DESIGNING AND CONSTRUCTING A CAR SIMULATOR: MECHANICAL AND STRUCTURE ANALYSIS

By:

Dennis Adrian Tjahyadi

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SWISS GERMAN UNIVERSITY

EduTown BSD City

Tangerang 15339

Indonesia

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

Dennis Adrian Tjahyadi

Student Date

Approved by:

Dr. Eka Budiarto, S.T., M.Sc.

Thesis Advisor Date

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Leonard Rusli, Ph.D

Thesis Co-Advisor Date

Dr. Ir. Gembong Baskoro, M.Sc

Dean Date

ABSTRACT

DESIGNING AND CONSTRUCTING A CAR SIMULATOR CASE:
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By

Dennis Adrian Tjahyadi
Dr. Eka Budiarto, S.T., M.Sc., Advisor
Leonard Rusli, Ph.D, Co-Advisor

SWISS GERMAN UNIVERSITY

Driving simulators have been made to carry out different types of purpose, such as entertainments, driving courses, as well as study human behavior. Also, driving simulators provides safety to the driver compared to driving a real vehicle whether it is cars, ships, or planes. Rather than using real vehicle, the simulators eliminates preparation time and cost for constructing new vehicles for each simulations. The objective of project is to design and construct a full scale car simulator which gives a movement response from the visualization to the driver in real time. This project is carried out in group of four, which are mechanical, electrical, control and communication system. This thesis focuses on designing mechanical structure of a car simulator that has two Degree of Freedom. The actuators are two DC motors and controlled by Arduino microcontroller. First, research and analysis of the car simulator structure have to be done using computer-aided design (CAD) and computer-aided engineering (CAE). After the prototype is constructed, the system is implemented to the structure so that the driving simulator platform can move according to the simulation program.

Keywords: Car/Driving Simulator, Degree of Freedom, Computer-aided engineering, Arduino Microcontroller, Structure Analysis

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DEDICATION

I dedicate this thesis work to my families, friends, and for the future of Swiss German University.

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