

GrabToday

A smart city caters to a smart population. And smart people use technology to push beyond the trivialities of day to day lives and make the most out of their time. We think it's imperative that such technologies are accessible to the population to make our cities more efficient and more fun. That is the origin story of GrabToday.

GrabToday is an online collaborative discovery application where users find new spots to dine, explore or new movies to watch. GrabToday makes suggestions on new restaurants, movies, or events happening in and around your city based on the reviews given by other users. The idea is simple - the more you share common interests with another person, the more the chances a new interest of his/her would be shared by you. The platform is originally developed to be deployed online. But by exposing an API, the information-rich data set could be used as the backend even for mobile application. The web-app allows the user to register and rate the places they've been to while the same information is used to generate suggestions for other users and themselves.

The algorithm used is known as collaborative filtering. In general, collaborative filtering is the process of filtering for information or patterns using techniques involving collaboration among multiple agents, viewpoints, data sources, etc. Applications of collaborative filtering typically involve very large data sets. Collaborative filtering methods have been applied to many different kinds of data including: sensing and monitoring data, such as in mineral exploration, environmental sensing over large areas or multiple sensors; financial data, such as financial service institutions that integrate many financial sources; or in electronic commerce and web applications where the focus is on user data, etc. The remainder of this discussion focuses on collaborative filtering for user data, although some of the methods and approaches may apply to the other major applications as well.

In the newer, narrower sense, collaborative filtering is a method of making automatic predictions (filtering) about the interests of a user by collecting preferences or taste information from many users (collaborating). The underlying assumption of the collaborative filtering approach is that if a person A has the same opinion as a person B on an issue, A is more likely to have B 's opinion on a different issue x than to have the opinion on x of a person chosen randomly. For example, a collaborative filtering recommendation system for television tastes could make predictions about which television show a user should like given a partial list of that user's tastes (likes or dislikes). Note that these predictions are specific to the user, but use information

gleaned from many users. This differs from the simpler approach of giving an average (non-specific) score for each item of interest, for example based on its number of votes.

In our particular case, the users are the people who frequent places to socialize and relax including restaurants, cafes and cinemas. There are existing platforms that lists eateries, tourist destinations and currently playing movies. But when a user is indecisive about his choices, these platforms can only add to the confusion. This is where a collaborative filtering based platform could help. They would suggest places for the user, that he is most likely to rate highly and would provide higher amount of satisfaction with lesser amount of indecision. There are multiple reasons why this works. First and foremost, people tend to share interests in very evident patterns. For example, consider economic classes. Two users, falling into the same economic class would have tendency to visit the same eateries, same film theatres etc. Similarly, if you share a personality type with another person, your interest would lie in similar kind of genre of entertainment and would be enticed by similar destinations.

The exact algorithm that was used to achieve the result is a form of collaborative filtering. After collecting the data related to the stuff that the users prefer, you need somehow a metric to determine how similar the users are compared to one user's taste. To measure this, you have to compare each user with others using a similar measure distance. There are some functions to evaluate this metric, but in this application we use the pearson correlation. Generally, the Pearson correlation gets slightly better results, since it shows how much the variables change together. Now that we have the measure distances to compare two users, we now can define another function to classify all users compared to a specified user and find the one that is most similar. In this particular case, the goal is to find users that rated and have the similar taste so we can know who to ask for advice when the user want to choose a place to hangout.

The algorithm looks at each user except the one passed as parameter. It calculates how similar the users are to the specified user and after looks at each item rated by those users. As result you now have a classified activity list and also a estimated rate a user will give for that activity. This report allows the algorithm to make suggestions that would be most rewarding for the user.

Implementation has been carried out as a web app that using the Django framework in Python. The application is made to run in a browser on a laptops and the back end could be extended to support a mobile application. The strength of the application lies in collaborations and as more people access the application through their mobile devices and rate the places they visit, the more appropriate the suggestions would be.

The application opens up many opportunities. The possibilities are numerous when people collaborate with information. And nothing else can do this job better than a machine which does all the number crunching and data munching while humans involve themselves in more fulfilling endeavours. Further, we can extend this application to other options such as hospitals, schools, gas stations, etc. with more customizable features. Or a booking systems can also be introduced and converted into an all-in-one platform. The application has a scope for further innovation.