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A Review Paper on Crowd Sensing in Vehicular Ad hoc Network (VANET)

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Abstract - **Mobile crowd sensing aims to provide a mechanism to involve participants from the general public to efficiently and effectively contribute and utilize context-related sensing data from their mobile devices in solving specific problems in collaborations, Also, a remarkable trend in mobile computing is the increasing use of mobile devices to access social networking services. Inthis, thepaper addresses the problem of the task allocation crowd sensing in VSN's.So because of the inherent nature of crowd sensing task need a different group of different participants to complete collaboratively. Thus, for task allocation in crowd sensing, we propose an application-oriented service collaboration model (ASCM). This ASCM automatically allocate multiple participants with multiple crowd sensing tasks across different mobile devices and cloud platform in an efficient and effective manner in VSNs**

I. INTRODUCTION

Vehicular Ad-Hoc Networks, (VANET), are kind of Mobile Ad Hoc Network, (MANET), in which vehicles act as nodes and each vehicle is equip with transmission capabilities which are interconnected to form a network. The topology created by vehicles is usually very dynamic and significantly non-uniformly distributed. The availability of navigation systems on each vehicle makes it aware of its geographic location as well as its neighbours. However, a particular kind of routing approach, called Geographic Routing, becomes possible where packets are forwarded to a destination simply by choosing a neighbour who is geographically closer to that destination. According to architectures of network, VANET can be divided into three categories, the first of which is the Wireless Wide Area Network (WWAN) in which the access points of the cellular gateways are fixed in order to allow direct communication between the vehicles and the access points. However, these access points require costly installation, which is not feasible. The second category is the Hybrid Wireless Architecture in which WWAN access points are used at certain points while an ad hoc communication provides access and communication in between those access points. The third and final category is the Ad Hoc V2V Communication which does not require any fixed access points in order for the vehicles to communicate. Vehicles are equipped with wireless network cards, and a spontaneous setting up of an ad hoc network can be done for each vehicle (Li and Wang, 2007). This study will focus on studying ad hoc V2V communication networks, which are also known as VANETs.

Mobile Crowd Sensing (MCS) presents a new sensing process based on the power of mobile devices. The sheer number of user-companioned devices, including mobile phones, and smart vehicles, and their inherent mobility enables a new and fast-growing sensing paradigm, the ability to acquire local knowledge through sensor-enhanced mobile devices – e.g., location, surrounding context, noise level, traffic conditions, and in the future more specialized information and the possibility to share the knowledge within the social sphere, healthcare providers, and utilityproviders. The information which are collected on the ground combined with the support of the cloud where data fusion takes place, make MCS a good platform that can often replace static sensing infrastructures, and enabling a broad range of applications including urban, public safety, traffic planning, environment monitoring, just to name a few.

The Urban Sensing Scenario: Route planning is a common type of application of Mobile crowd sensing. With participatory sensing, it can collect GPS trajectory data from vehicle which has to compute the optimal route when answering a query with departure. However, for a more complex query, that is, to generate an itinerary for a visitor to a city given the time budget (start time, end time).A similar example is noise mapping, which is also a popular type of MCS application. With participatory sensing, it can get the noise map using mobile audio sensing. But people may wonder the causes of noise in a specific place, which have to correlates with the category (e.g., market, school, street) of that place. This can be obtained from a LBSN check-in dataset. Therefore, with Mobile Crowd Sensing, it can leverage both online and offline data which is contributed by participants and explore cross-space data fusion to nurture novel applications.

II. LITERATURE SURVEY

1: Leye Wang, Daqing Zhang et.al,In this paper, the author attempt to reduce the number of the required sensing cells and thus the number of the allocated tasks to participants in location-centric MCS applications by considering the temporal and spatial correlations among the sensing data from different cells. To that end, it propose a novel task allocation framework, called CCS-TA, combiningthe state-of-the-art compressive sensing, Bayesian inference, and active learning mechanisms to actively select a minimum number of sensing cells in each cycle while deducing the missing values of the remaining cells, and ensuring that the overall data accuracy meets a predefined bound.

2: Xiping Hu, In this paper ,the author provide a crowd sensing platform which addresses the research challenges in the overall workflow of crowd sensing in VSNs in terms of task allocation and task execution. This platform supports the creation of different context-aware mobile crowd sensing applications and facilitates their real-world deployments in VSNs.

First, because of the inherent nature of crowd sensing, usually a crowd sensing task needs a group of different participants to finish it collaboratively. Thus, for task allocation in crowd sensing, it propose an application-oriented service collaboration model (ASCM). This ASCM automatically allocates multiple participants with multiple crowd sensing tasks across different mobile devices and cloud platform in an efficient and effective manner in VSNs.

3: Xiping Hu, Victor C.M. Leung,In this paper, the author provide the network connectivity of the underlying VANET is dynamic and frequently changes as mobile nodes like vehicles can move at high speeds; consequently the wireless links may be unreliable and have short lifetimes. The dynamic network connectivity may cause failures of mobile crowdsensing applications during their executions. To enable the adaptation of mobile crowdsensing applications to such dynamic network conditions, beyond many challenges already addressed in network protocol designs in all layers of the protocol stack, in the application layer, its major challenge is the applications need to handle possible disconnections and reconnections. However, in the application layer, existing solutions on self-adaptive mobile applications in dynamic networks still have several constrains and could not address this challenge effectively over VANETs.

4: JiafuWan, Jianqi Liu et.al, the emerging technologies (e.g., mobile cloud computing) together with the improvement of the infrastructure have brought new opportunities for traffic prediction and congestion alleviation. In this paper, itfocuses on two aspects: the taxonomy of CAIV and reliable traffic prediction approaches.The architecture of CAIV is divided into three primary architecture types: VTC, VAC, and VWC. Then, it briefly review traditional traffic prediction realized through both V2I and V2Vcommunications. Subsequently, it propose a mobile crowd sensing technology to support dynamicroute choices for drivers to avoid congestion

5: Nawaporn Wisitpongphan, Fan Bai et.al,Author developed a comprehensive approach for studying the severity of the disconnected network phenomenon in routing messages in Vehicular Ad Hoc Networks. The proposed approach uses statistical models extracted from measured data on I-80 freeway in California. Using these statistical models, it developed an analytical framework that sheds light onthe major characteristics of disconnected VANETs. The results of the extensive Monte-Carlo simulations conducted verify the validity of comprehensive analytical framework and show that our analytical framework provides good estimates to key performance metrics such as the average re-healingtime.

6: Hyun Yu, Joon Yoo et.al,The VANET which is an essential technology in the ITShas the disadvantages such as short time for link connection 336 and high packet loss ratio. Therefore, routing protocols thatprovide stable routes are required. In this paper, it proposed the idea of improving network connectivity byusing the roads with higher vehicle density in establishing routes. In order to evaluate the performance of ourproposed routing mechanism, we compared ours with GPSR through NS-2 based simulations

7: Bin Guo, Zhiwen Yu et.al,In this paper, it presented Mobile Crowd Sensing (MCS). Similar to participatory sensing, MCS also leverages the power of citizens for large-scale sensing. However, it goes beyond participatory sensing by having implicit and explicit participation, and the collection of crowdsourced data from both mobile sensing and mobile social network services. It has characterized the key features of MCS, including crowd-powered data collection, cross-space data mining, and low quality data analysis.

8: Gayathri Chandrasekaran,In this paper, we argued that VANETs would turn out to be THE networking infrastructure for supporting future vehicular applications. It started with describing the factors that would be critical in making VANETs a reality followed by a discussion on theresearch challenges. It showed that there are several challenged including security and privacy and those active research efforts are being undertaken to bridge the gaps required to make VANETs a reality.

III. CONCLUSION

In this, paper focused on the feature of task allocation of crowd sensing in VSN's. It proposed ASCM, a novel application-oriented service collaboration model to approach the automatic allocation of multiple mobile crowdsensing tasks with multiple participants, so as to enable the tasks to be finished in an efficient and effective manner. To the best of our knowledge, ASCM is the first work that investigates how to quantify the relationships between multiple participants, crowdsensing tasks and crowd groups in crowdsensing, while supporting automatic allocations of multiple crowdsensing tasks with multiple crowdsensing participants across mobile devices and cloud platform efficiently and effectively during run-time.

REFERENCE

[1]Platform for Building Context-aware Mobile Crowd sensing Applications in Vehicular Social Networks, 2015, available: https://open.library.ubc.ca/collections/24/items/1.0216020/source

[2]Leye Wang, Daqing Zhang. "CCS-TA: Quality-Guaranteed Online Task Allocation in Compressive Crowd sensing".*Conference paper, 2015*.

[3] Hyun Yu, Joon Yoo, "A VANET Routing based on the Real-time Road Vehicle Density in the City Environment".*IEEE*,2013.

[4] Baber Aslam and Cliff Zou. "Distributed certificate and application architecture for VANET".*IEEE*, 2009

[5] Nawaporn Wisitpongphan, Fan Bai, Priyantha Mudalige. "Routing in Sparse Vehicular Ad Hoc Wireless Networks". *IEEE journal on selected areas in communications, vol. 25, no. 8*, 2007

[6] Peyman Talebifard, Victor C.M. Leung. "Towards a content-centric approach to crowd-sensing in vehicular clouds".*Journal of Systems Architecture, 2013.*

[7]JiafuWan ,Jianqi Liu. "Mobile Crowd Sensing for Traffic Prediction in Internet of Vehicles".Journal,2016.

[8] Ankita Agrawal , Aditi Garg, Niharika Chaudhiri."Security on Vehicular Ad Hoc Networks (VANET) : A Review Paper". *IEEE ,vol 3*,2013.