

Visual Analysis of Travel Route Recommendation

System Demonstration

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POI Compar

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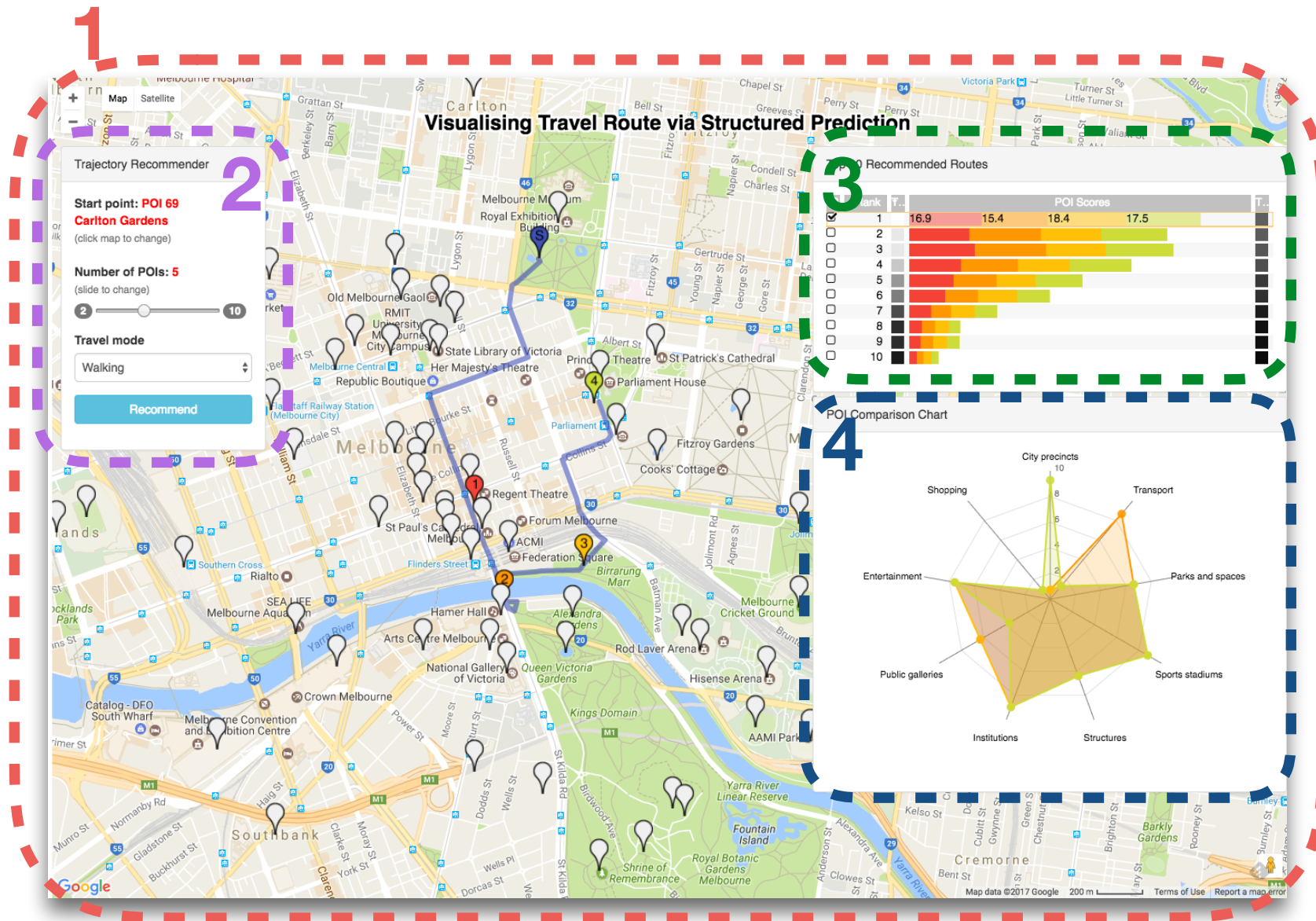
Travel Route Recommendation

- 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.

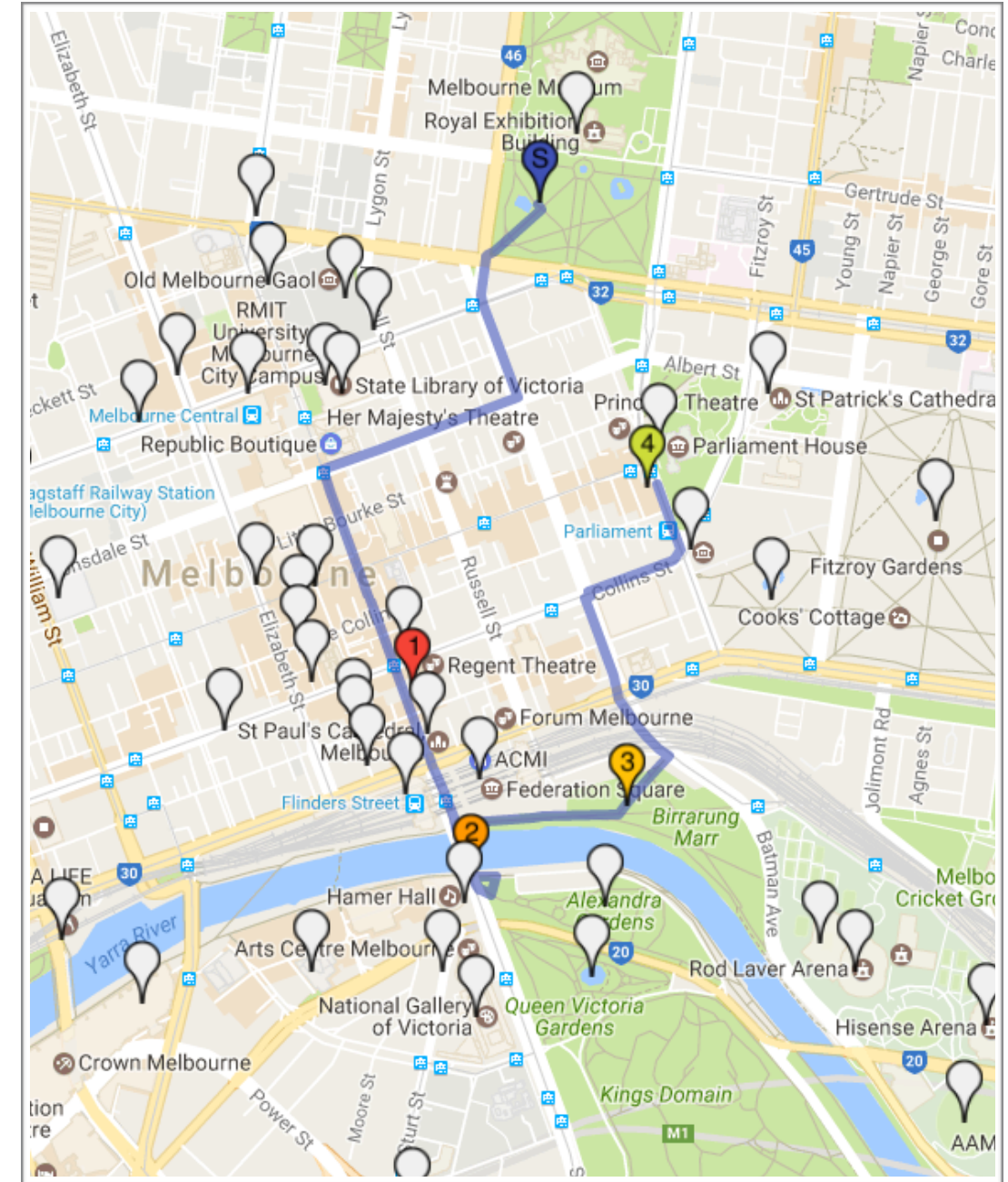
Demo System



- 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



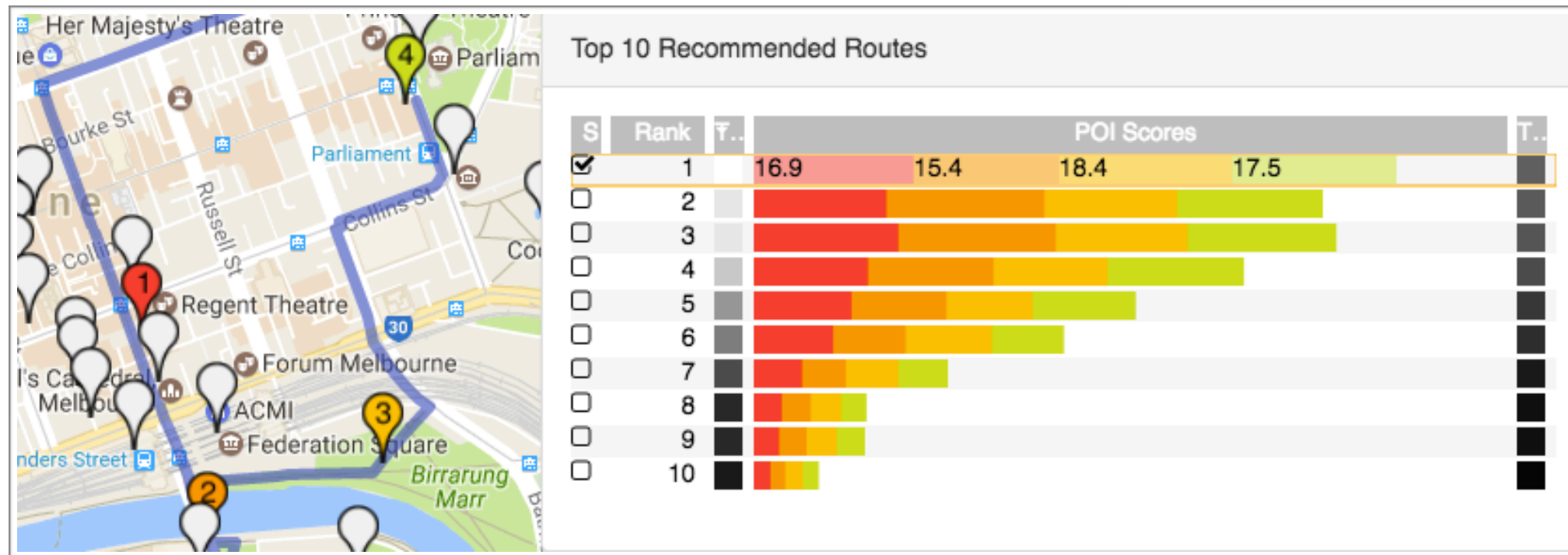
2. User Input Box

- 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.

The image shows a mobile application interface titled "Trajectory Recommender". It is overlaid on a map background. The interface contains the following elements:

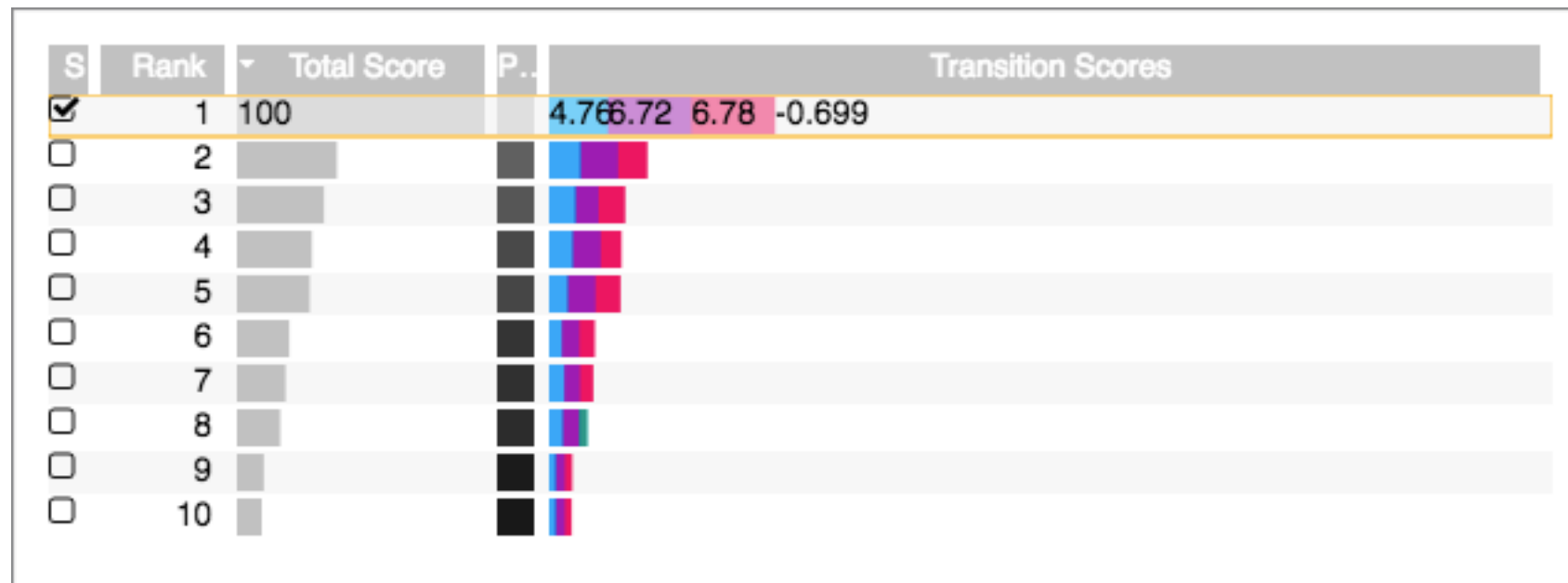
- Start point:** **POI 69**
Carlton Gardens
(click map to change)
- Number of POIs:** **5**
(slide to change)
A slider control is shown with the value 5, ranging from 2 to 10.
- Travel mode:**
A dropdown menu currently shows "Walking".
- Recommend** button (blue)

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 clicking the selection box

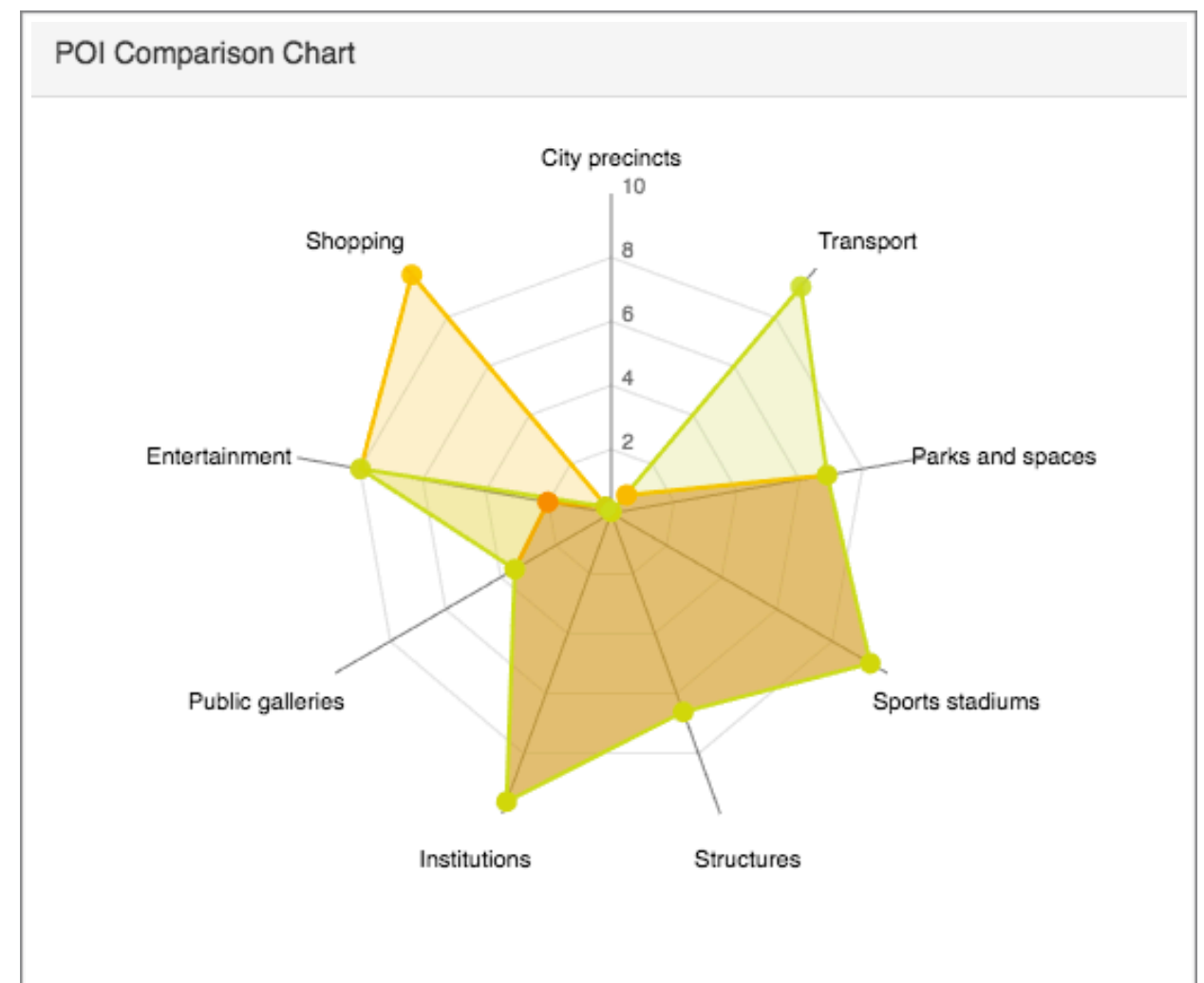
3. Route Score Chart - Edge scores



- 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.
- The POI & edge scores are summed up to make a recommendation.
- Total score = POI score + transition score.

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/>