# AN EMBEDDING TRAID-BIT METHOD TO IMPROVE THE PERFORMANCE OF ARABIC TEXT STEGANOGRAPHY

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## Abstract

The enormous development in the utilization of the Internet has driven by continuous improvements in the region of security. The enhanced security techniques are applied to save the intellectual property. There are numerous sorts of security mechanisms. Steganography is the art and science of concealing secret information inside a cover media without drawing any suspicion to the eavesdropper so that the secret information can only be detected by its proposed recipient. This is done along with the other steganography methods such as image, audio, video, various text steganography methods that are being presented. The text is ideal for steganography due to its ubiquity. There are many steganography methods used several languages such as English, Chines and Arabic language to embed the hidden message in the cover text. Kashida, shifting point and sharp_edges are Arabic steganography methods with high capacity. However, kashida, shifting point and sharp_edges techniques have lack of capability to embed the hidden message into the cover text .This study proposed new method called Traid-bit method by integrating three several types of methods such us kashida, shifting point and sharp_edges to evaluate the proposed method in improving the performance of embedding process. The study presents the process design of proposed method including the algorithms and the system design. The study found that the evaluation of the proposed method provides good knowledge to steganographer to improve the performance of embedding process when the Arabic text steganography method is developed.



**Keywords:** Arabic Language, Text Steganography, Embedding Performance, Information Security.

# Abstrak

Perkembangan pesat dalam penggunaan Internet telah didorong oleh peningkatan berterusan dalam perihal keselamatan di alam maya. Teknik-teknik keselamatan yang sedia ada dipertingkatkan lagi yang bertujuan untuk menjaga dan menyelamatkan harta intelek. Terdapat pelbagai jenis mekanisme keselamatan, dan Steganografi adalah salah satu daripadanya. Steganografi adalah suatu seni dan sains yang bertindak sebagai mekanisme untuk menyembunyikan maklumat rahsia di dalam sesebuah media tanpa menimbulkan sebarang kekeliruan supaya maklumat rahsia hanya dapat dikesan oleh penerima. Perkara ini dilakukan bersama-sama dengan kaedah steganografi yang lain seperti imej, audio, video, dan pelbagai kaedah teks steganografi yang ada. Teks sesuai untuk digunakan untuk steganografi kerana keleluasaannya. Terdapat banyak teknik steganografi digunakan beberapa bahasa seperti Inggeris, China dan Bahasa Arab untuk menyamarkan mesej yang tersembunyi dalam teks penutup. *Kashida*, *shifting point* dan *sharp_edges* adalah teknik steganografi Arab dengan kapasiti tinggi. Walau bagaimanapun, *kashida*, *shifting point* dan *sharp_edges* teknik mempunyai kekurangan prestasi untuk membenamkan mesej yang tersembunyi ke dalam teks penutup. Kajian ini mencadangkan kaedah baru dengan mengintegrasikan teknik teks steganografi Bahasa Arab untuk menilai kaedah yang dicadangkan dalam meningkatkan prestasi proses penerapan. Kemudian, kajian ini membentangkan reka bentuk proses kaedah yang dicadangkan termasuk algoritma dan reka bentuk sistem. Kajian ini mendapati bahawa penilaian kaedah yang dicadangkan menyediakan pengetahuan yang baik untuk steganographer dalam meningkatkan prestasi proses penerapan di dalam teknik teks steganografi Arabic dibangunkan.

Kajian ini membentangkan reka bentuk proses kaedah yang dicadangkan termasuk algoritma dan reka bentuk sistem. Kajian mendapati bahawa penilaian kaedah yang dicadangkan menyediakan pengetahuan yang baik untuk steganographer untuk meningkatkan prestasi proses menerapkan apabila kaedah teks steganografi Arab dibangunkan.

**Keywords:** Bahasa Arab, Teks Steganographi, Menerapkan Prestasi, Maklumat Keselamat.

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# CHAPTER ONE
# INTRODUCTION

## 1.1 Background of Study

Nowadays, our communications are hardly private anymore. Intruders in communication and technology can get information in a readable and understandable form of system. The information disclosed by Intruders to others, may be used to lunch attack or altered against the person or organization's want (Bhattacharyya, Banerjee, & Sanyal, 2011). Unauthorized people are increasingly interested in other people's conversations, especially with the Internet being an open system. Hence, added counter measures must be taken to ensure privacy rights. One of the solutions used to tackle this problem is Steganography.

Steganography is the art and science that deals with hiding of secret messages in order to protect the existence of the message being detected by human senses. It is also a sub-discipline of information hiding. It is often mistaken for cryptography, even though both are used to protect valuable information. The difference between them is that steganography is the study of hiding information to conceal its existence, while Cryptography is the art of cryptogram or secret writing, involving various methods or embedded technique to ensure the protection of message contents (Computing, Kumar, & Singh, 2015). This depicts that the use of steganography makes anyone looking at the object storing secret information not to expect the existence of a message in the object, thereby dismissing thoughts of decrypting the object.

Steganography originated from a Greek word which comprises of Steganos, meaning 'to cover' or 'secret', and Graptos which means writing or drawing. Hence, steganography literally means 'covered writing'. The art has been used centuries ago before it was known as steganography. An example of its ancient use: "*Greek history*

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