

**A STUDY ON INFORMATION HIDING : STEGANOGRAPHY**

**BY**

**MOHD RIDZUAN BIN AHMAD HARIRI**

**BACHELOR OF SCIENCE (Hons) IN DATA COMMUNICATION AND  
NETWORKING**

**THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE  
REQUIREMENT FOR THE DEGREE OF BACHELOR OF SCIENCE**

**FACULTY OF INFORMATION TECHNOLOGY  
AND QUANTITATIVE SCIENCE**

**MARA UNIVERSITY OF TECHNOLOGY**

**2003**

## ACKNOWLEDGEMENT

In the name of Allah, who is the Gracious, Most Merciful and Him alone are worthy of all praise; Alhamdulillah, with His blessing, I am able to complete this project with my full effort and within the time constrain given to me.

First and foremost, I would like to address my deepest appreciation and sincerest thanks to my dedicated supervisor, Dr Saadiah Bt. Yahaya, who was also my lecturer for Research Project Course (ITT580), for her guidance, encouragement, comments, ideas, tolerance and support that led to a better quality of my thesis project. I do feel most fortunate to have her expert guidance, precious advice and suggestions at every step of my project. I am so grateful to have this opportunity to learn and gain experience doing this project from such a skilled and talented lecturer.

A special appreciation also to Mr Shahardean from Network and Security Unit, Bank Negara Malaysia, who provided me with basic knowledge of network security, also to Mr Asrul Jan, who I met in ITTutor.net's forum a year ago and Mr Bachtiar (also known as *root*) in Bincang.net, for their suggestions and supportive advices regarding my study of steganography. I would like to dedicate my deepest appreciation also to Miss Elonka Dunin, General Manager of Online Community at Simutronics Corporation, who guided me through simple chatting session and keep giving me information inside my email boxes.

Last but not least, to my family, who always motivate me and support me throughout this project, and also to all my friends who helped me along the way, due to complete this project. I wish them best of luck and thank you for everything. To all mentioned here, may Allah bless you all.

Mohd Ridzuan Ahmad Hariri

## **ABSTRACT**

In a world where privacy is a right, many people try to find a way to hide information especially when it comes to sensitive documents and files. A person would like to send an email or file with no fear that a person aside from the recipient will read the message. Also, with all information that is on the Internet, owners of such information must protect themselves from unwanted spying, copying, theft and false representation. Recent advances in computing power and recent interest in this privacy issue has led to the development of techniques to hide messages in otherwise innocuous computer files such as digital pictures and digitized audio. This is what we called as steganography.

In this dissertation, we will only provide basic knowledge of steganography with simple explanation based on research done by security experts around the world. We try to provide readers with basic idea of this concept so that they can differentiate with the concept of cryptography, which most people still confuse and assume that both terms represent the same security techniques.

Throughout this thesis, we will look into the history of steganography, the basic concept and components of it and different techniques for different types of medium used to secretly communicate through this security concept. At the end of this paper, we will discuss on weaknesses of steganography in general without specifying on any medium mentioned previously.

# TABLE OF CONTENTS

ACKNOWLEDGEMENT

ABSTRACT

TABLE OF CONTENTS

LIST OF TABLES AND FIGURES

## CHAPTER ONE PROBLEMS DEFINITION

1.0	INTRODUCTION	1
1.1	BACKGROUND OF THE PROBLEM	1
1.2	PROBLEM DESCRIPTION	2
1.3	PROJECT OBJECTIVE	2
1.4	PROJECT SCOPE AND LIMITATION	2
1.5	PROBLEM SIGNIFICANCE	3
1.6	OVERVIEW OF THESIS	3
1.7	CONCLUSION	4

## CHAPTER TWO LITERATURE REVIEW

2.0	INTRODUCTION	5
2.1	DETAILS DESCRIPTION OF THE PROBLEM	5
2.2	DEFINITION OF TECHNICAL TERMINOLOGIES	6
2.2.1	Algorithm	6

# **CHAPTER ONE**

## **PROBLEMS DEFINITION**

### **1.0 INTRODUCTION**

A precise definition is one of the most important elements to explain a particular subject or topic. It is because a definition shall give a brief description on the whole idea. This is where Chapter 1, Problems Definition plays its roles in defining the problem background, the scope, objectives and the significance of our study.

### **1.1 BACKGROUND OF THE PROBLEM**

In the world of communication and knowledge sharing, data transferring becomes one of the major parts to be considered. All the information or data transferred should be secured enough especially for those personal information which can only be viewed by authorized person.

In this matter, data hiding plays its role as one of the ways to secure the data being transferred. Using several techniques that generally known as cryptography, data is hide from unwanted users. Therefore, only those who have the secret key are able to decrypt the hidden information. However, most of the hackers are used to the style of encryption, which allow them to decrypt it back for the purpose of retrieving the information inside it.

Cryptography allows the enemy to detect, intercept and modify messages without being able to violate certain security premises guaranteed by a cryptosystem. While steganography hide messages inside other harmless messages without being detected from an enemy.