شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

يجب أن

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HANAA ALY

CALIBRATION AND VALIDATION OF VISSIM PARAMETERS IN MIXED TRAFFIC FOR THE SELECTED MAIN CORRIDORS IN CAIRO CITY

By

Ahmed Moustafa Abdou Ahmed

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of

MASTER OF SCIENCE

In

CIVIL ENGINEERING - PUBLIC WORKS

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
GIZA, EGYPT
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Under the Supervision of

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Associate Professor
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Title of Thesis:

CALIBRATION AND VALIDATION OF VISSIM PARAMETERS IN MIXED TRAFFIC FOR THE SELECTED MAIN CORRIDORS IN CAIRO CITY

Key Words:

Calibration; Simulation; Microscopic; Validation; Parameters

Summary:

A framework for calibrating PTV VISSIM microscopic simulation model for the selected corridors in Cairo is developed. The calibration process is based on estimating appropriate PTV VISSIM driving behavior parameters values given measurable traffic indicators from the field. First, build a microscopic simulation model. Second, identify the significant driving behavior parameters by using ANOVA single factor. Third, the Genetic Algorithm (GA) is used to calibrate the significant parameters. Prediction procedure could successfully predict traffic flow and average travel time along network links with a correlation coefficient of (R^2= 0.98, 0.99, and 0.99 for Autostrad, Imtedaad Ramses, and El Mosheer, Respectively) and define the final calibrated values of the significant parameters. Finally, the validation is applied on Salah Salem corridor model at AM and PM peak shows the validation process of the final calibrated parameters is successful and leads to a good result for traffic flow and the correlation between field and simulated travel time (R^2 = 0.84 and 0.843 at AM peak and PM peak, receptively).

Disclaimer

I hereby declare that this thesis is my own original work and that no part of it has been submitted for a degree qualification at any other university or institute.

I further declare that I have appropriately acknowledged all sources used and have cited them in the references section.

Name: Ahmed Moustafa Abdou Ahmed Date: / /2022

Signature:

Dedication

To My Late Parents

Acknowledgments

I am really enthusiastic and grateful at the time of completing my MSc degree. During the last four years, I had the opportunity of continuing my graduate studies and carrying out research in the field of transportation and traffic Engineering. This opportunity allowed me to start my research on several interesting topics in transportation and traffic engineering field, and programming in addition to practical work experience in the fields of traffic engineering and highway design.

During my course of study and furthered my knowledge by reading and learning more about very interesting topics in those fields. I followed my advisors and I struggle, step by step, until finally my hard work concluded and I was able to write this thesis to present my research findings.

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