COMP 3106 Project Proposal

AI Itinerary Planner for Ottawa Dates

Cameron Teed (101227413)

1. Background and Objectives

For this project, I want to explore how artificial intelligence could be used to build a local date itinerary planner for people in Ottawa. Most apps today, like Google Maps or Yelp, are good at recommending individual places, but they don't connect them into a sequence that actually feels like a complete date. The idea here is to design a system that suggests realistic, multi-stop itineraries (for example, coffee → park → dessert) based on a person's preferences for location, mood, and budget.

The main goal is to see whether AI methods can plan better, more personalized date routes than a simple random or rule-based system. Along the way, I also want to compare two different planning approaches: a Genetic Algorithm (GA) and a basic heuristic search, to see which one builds more natural itineraries under real-world constraints like time and cost.

2. Proposed AI Methods

The system will start by classifying venues based on their descriptions (for example, "cozy café with candlelight"). I plan to represent the text using either TF–IDF features or pretrained GloVe word embeddings, and then train a simple classifier such as Logistic Regression or Naïve Bayes. Each venue will be labeled with one or more tags that describe its type (`restaurant`, `museum`, `cooking_class`) and general vibe (`romantic`, `casual`, `outdoor`, etc.). These labels will help the system match user preferences and ensure that the overall itinerary feels coherent.

Once the venues are labeled, the planner will combine them into full itineraries. A scoring function will evaluate how well each plan fits a user's input by considering factors like matching tags, ratings, travel distance, and cost. The heuristic approach will build a plan step by step, while the Genetic Algorithm will treat each itinerary as a "chromosome" and evolve it through selection, crossover, and mutation. Before either method runs, simple rule checks (for example, filtering out places that are closed or over budget) will narrow down the options.

If I have time near the end, I'd also like to experiment with a small NLP feature that can read short text queries like "plan a fun, cozy date in Barrhaven under $30" and automatically extract the mood, location, and budget.

3. Dataset and Environment

The dataset will include roughly 200–250 venues from around Ottawa. For each one, I'll collect details such as name, type, coordinates, cost, hours, rating, and a short description. Each entry will also include manually assigned labels for type and vibe, which will serve as training data for the text classifier. This multi-label setup should allow the system to recommend more than just restaurants — for example, it could mix museums, cafes, and outdoor spots. The data will be gathered from public sources and APIs (Google Maps, Google Places, Yelp, etc.) and stored in a CSV file for convenience.

4. Validation and Analysis Strategy

To evaluate the text classification step, the labeled data will be divided 80/20 into training and testing sets. I'll compare accuracy, precision, recall, and F1 score for the TF–IDF and GloVe versions. For the itinerary generation part, I'll compare three methods: random selection (as a baseline), heuristic search, and the Genetic Algorithm. Metrics will include the average itinerary score, number of constraint violations, and, in the case of the GA, its convergence speed. I also plan to do a small informal survey among friends or classmates to see which itineraries seem most appealing or realistic. Finally, I'll compare the overall results with and without the text classification step to measure its real impact.

5. Novelty

This project stands out from typical recommendation tools because it focuses on generating complete date itineraries rather than just single spots. It combines elements of text classification, optimization, and simple reasoning to make something that feels genuinely useful and a bit fun to test. I'm also interested in this topic personally — I've noticed how hard it can be to plan creative local outings, and I think it's a neat challenge to see how AI can make that easier.

6. Weekly Schedule

Week (2025)	Planned Work
Oct 31 – Nov 7	Collect and clean venue data; decide on label categories (type and vibe).
Nov 8 – Nov 14	Implement text features (TF–IDF / GloVe) and train the classifier.
Nov 15 – Nov 21	Develop the scoring function, rule filters, and heuristic planner.
Nov 22 – Nov 28	Implement and tune the Genetic Algorithm; begin testing.
Nov 29 – Dec 5	Run experiments, analyze results, and prepare the demo and report.