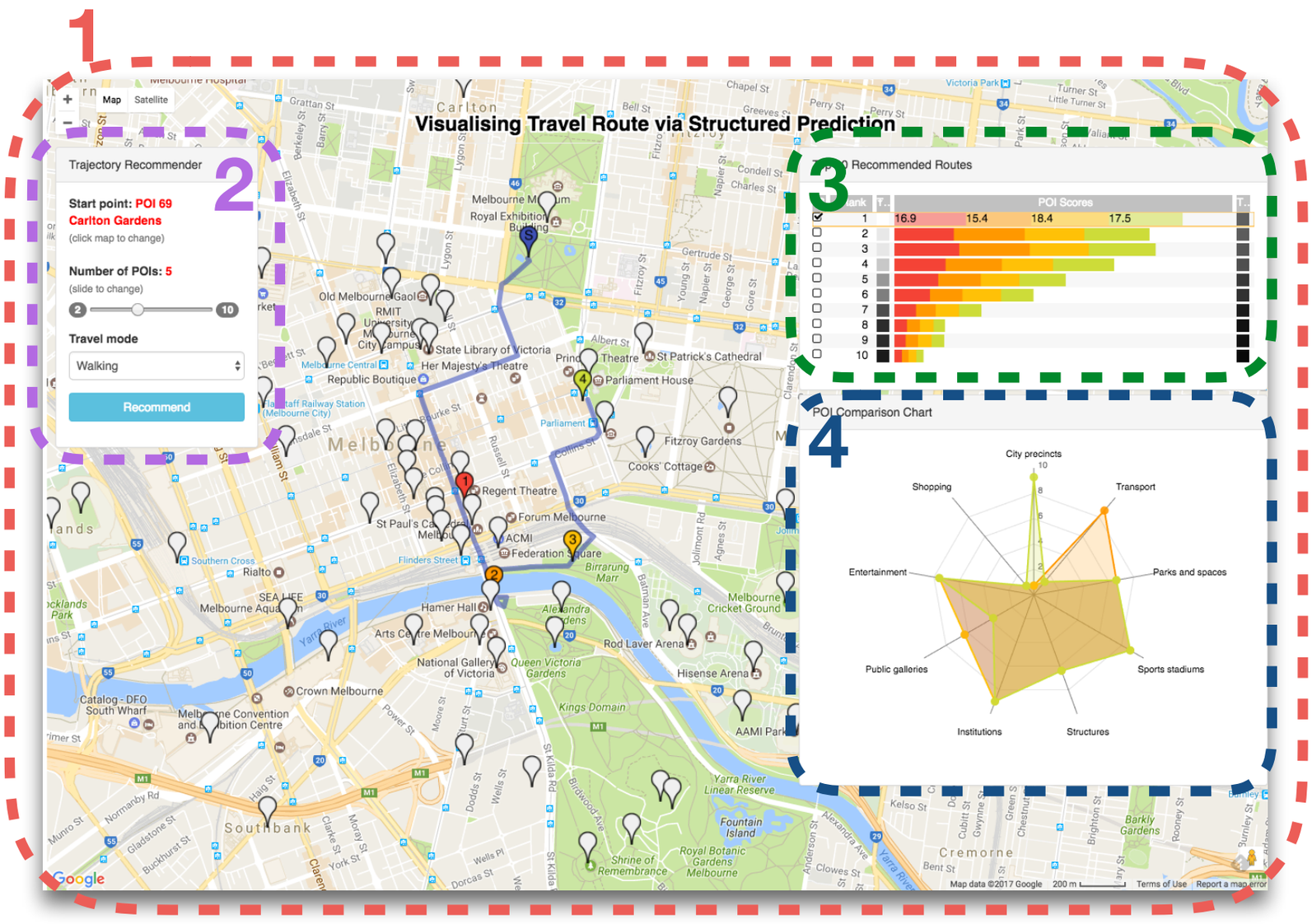
- The goal is to **suggest one or more sequences of POIs** to be visited, which maximise user experience.

- Unlike the traditional recommendation tasks, the route recommendation requires modelling a structure between POIs.

Contributions

- We formulate the travel recommendation problem as a **structured prediction problem**.
  - This allows us to leverage the structured SVM (SSVM) literature.
    - Explicit feature construction of SSVM helps visualising interpretable recommendation process.
- We demonstrate an **interactive route analyser** which helps the interaction between users and route recommendation systems.
  - A user can analyse suggested routes and plan a better trip.

Demo System

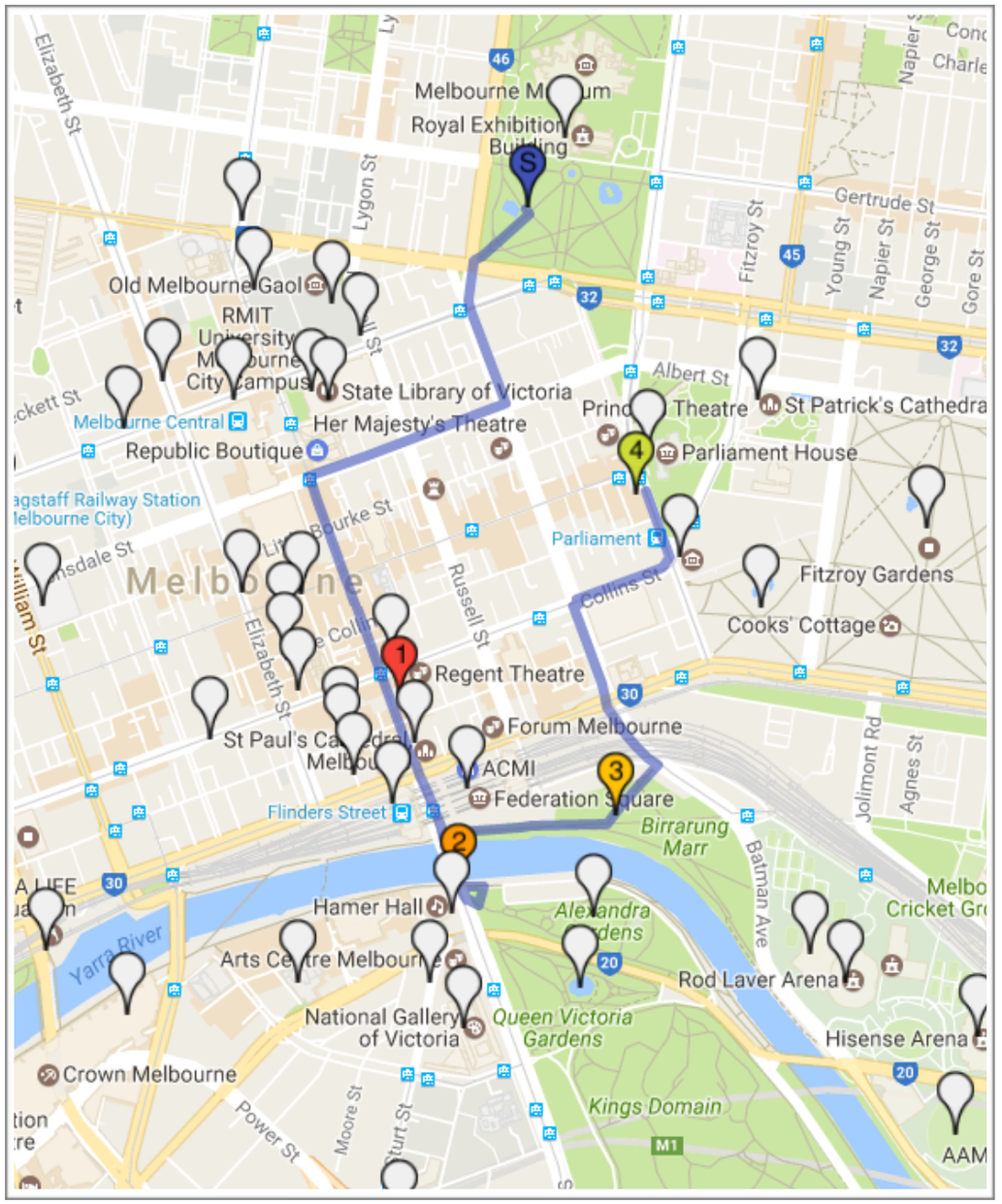


- Our demo system is a web application.
- The system consists of 4 main parts:

1. Map to display routes
2. User input box
3. Route score chart
4. POI score chart

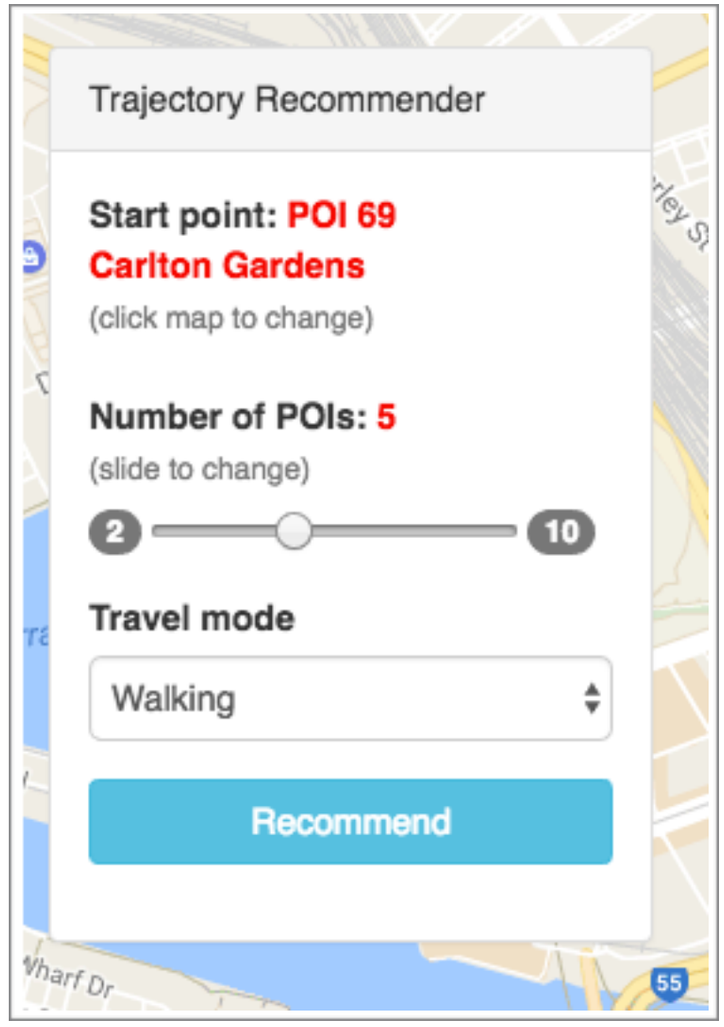
1. Map to Display Routes

- A map is the major component of our system.
- Recommended routes are displayed on the map
- Suggested POI sequence is

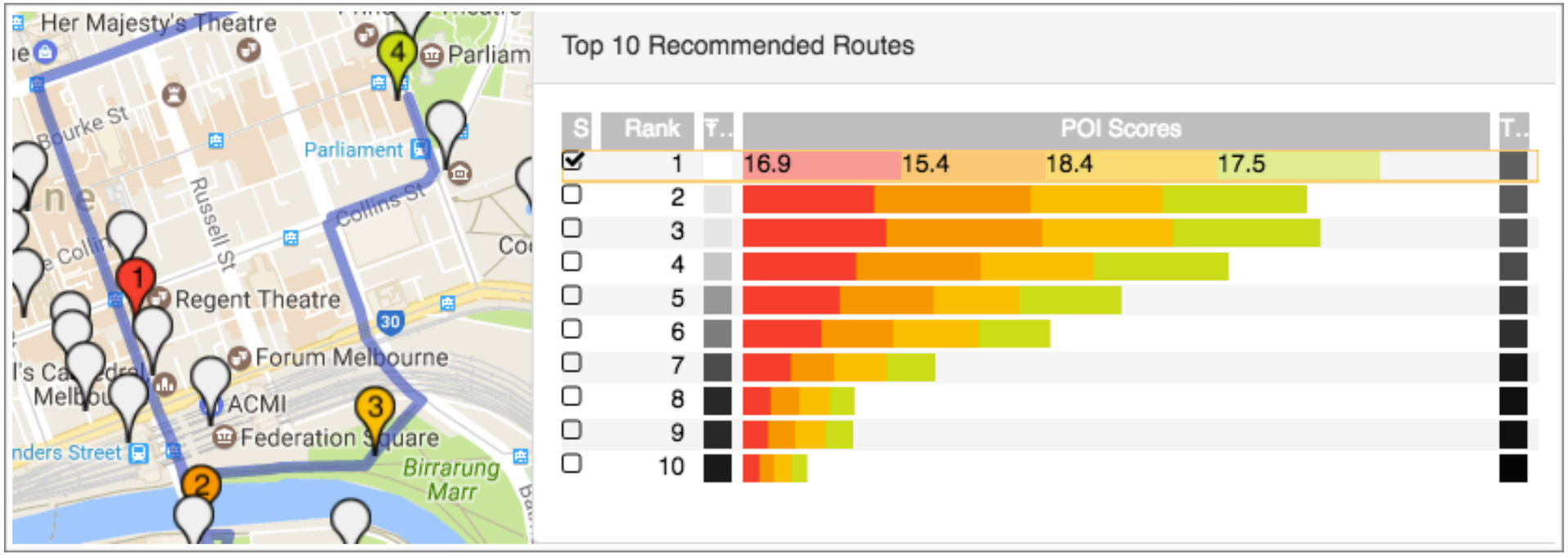


2. User Input Box

- A user can issue a query for a route recommendation.
- A query consists of
  - Starting POI
  - Length of trip: number of POIs to be visited
  - Travel mode: walking, bicycling, driving
- When the user hit recommend button, the system will generate the ranked list of route.
- A top recommended route is drawn after a query issued.

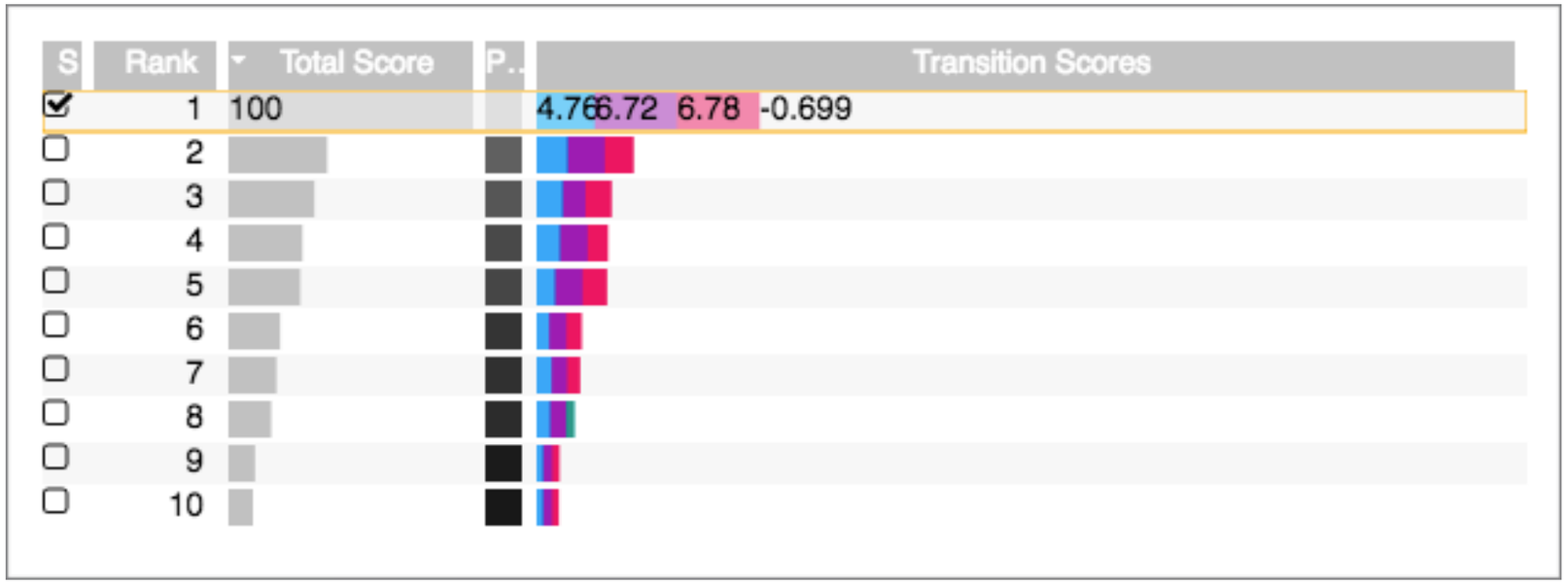


3. Route Score Chart - POI scores



- Route score chart visualise various scores of the suggested route.
- In *POI scores* column, each bar from left to right represent a **relative score of each POI along the route**, and the total length of stacked bars represents the total POI score of the suggested route.
- A user can visualise multiple routes by checking the selection boxes.

3. Route Score Chart - Edge scores

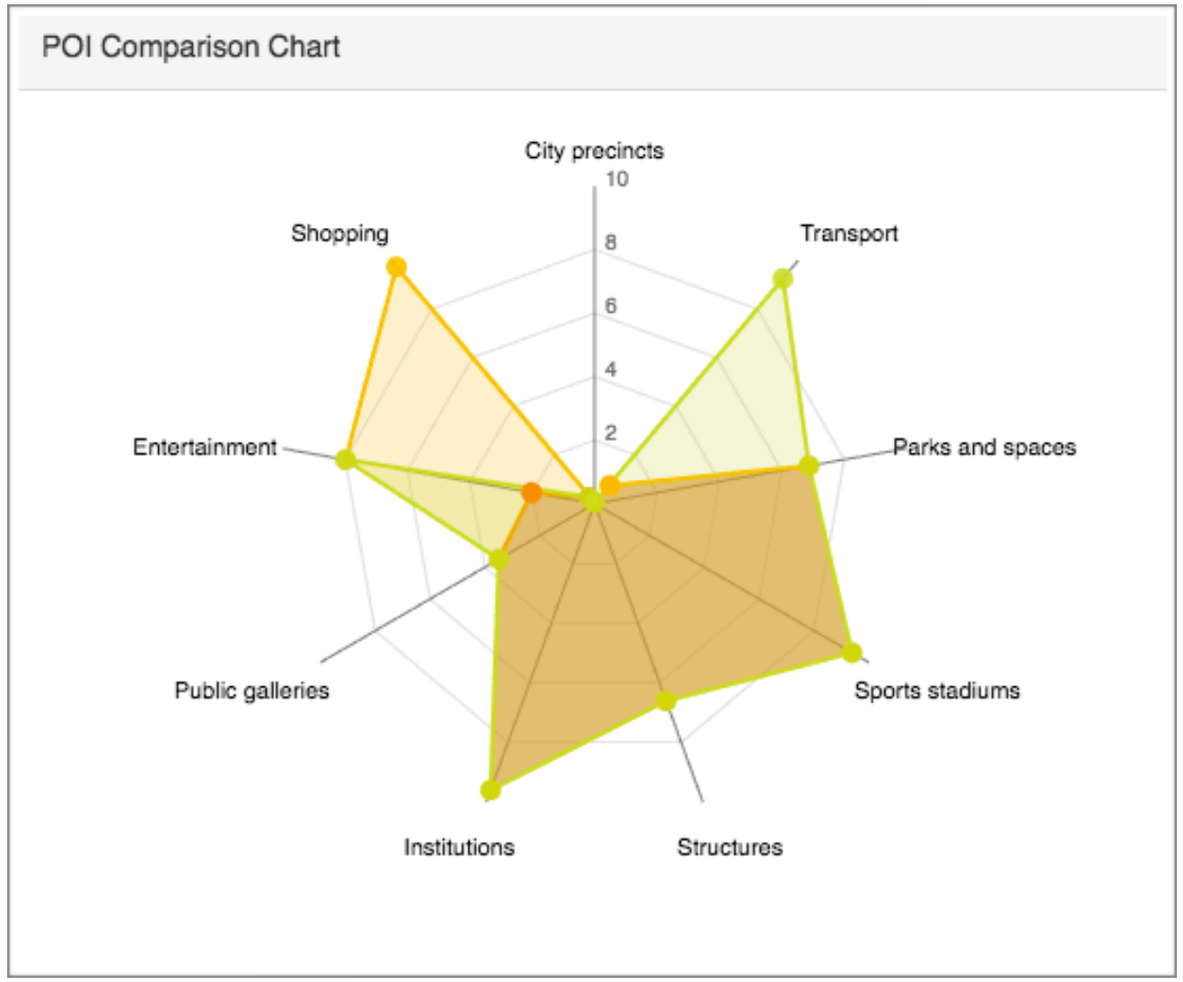


- In *transition scores* column, each bar from left to right represent a **relative score of each edge along the route**, and the total length of stacked bars represents the total edge score of the suggested route.

- Total score (= POI score + transition score) is used for the recommendation.

4. POI Score Chart

- We also visualise POI features along the selected route.
- For example, the radar chart on the right shows differences between POIs with respect to their categories.
- Users can easily check how diverse or focused the suggested route is.



System Demonstration

- Live system is available at
  - http://115.146.87.43:8080/