This is the title of the manuscript

Jos AE Spaan\*, Ruben Coronel#

\*Dept of Biomedical Engineering and Physics, Academic Medical Center, University of Amsterdam, Meibergreef 7, 1105AZ Amsterdam

#Dept of Experimental Cardiology, Heart Failure Center, Academic Medical Center, University of Amsterdam, Meibergreef 7, 1105AZ Amsterdam

Corresponding Author:

Jos AE Spaan,

e-mail: [j.a.spaan@amc.uva.nl](mailto:j.a.spaan@amc.uva.nl)

tel: +31205665202

fax: +3120xxxxxx

The total number of words of the manuscript, including entire text from title page to figure legends: **5050**

The number of words of the abstract: **199**

The number of figures: **7**

The number of tables: 2

Abstract should not be more than 200 words. Start with aim, describe the method, provide major results and provide conclusion

Coronary circulation, heart, microspheres

Glossary of terms when relevant

Introduction

The growing rates of vehicles are huge torment to vehicle users, travelers and pedestrians. The exponential increase in number of vehicles over the time will lead to a disruptive road infrastructure worst traffic condition. This in turn makes us to identify innovative ways to find a solution during such complications. One of the best possible ways is to inform the road travellers about the traffic in their routes. This information subsequently helps them to plan their travel patterns ahead. The travellers can identify the route towards the destination based on the travel time established by the current travelling condition of a route.

The recently trending and the most sophisticated solution in identifying the travel time is Vehicular Adhoc Network (VANET) infrastructure. It is a promising application-oriented network which aids in providing various applications to diverse classifications of users. For instance It helps the travellers to travel with emergency and safety related information, distributing entertainment content for passengers, traffic management information to traffic controllers and managers, etc., This infrastructure similar to wireless communication technologies but in contrast the wireless sensor networks are dynamic, high in processing capacity, efficiency and storage. The communication and transmission of data can be of three types 1) Communications between Vehicles (V2V), 2) Communications between Vehicles to any road side infrastructures or RSUs (V2I) and 3) Communications between Infrastructure to Infrastructure (I2I). This type of communications and infrastructures enables development of new and innovative real time applications to travellers. The vehicles are equipped with wireless units such as On Board Unit (OBU) and Global Positioning System (GPS). The duration and continuous connectivity is essential to establish communication capabilities among wireless equipment. The connections over V2V cannot completely fulfil the requirement of operation in an Intelligent Transportation Systems (ITS) application. It may not provide satisfying QoS and connectivity due to its dynamic nature of the network. To overcome such challenges, Road Side Units (RSU) are used in order to ensure the connectivity of access point, QoS to applications, covering non-blind spot coverage, mobility support and collaborate the dynamic resource management in VANET. However, deploying RSUs comes up with dramatically increase in cost. It has to be made sure that 1) Limited RSU’s are deployed especially in suburbs and scarcely populated locations during a large scale deployment 2) Cover maximum number of vehicles in the transmission range 3) handle transmission of information through heavy traffic and emergency conditions. The RSU has to have a maximum coverage. Therefore, it is imperative to optimize the number of RSUs that are going to be placed in city roads. The delay to communicate between RSUs should be kept minimum. The cost involved to place RSUs should be the least. Also, the RSUs should be placed to ensure maximum coverage. On the basis of the availability of RSU the travel time for vehicles can be ensured to be an ideal value. Our goal is to identify the wide range of parameters and factors that are vital and influential in the deployment of RSU for any given area. By this way it should make the network planner provide optimal solution to deployment by casing up all possible criteria’s that affect the communications and connectivity.

**Parameters considered**

Most of the algorithm used for deployment uses the candidate location of a RSU to an intersection. The intersection and their priority become the important criteria for most of the optimal algorithms. The priority calculation . Almost all the researchers have considered the installation cost for the selected area.

In Yingge song et al, heterogeneous RSU’s composed of variable transmission range are considered for reducing the radiation exposure, energy consumption and energy cost. With candidate position of RSU the placement of RSU’s are determined using Integer Linear Programming (ILP).

**Algorithm used**

There are wide range of approaches and techniques used to figure out optimal solution to RSU deployment with varied factors influencing the placement. Greedy based approaches were commonly used to identify the location of RSU with road network, traffic infrastructure and traffic characteristics by Ramy Rizk et al. In specific the overlapping of RSU were considered in the network model. Similar approach was adapted by Along with greedy approach Chi et al provided a dynamic and hybrid approach based intersection connectivity.

Prithivraj Patil et al offers a voronoi diagram based algorithm using the geometric of the area selected for deployment. It does not consider factors such as density, priority, etc.,

Full coverage of network is always not guaranteed when deployment is focused towards junctions/intersections.

Methods

Patients

Instrumentation

Statistics

Results

As shown in figure 1

Discussion

From this manuscript we may conclude in about three sentences