

**Universiti Teknologi MARA**

**The Optimization of Technical Trading  
Strategy Using Genetic Algorithm  
Approach**

**Khairunnisa binti Musa**

Thesis submitted in fulfillment of the requirements for  
**Bachelor of Science (Hons) Intelligence Systems**  
**Faculty of Information Technology And**  
**Quantitative Science**

**December 2005**

## **DECLARATION**

I certify that this thesis and the research to which it refers are the product of my own work and that any ideas or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.

DECEMBER 31,2005

KHAIRUNNISA MUSA  
2003470412

**APPROVAL****THE OPTIMIZATION OF TECHNICAL TRADING STRATEGY  
USING GENETIC ALGORITHM APPROACH****BY****KHAIRUNNISA BINTI MUSA**

This thesis was prepared under the direction of thesis advisor, Puan Siti Arpah Ahmad. It was submitted to the Faculty of Information Technology and Quantitative Sciences and was accepted in partial fulfillment of the requirements for the Degree of Bachelor of Science Intelligent System.

Approved by:

.....

Puan Siti Arpah Ahmad

Thesis Supervisor

Date:

## ABSTRACT

Recently, the use of genetic algorithm for the optimization of technical trading strategies has been receiving a great deal of attention. A technical trading strategy involves the study of past behavior in order to draw conclusions concerning the direction and magnitude of future price movement. Technical models are designed to keep investor trading with the trend. Understanding the best trend could produce a promising lucrative investment. This research is about an application of technical trading strategy to foreign exchange market by using Standard Genetic Algorithm (STDGA). Genetic algorithm is used as a tool to efficiently search for the most attractive solution as a suggestion for the trader to trade in foreign currencies. Results from the function optimization shows that STDGA is effective and efficient in locating the optimal solution (the maximum value of the Sharpe Ratio).

## TABLE OF CONTENTS

DECLARATION	ii
APPROVAL	iii
ACKNOWLEDGEMENT	iv
ABSTRACT	v
TABLE OF CONTENTS	vi
LIST OF TABLES	ix
LIST OF FIGURES	x
<b>CHAPTER 1: INTRODUCTION</b>	
1.1 INTRODUCTION	1
1.2 PROBLEM DESCRIPTION	2
1.3 RESEARCH OBJECTIVE	4
1.4 RESEARCH SCOPE	4
1.5 RESEARCH SIGNIFICANCE / BENEFITS	5
1.6 CONCLUSION	6
<b>CHAPTER 2: LITERATURE REVIEW</b>	
2.1 INTRODUCTION	7
2.2 GENETIC ALGORITHM	7
2.2.1 INTRODUCTION	7
2.2.2 FITNESS FUNCTION	9
2.2.3 GENETIC ALGORITHM OPERATORS	11
2.2.4 SELECTION AND EVALUATION	13
2.2.5 ADVANTAGES OF GENETIC ALGORITHM	17
2.3 TECHNICAL TRADING STRATEGY	18
2.3.1 INTRODUCTION	18
2.3.2 TRADING STRATEGY FOR OPTIMIZATION	18