**Problem Description and Project Goal**

Moving to a new living environment can be exciting but overwhelming as well. A challenge is created for newcomers who may struggle to find dining options that suit their preferences from the large amount of restaurants nearby. Although there are online platforms like Yelp and Google Reviews that provide recommendations based on ratings and popularity, they often fail to account for personalized preference. These platforms also tend to present restaurants in a long list, which makes it harder to compare multiple restaurants and narrow down to the best choice.

This approach is particularly relevant given the growing need for personalized recommendation systems in urban environments. As cities become more diverse and offer an increasing number of dining options, newcomers require tools that streamline the decision-making process. By implementing a tree-based recommendation system, we aim to create a more user-friendly, structured, and effective way for individuals to explore their new city's food scene. This project not only applies key computer science concepts but also addresses a real-world problem that affects many individuals moving to unfamiliar locations.

**In this project, our goal is to develop a smart restaurant recommendation system using tree-based modelling based on cuisine type, price range, and location; this helps newcomers efficiently find restaurants by navigating through a structured tree of options.**

**Motivation**

As international students who are coming to Toronto for the first time, our group has personally experienced the challenge of finding good dining options in an unfamiliar city. With tight schedules due to academic work and assessments, we often have limited time to search for suitable restaurants that fit our preferences and budgets. Many existing platforms do not effectively cater to newcomers who are unfamiliar with local dining options, leading to frustration and inefficient decision-making.

**Background Knowledge and Context**

The problem of restaurant selection is closely related to hierarchical classification, and it is often solved using tree structures in computer science. The tree data structure is an effective way to represent hierarchical relationships, like organizing restaurants by cuisine type, price range, and location. Within this system, the root node represents all available restaurants, while intermediate nodes represent different categories such as cuisine type or price range. The leaf nodes contain individual restaurants, each with relevant details such as name, address, rating, and customer reviews. This allows users to have efficient searching and filtering, resulting in quickly locating restaurants that match their preferences.