Universiti Teknologi MARA

Securing Mobile Devices Data using Image Steganography

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ABSTRACT

Nowadays mobile phone users store information and communicate a lot using mobile devices rather than using desktops or notebooks. As a result, their mobile devices are exposed to network exploits where hackers or any cyber attackers can steal their mobile devices data. However, existing data security technique such as encryption technique still failed in inhibiting data theft attacks as encrypted data can easily arouse cyber attackers. One of the possible solution is by applying steganography technique to secure mobile devices data. In this project, the technique used is image steganography using pixel value differencing (PVD) technique. An image mobile steganographic app is developed to secure user data by encrypting user data into cover image. Five different test image with size of 512x512 of PNG file format is used for the cover image. For the mobile devices data, 3 different text with multiple size including 64 bytes, 128 bytes and 256 bytes were applied as secret data and encrypted into the cover image. The imperceptibility effectiveness of the technique is tested based on the PSNR value of each cover image and has been analyzed. The result of the PSNR value of all cover image is above 30 dB shows that the cover image is imperceptible to human eyes and the project considered successful. Based on the result, this technique can effectively provide high imperceptibility to hide secret message into a cover image.

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CHAPTER 1

INTRODUCTION

This chapter describes the general introduction of this computing project. It also describes the details of security mechanisms in the use of data and communication protection, the issues and problems that led to this research.

1.1 Project Background

Nowadays, the digital world is growing and become more powerful. As a result, data sharing and transmission in digital communication turn out to be one of the significant tasks. Data sharing and transmission are essential for information exchange and it plays an important role such in online business, social media, and teleconferencing. There are different type of devices used for data transmission and one of the most used devices is mobile devices. Data transmission always take place over mobile devices due to its compatibility and light weight that make it easy to carry. Hence, user data are mostly stored and managed in the mobile devices.

As such, user data security and protection in mobile devices is vital because mobile devices are frequently used to transmit, store and manage important data. Moreover, mobile devices are now used in all areas of life (Yesilyurt & Yalman, 2016). This inadvently also lead to the rise of the number of users mashroomed exponentially security threats. Privacy data and company data might get easily stolen inside the devices or through a network by third party if there is no strong security mechanism applied to secure the data and communication. Therefore, there is a need for a