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SMART BUS MONITORING AND TRACKING SYSTEM

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ABSTRACT

Primary information for the most citytransport travelers the bus arrival time. Excessively there often discourages the travelers due to long waiting time at busstops and for taking busesmakes them reluctant. In this system, based on bus passengers' participatory sensingwe are going to present a system which will predict the time of bus arrival.With commodity mobile phones, for estimating the routes of bus travelingand to prediction of arrival time of bus at defferent bus stops,the passengersof busare effectivelycollected and also utilizedcontext ofsurrounding environmental. On theparticipating users collaborative effort theresolely relies the and it is not dependent from the operating companiesof bus, so without support requesting fromparticular bus operating companiesfor supporting the universal bus service systems it can be adopted easily. We resort to energy efficient sensing and more generally available resources, including signals of cell tower, statuses of movement, recordings of audio,etc.,instead of referring toGPS enabled informationof location, to the participatory party andbring less burden by encourageing their participation.

KEYWORDS: Time prediction, Participatory sensing, Mobilephones,global positioning system, conductors.

INTRODUCTION

In many parts of the world there has beenwell developed the public transport, especially the bus transport. Due to the bus transport services there reduce the uses of the private car and fuel consumption as well as alleviate congestion of traffic. There serves over 3.3 r million bus rides everyday on average in Singapore with around 5 million residentsby the bus system in 2011 as it is one of the mostaffordable and comprehensive means of public transport.

The travelers usually want toknow the accurate arrival time of the bus when traveling with buses. Excessively there may drive away the anxious travellers due to longwaiting time at bus stops and make them reluctant to take buses. Nowadays, timetables of the have provided by the mostbus operating companies on the web freely available for the travelers. However, there provided very limited informationin the bustimetables,which are typically not timely updated. Many public services (e.g., Google Maps) are providedfor travellers other than those official timetables. Fo the bus travellers they are far from satisfactoryAlthough such services offer useful information. Forexample, due to manyfactors which are unpredictable,there may be dalayes the bus schedule. To take alternative choices for transport instead the next bus accurate arrival time willallow travelers,and thus their anxiety mitigate and their experience is improve. Towards this aim, the realtime bus arrival timeoffer there to the publicby many commercial providers of bus information.However, there requires thecooperation of the operating companies of bus and substantial costincurs for such services providing.

This paper is, based onsensingof crowd-participatory we present a novel system which predict the bus arrival time. For acquiring the bus arrival time we interviewed bus passengers.Most passengers want to instantly trackthe the next buses arrival time that indicate by them and to help toestablish a system forthe estimation of the variousbus stops arrival time for the communitythey are willing tocontribute their information of location on buses. To bridge those who want toknow the arrival time of bus to those who are onthe bus and able to share their instant information ofbus route to designa crowd-participated service this motivates us. For achievingsuch a goal, with the help of commodity mobile phones we let the passengers of bus themselves cooperatively sense the information of bus route. In particular, to a processing server, which intelligently processes the data, there may anonymously upload the sharing passengers their sensingdata collected on buses and distributes informationwhich is useful to those querying users.

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RELATED WORKS

There provide free bus timetables onthe web by the bus companies. However, only provide verylimited information, by such bus timetables and according toinstant traffic conditionswhich are typically not timely updated. Although there offer the realtime bus arrival information by many commercial businformation providers, the service usually comes with substantial cost.The installment of in-vehicle GPSsystems incurs tens of millions of dollars with afleet of thousands of buses. There raises the deployment cost even higher by the networkinfrastructure to deliver the transit service, which would eventually translate toincreased expenditure of passengers.For those reasons, to acquiretransit information current research works [12] explorenew approaches independent of bus companies. To continuously and accurately track the absolute physical location of the buses is the common rationale of such approaches, for localization which typically uses GPS. Although there areavailablemany GPS-enabled mobile phones on the market, without GPS modulesa good number of mobile phonesare still shipped. Without using GPS signal or otherlocalization methods,those typical limitations of the localization based schemes motivatealternative approaches. Besides, Thereconsumes substantial amount of energy by GPS module, the lifetimeof power-constrained mobile phones reducing significantly. many mobile phone users usually turn

Figure 1: Absolute localization is unnecessary for arrival time prediction

off GPS modules to save battery power due to the high power consumption. To GPS satellites when they are placed without line-of-sight paths there may perform poorlythe mobile phonesin vehicles [9].

To fill this gap, by cellular signalsutilizingwe propose to implement a bus arrival time prediction system which is a crowd-participated. The system bridges thegap between the querying users who want to know the arrival time of bus to the sharing users willing to offer them realtime bus informationindependent of any bus companies. Unifying the participatory users, for realizing the passengerscommon welfare is our aim of design.To encourage more participants no explicit location services are invoked, so for localizationas to save the requirement of specialsupport ofhardware. There is negligible the marginal energyconsumption of collecting celltower signals onmobile phoneswith the comparison of highenergy consumption of GPS modules. Without reducing battery lifetime on sharing passengers' mobile phonesOur system therefore the celltowersignals utilizes. For accurate localizationof bus the need obviate by our design. As a matter of fact, the knowledge of the current position on the route(1D knowledge) since the publictransport buses travel on certain bus routes (1D routes on2D space), and to predict its arrival time at a bus stopthe average velocity of the bus suffices. As shown in Figure 1, for instance, say the bus is currently at bus stop 1,and its arrival time want to know to a querying user at busstop 6. There requires thedistance between bus stop 1 and 6 along the 1D bus routeas well as the average velocity of thebus for accurate prediction of the arrival time. In general, the physical positions of the bus there are not strictly necessary and thebus route on the 2D maps. In oursystem, we logically map the bus routes instead of pursuing the accurate 2D physical locations to a space featured bysequences of nearby cellular towers. We classify and trackthe bus statuses in such a logical space so as to predict thebus arrival time on the real routes.

To enable automaticand intelligent data collection and transmission we leverage various lightweight sensors on mobile phones. Althoughwe can make use of a basket of instantly available sensor resources, on energy-friendly and widelyavailable sensing signals we mainly focus.The purpose is toattract more participants to make the solution lightweight and pervasively available.

PROPOSED SYSTEM

Objectives:

1. To design a system which give exact bus location and tell predicted bus time to the passenger.

2. To design a simple bus ticket management system by introducing new approach of valid OTP till destination.
3. To design and develop smart bus location tracker and management system in which conductor can give information to next bus stand if any failure is occurred.

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The architecture of our system is shown in Figure 2. Thereare 3 major components.

1. Querying user:

It is shown in Figure 2 (right bottom),by sending therequest to the backend servera querying user queries the bus arrival time. the interest bus route and bus stop indicates by the querying user forreceiveing the predictedbus arrival time.

2. Sharing user:

There contributes the information of mobile phone sensing by the sharing user to the system. The data collectionmodule starts for collecting the sequence of nearby celltower IDs after a sharing user gets on a bus.The collected data is transmitted to the serverVia cellularnetworks. To detectwhether the current user is on a bus or notby mobile phones since with different means of transportthe sharing user may travel. As shown inFigure 2 (left side), the surrounding environment samples there periodically and extracts transit busesidentifiable features by the mobile phone.

It starts sampling the celltower sequences andsends the sequences to the backend server once the mobile phone confirms it ison the bus,. Ideally, there automatically performs thedata collection and transmission by the mobile phone of the sharing user without the manual inputfrom the sharing user.

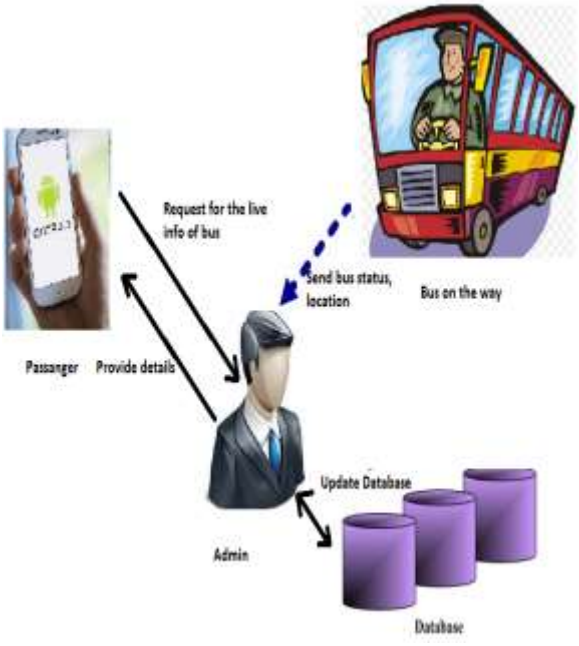

Figure 2. System Architecture

3. Backend server

To the backend server we shift most of the computation burden where from querying users are addressedthe uploaded informationfrom sharing users is processed and the requests. Tnere are involved two stages in thiscomponent.In order to bootstrap the system, in the offline pre-processing stagewe need to survey thecorresponding bus routes.To celltower sequence signatures we construct a basic database that associates particular busroutes. We mainlywardrive the bus routes and record the sequences of observed celltower IDs since we do notrequire the absolute physical location reference, which reduces the initialconstruction overheadsignificantly.

MODULES OF PROPOSED SYSTEM

1.User Module:

•This is the main module of system for whom we are developing this application.

•To get information by using application user needs to register to the system.

•User can search bus available and provide feedback about system.

•The token which is generated at time of travelling OTP get send on user registered mail id.

2.Depot Manager:

•This is the superior user of the system.

•The functions of depot manager are different from user, he can add new buses to the depot, he also add new routes or change routes. The depot manager can also add conductor to the system.

3.Conductor Module:

•Conductor can provide bus fare details to the passenger. He can also generate OTP at time of assign the seat to passenger.

In the onlineprocessing stageThecelltower sequences andaudio signals are processed by the backend server from sharing users on the buses. Thebackend server first distinguishes the bus route that the sharing user is currently traveling withreceiving the uploaded information. With the reportedcelltower sequence information the backend server classifies the uploaded bus routes primarily. Based on the current bus routestatuses the bus arrival time on various bus stops is then derived.

CONCLUSION

In this paper, using commodity mobile phoneswe present a crowd-participated bus arrivaltime prediction system. There efficiently utilizes lightweight onboard sensors by our system whichencourages as well as attracts participatory users. There provides the cost-efficient solutions by proposed system to theproblem which primarily relying on widely and inexpensive available cellular

signals. System deployed on the Android platform througha prototype withtwo types of mobile phoneswe comprehensively evaluate the system. A flexible framework provide by the proposed scheme provides for participatory contribution of the community being independentof any support from transit agencies and location services.

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REFERENCES

[1] Bus transport in Singapore. http://en.wikipedia.org/wiki/Bus_transport_in_Singapore.
[2] EZ-Link.http://www.ezlink.com.sg.
[3] Octupus.http://www.octopus.com.hk/home/en.
[4] Oyster.https://oyster.tfl.gov.uk/oyster.
[5] PublicTransport@SG.http://www.publictransport.sg/.
[6] T. Abdelzaher, Y. Anokwa, P. Boda, J. Burke,D. Estrin, L. Guibas, A. Kansal, S. Madden, and J. Reich. Mobiscopes for Human Spaces. IEEEPervasive Computing, vol. 6(issue 2): pages 20–29, Apr. 2007.
[7] G. Ananthanarayanan, M. Haridasan, I. Mohomed, D. Terry, and C. A. Thekkath. Startrack: a framework for enabling track-based applications. In Proceedings of ACM MobiSys, pages 207–220, 2009.
[8] M. Azizyan, I. Constandache, and R. Roy Choudhury.Surroundsense: mobile phone localization via ambience fingerprinting. In Proceedings of ACM MobiCom, pages 261–272, 2009.
[9] P. Bahl and V. N. Padmanabhan. RADAR: an in-building RF-based user location and tracking system. In Proceedings of IEEE INFOCOM, pages 775–784, 2000.
[10] R. K. Balan, K. X. Nguyen, and L. Jiang. Real-time trip information service for a large taxi fleet. In Proceedings of ACM MobiSys, pages 99–112, 2011.
[11] X. Bao and R. Roy Choudhury. Movi: mobile phone based video highlights via collaborative sensing. In Proceedings of ACM MobiSys, pages 357–370, 2010.
[12] J. Biagioni, T. Gerlich, T. Merrifield, and J. Eriksson. Easytracker: automatic transit tracking, mapping, and arrival time prediction using smartphones. In Proceedings of ACM SenSys, pages 1–14, 2011.
[13] J. Burke, D. Estrin, M. Hansen, A. Parker, N. Ramanathan, S. Reddy, and M. B. Srivastava. Participatory sensing. In Workshop on World-Sensor-Web (WSW): Mobile Device Centric Sensor Networks and Applications, pages 117–134, 2006.
[14] I.Constandache, X. Bao, M. Azizyan, and R. R. Choudhury. Did you see bob?: human localization using mobile phones. In Proceedings of ACM MobiCom, pages 149–160, 2010.
[15] E. Cuervo, A. Balasubramanian, D.-k. Cho, Wolman, S. Saroiu, R. Chandra, and P. Bahl. Maui:making smartphones last longer with code offload. In Proceedings of ACM MobiSys, pages 49–62, 2010.
[16] S. Gaonkar, J. Li, R. R. Choudhury, L. Cox, and A. Schmidt. Microlog: sharing and querying content through mobile phones and social participation. In Proceedings of ACM MobiSys, pages 174–186, 2008.
[17] M. Haridasan, I. Mohomed, D. Terry, C. A. Thekkath,and L. Zhang. Startrack next generation: a scalable infrastructure for track-based applications. In Proceedings of USENIX OSDI, 2010.
[18] M.Keally,G.Zhou,G.Xing,J.Wu,andA.Pyles. Pbn: towards practical activity recognition using smartphone-based body sensor networks. In Proceedings of ACM SenSys, pages 246–259, 2011.
[19] E. Koukoumidis, L.-S. Peh, and M. R. Martonosi. Signalguru: leveraging mobile phones for collaborative traffic signal schedule advisory. In Proceedings of ACM MobiSys, pages 127–140, 2011.
[20] F. Li, Y. Yu, H. Lin, and W. Min. Public bus arrival time prediction based on traffic information management system. In Proceedings of IEEE International Conference on Service Operations and Logistics, and Informatics (SOLI), pages 336–341, 2011.
[21] Y. Liu, L. Chen, J. Pei, Q. Chen, and Y. Zhao. Mining frequent trajectory patterns for activity monitoring using radio frequency tag arrays. In Proceedings of IEEE PerCom, 2007.\.