



**FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA MALAYSIA
SHAH ALAM
SELANGOR DARUL EHSAN**

**IMMUNE MULTISTAGE EVOLUTIONARY PROGRAMMING (IMEP) FOR
OPTIMAL LOAD SHEDDING APPROACH FOR LOSS MINIMIZATION**

**MUHAMMAD FARIS BIN BAHARUDDIN
BACHELOR OF ELECTRICAL ENGINEERING (HONS.)**

JANUARY 2014

APPROVAL

**FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA MALAYSIA**

**A thesis is submitted to the Faculty of Electrical Engineering
Universiti Teknologi MARA Malaysia in partial fulfillment of the
requirement for the Bachelor of Electrical Engineering (Hons.)**

This thesis is approved by

**NORLEE HUSNAFEZA AHMAD
PENSYARAH
FAKULTI KEJURUTERAAN ELEKTRIK
(KUASA)
UNIVERSITI TEKNOLOGI MARA
MALAYSIA**

.....
MISS NORLEE HUSNAFEZA BINTI AHMAD

Project Supervisor

Date: 20 JANUARY 2014

ACKNOWLEDGEMENT

Praise to Allah S.W.T, The All Mighty for the blessing and mercy given onto me to complete this project.

I would like to take this opportunity to express my sincere gratitude and appreciation to my supervisor, Miss Norlee Husnafa Binti Ahmad for his continuous guidance, advice, support, comments and kindness given towards the accomplishment of this research work and in the preparation of the thesis. I am also indebted to Faculty of Electrical Engineering, Universiti Teknologi MARA for allowing me fully utilized the necessary facilities during my studies.

Secondly, special thanks to both honorable panels, Dr. Hasmaini Mohamad and En. Mohd Ezwan Mahadan for their comments, invaluable suggestions and outstanding deliberations to improve the project during the project presentation.

Most importantly, I extend my gratitude to my family for their support, patience and assurance during my pursuit for higher studies. They have encouraged me throughout my education, and I will always be grateful for their sacrificed, generosity and love.

Finally yet importantly, thanks to all the persons who are directly or indirectly contributed because their perspective and guidance helped greatly to point me in the right direction until the completion of this project.

Thank you very much.

ABSTRACT

Optimal Load Shedding (OLS) is one of the way to operate, planning and security in power system. The process by which people use electric power handling power shortage is load shedding. In power systems, many method can be choose in order to solve a problem. One of them is Evolutionary Programming (EP). This paper choose to use the Immune Multistage Evolutionary Programming (IMEP) for solving the load shedding (LS) problems in power system. Immune Multistage is implemented in order to improve the system that work by Evolutionary Perogramming itself. The Immune Multistage Evolutionary Programming (IMEP) is employed for the best location and amount of load to be shed based on power lost minimization. This paper show the power losses and compared between Immune Multistage Evolutionary Programming (IMEP) and Evolutionary Programming (EP) which is both of it using IEEE 30-bus distribution system. These results show the Immune Multistage Evolutionary Programming (IMEP) method increases reduce losses better than Evolutionary Programming (EP) method.

Keywords-optimal load shedding; immune multistage evolutionary programming; loss minimization

TABLE OF CONTENTS

DISCRIPTION	Page
SUPERVISOR'S APPROVAL	i
DECLARATION	ii
ACKNOWLEDGMENT	iii
ABSTRACT	iv
TABLE OF CONTENTS	v
APPENDICES	viii
LIST OF FIGURES	x
LIST OF TABLES	x
LIST OF ABBREVIATIONS	xi
CHAPTER 1 INTRODUCTION	
1.1 Overview of the study	1
1.2 Problem statements	4
1.3 Objective of the project	5
1.4 Scope of the study	6
1.5 Problem significant	7
1.6 Thesis organization	8