بسم الله الرحمن الرحيم

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تم رفع هذه الرسالة بواسطة / مني مغربي أحمد

بقسم التوثيق الإلكتروني بمركز الشبكات وتكنولوجيا المعلومات دون أدنى مسئولية عن محتوى هذه الرسالة.

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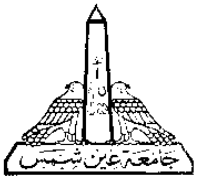

AIN SHAMS UNIVERSITY

FACULTY OF ENGINEERING

Computer Engineering and Systems

Vehicular Networks Simulation

A Thesis submitted in partial fulfilment of the requirements of the degree of

Master of Science in Electrical Engineering

Computer Engineering and Systems

by

Ahmed Ibrahim Abdelaal Ibrahim

Bachelor of Science in

Electronics Engineering and Electrical Communications

Faculty of Engineering, Cairo University, 2016

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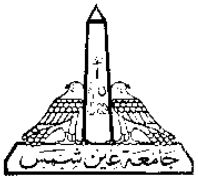
Cairo - (2022)



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Statement

This thesis is submitted as a partial fulfilment of Master of Science in Electrical Engineering, Faculty of Engineering, Ain shams University.

The author carried out the work included in this thesis, and no part of it has been submitted for a degree or a qualification at any other scientific entity.

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Abstract

A vehicular ad-hoc network (VANET) enables vehicles to communicate with each other directly or via roadside infrastructure in order to improve road safety and efficiency. Within a VANET, communications can potentially alter vehicular mobility and conversely, that the mobility could potentially influence vehicular communications.

Therefore, a VANET simulator environment is needed that can accurately model interactions between vehicular mobility and network protocols. There are many challenges in the area of simulation of VANET. One of the most fundamental requirements of the simulation studies is that the wireless communication channel should be modelled in a very realistic way to represent the real-world environment. Also, one of the big challenges in this field is the connection of a simulation to a real-world system, e.g. using a computer-controlled motor performance test station to increase the accuracy of the microscopic road traffic simulation. This is particularly beneficial for safety applications which have to be aware of the exact mobility behaviour of vehicles.

In this research we focused on building vehicular network simulator. This research surveys the challenges and the requirement for a beneficial and practical vehicular network simulator. The research aims to have a simulator that can be used in the different level of details of traffic simulation.

Key words: VANETs, Simulation, Veins, SUMO, MATLAB Toolbox

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Ahmed Ibrahim, July 2022

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