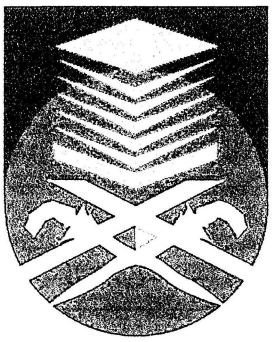

DEVELOPMENT OF A GEARING MECHANISM FOR A ROBOTIC FINGER

HAMZAH B. AB WAHAB
(2007284708)

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

Faculty of Mechanical Engineering
Universiti Teknologi Mara (UiTM)

MAY 2011

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

Signed: .....

Date: 20/5/2011

Hamzah Bin. Ab. Wahab

UiTM No: 2007284708

ACKNOWLEDGEMENT

First I would like to thank God (ALLAH) for giving me the opportunity and patience to carry out this work. I would like to express my special gratitude to my supervisor, Pn. Roseelena binti Jaafar because of her help and advice to complete this final year project. Without her help, it would have been difficult to accomplish this work.

Special thanks to all those who have helped me in this project whether directly or indirect. Your effort to make contribution in this project is highly appreciated. My deep thanks also to all my friends which giving and sharing information about this project with me. Also, my thanks to my family for giving me all the support, love and encouragement and for being my strength throughout my life.

Also thanks to Mr. Fadeli, technician at Mechanical Engineering Workshop for assisting me in using the rapid prototyping machine at the workshop. Not forgetting to Mr. Amlie who have assisted and encourage me in order to complete this project. To all, I thank and pray that one day, I would able to repay each all of them for helping to finish this project.

ABSTRACT

In this report, the study of a suitable gearing system for robotic finger is the main focused. Many types of gears have been considered such as planetary gearing system, harmonic gearing system, spur gear and bevel gear, in order to select the most suitable gear in accordance to the application of the gearing system for the robotic finger. The objective of this project is to design and model the gearing mechanism for the robotic finger. The project phases begin with designing and modeling of the gearing system. The clash and interference analysis by using CATIA is done to the gearing system. The gearing model will then be fabricated by using rapid prototyping process and tested to determine the working performance of the robotic finger. The purpose of the testing is to analyze the speed and force produced from the movement of the robotic finger. As a result, if the movement of the robotic finger is found to be acceptable and as desired, then the gearing system is said to be suitable for the robotic finger application.

TABLE OF CONTENT