Assignment 2 (individual) - Paper Summary
Due: Friday Oct. 7, 11:00pm

Instructions:
Write a summary of your paper you found using the ACM library (the paper should be 4-8 pages). Use the following template to help you disseminate the paper in a way that will help you learn more about the topic. You need to coordinate with your teammates to make sure that you don't use the same paper and that all the group's papers are related to the topic (and will help you with decision making).
Do not cut and paste from the paper. This is to be in your words, based on your own interpretation. Use the template to help you organize the paper summary, but it is to be ***formally written*** (e.g., in paragraphs, and in the third person), unless stated otherwise. It should be 1.5 – 2 pages long (2 pages max) at 11-point font.

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Paper Information:

Title:	Not All Trips are Equal: Analyzing Foursquare Check-ins of Trips and City Visitors
Author/s:	Wen-Haw Chong, Bing Tian Dai, and Ee-Peng Lim

Full Reference (ACM format):
Wen-Haw Chong, Bing Tian Dai, and Ee-Peng Lim. 2015. Not All Trips are Equal: Analyzing Foursquare Check-ins of Trips and City Visitors. In Proceedings of the 2015 ACM on Conference on Online Social Networks (COSN '15). Association for Computing Machinery, New York, NY, USA, 173–184. https://doi.org/10.1145/2817946.2817958

Summarize the paper in one to two paragraphs. Describe what problem the researchers are studying and why/how this relates to your topic:
As the title of the paper suggests, "Not all trips are equal," giving us the idea that there are different ways to plan and organise trips depending on various factors. One can predict an amazing trip based on the visitor's purpose, visitor type, trip duration, trip category, location prediction, check-in intensity, venue popularity, etc. This is possible with the well-known app called Foursquare, which is a location-based social network (LSBN) that provides its target audience with numerous travel-related services. Services that guide users to have detailed information about the venue based on the number of check-ins. To verify how the Foursquare app is beneficial for trip planning, researchers conducted a study on people residing in two Asian countries: Singapore and Jakarta. The datasets collected determine whether the visitors are foreigners or domestic travelers. Based on this visitor type and the visitor's place of interest, the trip is planned for that location.

The challenge for researchers was determining the difference between long-trip and short-trip travel, which is influenced by venue categories [page 173], purpose of visits, and different interests [page 176], resulting in varying check-in patterns. This data is necessary for making reliable decisions. The results showed that short trips have a higher check-in intensity than long trips [page 173]. Researchers did some analysis on visitors to find out the differences between short-term and long-term visitors [page 173]. It was observed that short-term visitors visit popular places more often than long-term visitors [page 173]. Researchers also provided information on the accuracy of venue prediction based on visitor type [page 174]. It is crucial to consider the research findings on check-in intensities when planning a trip because they assist travellers in choosing a destination based on the number of visitors a location receives. In other words, the higher the check-in intensity, the more popular the location is. Another reason is that it is feasible to customise the visits based on one's ethnic background. Finally, it is advantageous for both types of visitors to base their travel arrangements on the prediction model that offers good recommendations.

How did the researcher/s' study this? (e.g., describe the study/studies that they did, the number of participants, the type of participants, how long the study took, etc.)
There are several questions that need to be addressed while planning a trip. The Foursquare app helps us to solve this problem, but researchers came up with the following analysis. To show the significant differences between long and short trips, researchers based their study on the trip category. The datasets obtained for the research

were from the active users of two Asian cities: Singapore and Jakarta. Trip categorization follows a series of steps to find the difference between long and short trips, which can be determined by venue categories. In which the first step is to track the user's check-in at some location to indicate his/her place of visit for the trip [page 174]. In Singapore, there were 144 short-term tourists and 1972 long-term visitors who checked in more than five times each, but in Jakarta, there were 191 short-term visitors and 814 long-term visitors who checked in more than five times. We must classify the trips as long or short based on trip duration, which can be calculated by taking the difference between the first and last check-in [page 174]. These trips are then divided into long and short trips using two-mode Gaussian Mixture Modeling (GMM) [page 174]. Every visitor has a purpose for travelling somewhere. This purpose helps in categorising the venue. The location can be places of interest, major attractions, accommodation services, transport options, etc. When compared to short trips, the findings indicate that the distribution of Singapore and Jakarta locals and long trip check-ins over the key categories like arts, nightlife, outdoors, etc. followed comparable patterns [page 176]. To compute the results, we used Jenson-Shannon divergence (JS) to get significant values. It was shown that both types of travellers prioritise their venue categories according to the duration of the visit and their area of interest. For instance, short-term visitors prioritise sightseeing, while long-term visitors can spend more time buying than discovering attractions. The study included a variety of aspects that should be considered while deciding on a venue. One such element is based on the ethics and culture of the city, which implies that if the Muslim community living in Jakarta does not visit the nightlife places [page 176]. Besides this, it also depends on governmental regulations like prohibitions against going to casinos [page 177]. Planning a trip can be much easier if we undertake the check-in intensity. Researchers have observed that short trips have higher check-in intensity, which helps visitors focus on the popular destinations and use their limited time effectively. Long-term visitors, on the other hand, have more time and money to explore the places. The time-gaps of the check-ins were calculated by the Cumulative Distribution Function (CDF). Researchers are also looking into the connection between check-ins and friendships in terms of short and long-term trips. Wherein the check-in is influenced by the visitor's friends and the similar preferences they have [page 179].

Summarize the results (what were the top three "take home messages"):

We use the KDE model to estimate check-in probability at any city location [page 180]. The outcome for Singapore visitors demonstrated the need to integrate short-term visitors' check-ins into the model for long-term visitors because most short-term visitors' favourite locations are also visited by long-term visitors [page 181]. This is done to avoid redundant data. It also showed that friends' information is not essential. This is because the check-in history may already contain the friend's information, which is enough for the KDE model to infer the entrance of the visitor too. The results for Jakarta visitors explain that the country consists of Indonesians residing on the outskirts, which makes the check-in behaviour the same, which results in a minor difference between short-term visitors and long-term visitors [page 182]. Lastly, trip personalization also plays an important role in deciding the venue. For example, Jakarta does not have a subway system facility, but Singapore does, which makes visitors tend to travel more by subway, hence reducing the personalization over choosing the venues. One can make predictions depending on the user-type to get satisfactory recommendations.

How do the results relate to your topic?

The main aim of the paper is to help the visitors find the perfect venue for their trip. Using the KDE model's outputs, we can quickly locate any information pertaining to visitor type, trip categorization, etc. The model enables visitors to learn about other communities' interests in things like dining, shopping, and music, enabling them to recommend the location.

If the researchers made recommendations at the end of their study, what were they? If they did not make explicit recommendations, what do you think the main recommendations would be? (This section does not need to be written in paragraphs – you can use bullet points instead).

1. The user can input the trip duration on the mobile apps or prediction models to directly receive venue predictions or recommendations [page 183].
2. The researchers suggest providing predictions on the remaining hours of the trip. This will help to get better prediction accuracy [page 183].

How do these recommendations relate to your topic?

It is crucial to input the data directly into the prediction model for high accuracy, which improves the user's experience. This means that a trip can be planned without worrying about getting the wrong results. Moreover, providing the predictions for the remaining hours of the trip gives visitors an opportunity to plan to undertake an activity or prepare to depart.