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Survey on Bicycle Sharing System Analysis using Data Mining

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ABSTRACT: In bicycle-sharing systems, we can provide shared bike services for the peoples have been launched in many big cities. In this systems, people are able to borrow and return bicycles at any station which comes under the service region very conveniently. Therefore, bicycle-sharing systems are normally used as a short distance trip supplement for private as well as regular public transportation.. For stations located at different locations in the service region, the bicycle usages can be quite skewed and imbalanced. Some stations have many incoming bicycles and without enough docksfor upcoming bicycles, while sometimes other stations get empty quickly and lack enough bicycles for people to check out. Therefore, concluding the destinations and arriving time of each individual trip beforehand can effectively help the service providers schedule manual bicycle re-dispatch in advance. In this paper, we will understand the individual trip prediction problem for bicycle-sharing systems. To address this problem, we study a real-world bicycle-sharing system and analyse individuals bicycle usage. firstbased on the analysis, a new trip destination prediction and trip duration inference model will be introduced.

KEYWORDS: Access control, Trip Prediction, Bicycle-Sharing System, Data Mining, Fine grained Approach

I. INTRODUCTION

This system refers to a public transportation service system in city offering bicycles for shared use to individuals within a relatively short period of time (about 30–45 minutes) for free or with less charge. This system consists of 'Bicycle on Rent' People can borrow bikes from near stations and return the bike to any stations in the cityRegistration is must by filling up personal details.After registration user can login with his username and password in order to access the system Admin shows various bicycle list and user can view each bicycles feature. Then according to user he can choose his bicycle. After the usage user can return his bicycle to any station which is in that region.This system is safe and of low polution, and each bicycle can be used by several peoples per day. Due to the widely spread large number of branches and available stations in the city, people can easily borrow and return the bikes very conveniently & efficiently without wastage of time on waiting (time required for the public transportation) or issues about parking in cities (for private vehicles). So finally, bicycle-sharing systems are becoming more and more popular recently, which have been adopted in many large cities, e.g., Chicago (Divvy Bike), New York (Citi Bike), San Francisco (Bay Area Bike Share), Washington, D.C. (Capital Bikeshare).

Our system provides facility for users to take bicycles with either "one-day pass" or "annual subscribed membership". "One-day pass" is normally used by people for temporary travelling, e.g., tourist for short period of time sight watching, but the charges per day for that are slightly higher. While, "subscribed membership" is a great and very useful option available for people with less travel needs, e.g., office employees and students. Generally, trips completed by using one-day pass or by membership holders within half hour are included in the pass or membership, but trips longer than half hour may includeextra or overtime fees. More information about the detailed pricing rules is available. Unlike traditional system of fixed-route public transportation at prescheduled time, services provided by our systems are more flexible, efficient and can meet the daily travel needs of differentcategoriesofusers.Bicycle-sharingssystemprovides a more perspective to understand individuals travel needs, which consist of various aspects about the travelling, e.g., trip origin station and start time, as well as trip destination stations and end time. Generally, the travelling needs of different kind of people with various travel purposes can be different. For example, tourists with

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one-day pass allow us to use the bicycle to travel among attraction spots, while registered subscribers (like workers, tourists and students) mainly travel between companies or schools and homes with the bike.

II. RELATED WORK

Bicycle-sharing system has got lots very much popularity in recent years with goal to increment the cycle usage improve the first mile or last mile connection to other modes of transportation, and we can learn and get to know about the environmental impacts of our transportation activities, management, policies, and challenges as well as opportunities. A large amounts of other reviews and case-studies works on bicycle-sharing systems have appeared so far which study the bicycle-sharing systems from different aspects and directions.

Nowadays, urban computing has become a big research area and lots of works have been done by Zheng et al. already. Nowadays this systems are an important part in urban computing. Many research works have been done on bicycle-sharing systems as well as on other transportation systems to study the system design problem, load balancing, and bicycle traffic prediction problem, and introduce a strategic design problem for bicycle management systems incorporating bicycle stock considerations. The problem mentioned and studied in covers the design work about various aspects of this system, for e.g., the creation of bicycle lane, the selection of paths, the number and locations of bicycle stations, etc. there are different develop methods for maximizing the throughput of a mobility-on-demand urban transportation system and introduce a rebalancing policy that minimizes the number of vehicles performing rebalancing trips [10]. The optimal re-balancing policy can be taken as the solution to the linear program effectively and efficiently in the proposed model. Li et al. propose a hierarchical prediction model to guess the number of bicycles that will be rent from or returned in a future transactions which focus more on the things like traffic flow in the bicycle-sharing system and is different from trip destination and duration prediction problem of a specific trip studied in this paper.

III. PROPOSED ALGORITHM

Bicycle-sharing system allows people to borrow bikes with either “one-day pass” or “annual subscribed membership”. “One-day pass” is usually preferred by users for temporary usages, e.g., tourist for short-time, but the charges per day are too high. “Subscribed membership” is a good option for people with less travel needs, e.g., office worker and students. Generally, trips completed by one-day pass/membership holders within less time are included in the pass/membership, but trips longer than 30 minutes may include the overtime fees. Unlike traditional public transportation at prescheduled time, services provided by our systems are more flexible and it is able to fulfil the daily travel needs of different number of users. Bicycle-sharing system provides a scope to understand people travel behaviors, which consist of various aspects about the travels, e.g., trip origin station and start time, as well as trip destination stations and end time.

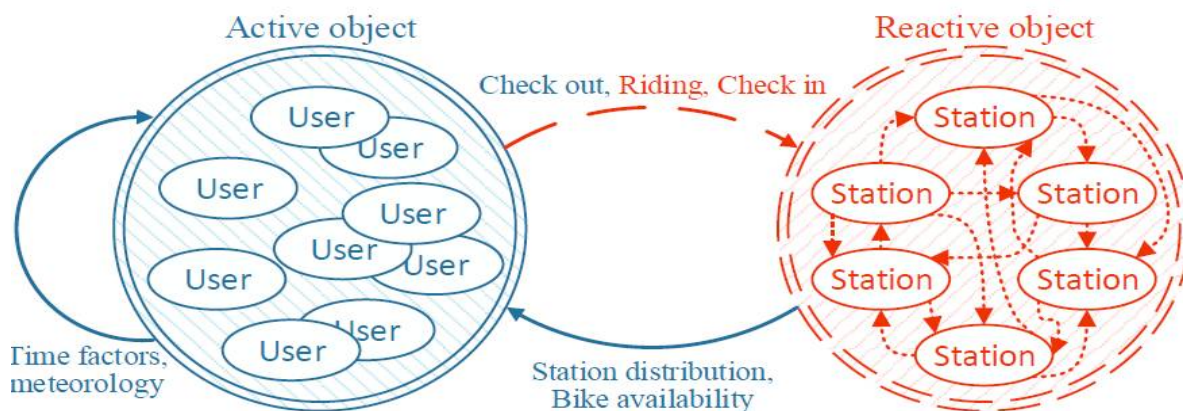


Figure 1: Components of a bike-sharing system.



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Normally the behaviours of different peoples for different travels are different. For instance, tourists takes bicycle with one-day pass tend to use the bicycle to travel to different spots, while registered subscribers (likeworkers and students) mainly travel between companies/schools and homes with the bicycle.

IV. EXISTING SYSTEM

In existing system user allows to take bicycle online. User can make payment through credit cards .Currently the charges for Bicycle rents are too high which is not affordable to users. Also in the existing system the system is well proposed for the bike usage. The existing system required to be more efficient and exhaustive as well as it should be flexible. In existing system the user should has to find particular shops manually and then go there for clearing details and documentation parts which is very time consuming process. Also there is lots of paper work. The tourists, employees as well as students are not getting the proper services due to such manual work process. So to reduce such time factor we have introduced the proper bicycle sharing system.

V. FUTURE WORK

The proposed system can be made more useful in future for bicycle usage. Bicycle-sharing has received increasing attention in recent years and has goal to increase cycle usage improve the connection to other modes of transit, and lessen the environmental impacts of our transport activities. We can use advanced and secure algorithms the long key size of AES algorithm such as AES-256 bit right now we are using AES-128 bit. Also we can provide the gmail notification or the message notifications to the user. So in future this work can be done.

VI. CONCLUSION AND EXPECTED RESULTS

We have studied the trip prediction problem for bike-sharing systems to conclude the potential trip destination station and trip duration. Extensive analysis about the user composition of a real-world bike-sharing system, Based on the analysis results, two new regression based inference models paper to predict the potential trip station and trip duration respectively. In this paper, we have studied the trip prediction problem for bicycle-sharing systems to analyze the trip destination and duration. The detailed analysis about the user composition of a real-world bicycle-sharing system, individuals attributes bike usage behavior patterns and spatial bike usage behavior patterns have been done. Based on the analysis results, two new regression based inference models have been introduced in this paper to predict the potential trip destination station and trip duration respectively. Experiments conducted on the real-world bicycle-sharing system dataset prove the effectiveness of the proposed model trip destination station and trip duration.

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