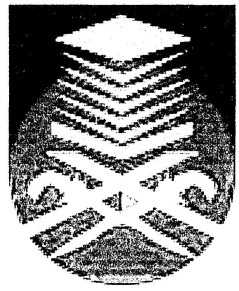

CONCEPTUAL DESIGN FOR STATE CONTROL OF A PROSTHESIS FINGER

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A thesis submitted in partial fulfillment of the requirements for the award of Bachelor Engineering (Hons) Mechanical

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MAY 2010

" I declared that this thesis is the result of my own work except the ideas and summaries which I have clarified their sources. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any degree."

Signed : .....

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ACKNOWLEDGEMENT

Praise be to Allah for His blessings and giving me the strength along the challenging journey of completing the project as well as this thesis writing, for without it, I would not have been able to come this far.

First and foremost, I would like to take this opportunity to express my deepest gratitude to my supervisor of this project, Dr.-Ing Low Cheng Yee who has relentlessly and tirelessly assisted me in completing this project and has been a good mentor for me, giving me moral supports and patiently guided me throughout the project. I may have stumbled and tripped along the way, however your dedication and patience has made my learning ladder an easier one to climb.

My greatest thanks also go to my family who has given me support throughout my academic years. Not to forget to all technician in Faculty of Mechanical Engineering for their guidance in preparing the model of this project. For all my friends, thank you for your supporting, kind word, encouragement, and comment.

Finally yet importantly, to those who have, in a way or another contributed to the pleasant month of my final year project, your presence and your countless effort and support had given me great strength and confidence. Thank you.

ABSTRACT

A prosthesis works as an aid to help recover some of the lost functions of an amputated organic limb. This study focuses on the conceptual mechatronic design of a laboratory finger prosthesis which resembles both the key physical features and the grasping functionality of a middle adult finger by means of a new specification techniques, i.e. Systems Modeling Language (SysML). SysML is a general-purpose graphical modeling language that supports the analysis, specification, design, verification and validation of complex systems. These systems may include hardware, software, data, personnel, procedures, facilities and other elements of man-made and natural systems. SysML can represent systems, components and other entities such as structural composition, constraints on the physical and performance properties. The conceptual design of the prosthetic finger which is geared towards four essential characteristics: (i) anthropomorphically accurate size, (ii) kinematically accurate motion, (iii) hybrid actuation mechanism, and (iv) tactile sensory feedback. The list below shows the type of the diagrams which has been made using the SysML program:

I. Use case diagram
II. Block definition diagram
III. State machine diagram
IV. Activity diagram
V. Requirement diagram

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