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ZIP-Find

(Location based Restaurant Search and Recommendation System)

Project Domain: ZIP-Find is a location based restaurant search and recommendation system. In this project, we plan to build a knowledge graph about restaurants and local attractions located in different cities of California. Our knowledge graph will model the relationship between zip codes, cities, restaurants and attractions. Based on the attraction, given as an input by the user, our system will output highly-rated restaurants in the nearby zip codes, which can be filtered using various attributes such as cuisine, reservations, parking, free wifi and so on. This knowledge graph will be useful to discover restaurants located around a local attraction as well as suggest other nearby attractions. Moreover, our system will provide a provision of entering a restaurant that the user likes and search for similar restaurants around the attraction they are planning to visit.

Datasets & Representation:
Our knowledge graph will contain data from the following three sources:

1) Structured data source for extracting zip codes in California - https://www.unitedstateszipcodes.org/ca/
2) Top attractions in California using Tripadvisor website - https://www.tripadvisor.com/Attractions-g28926-Activities-a_allAttractions.true-California.html
3) Restaurants in California using Yelp website - https://www.yelp.com/

There is no existing ontology that defines all the required attributes for restaurants and attractions that we plan on using for this project. Hence, we will design a custom ontology that captures the information about restaurants and its attributes (cuisine, reservations, parking, free wifi etc.), local attraction and its attributes (number of reviews), cities and zip codes.

Technical Challenge:
We will be using our knowledge graphs to relate California based local attractions and restaurants using zip codes. We will be using SPARQL queries for extracting highly rated restaurants and nearby local attractions using pattern matching. Provision to filter search results will also be provided. This is a novel task because our system will be a one-stop platform that will link local attractions and restaurants in a single application. We will additionally be designing a recommendation system for recommending restaurants based on a notion of similarity between attributes. This problem is a challenging one as it requires feature engineering for selecting the appropriate attributes to give fairly precise results which is beyond the scope of this course. Handling missing or noisy data for a few zip codes will impact the quality of the graph and needs to be handled carefully. To evaluate our system we will use human expertise to verify the recommendation and search results.