

Image Steganography using Java Swing Templates

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Abstract— Multimedia data hiding techniques have developed a strong basis for steganography area with a growing number of applications like digital rights management, covert communications, hiding executables for access control, annotation etc. The advantage of steganography over cryptography alone is that messages do not attract attention to themselves, to messengers, or to recipients. An unhidden coded message, no matter how unbreakable it is, will arouse suspicion and may in itself be incriminating, as in some countries encryption is illegal.

Keywords-image steganography; AWT Components; Stegoanalysis; cryptography; java swing templates.

I. INTRODUCTION

Communication by embedding a message or data file in a cover medium has been increasingly gaining importance in the all-encompassing field of information technology. Audio steganography is concerned with embedding information in an innocuous cover speech in a secure and robust manner. Communication and transmission security and robustness are essential for transmitting vital information to intended sources while denying access to unauthorized persons. By hiding the information using a cover or host audio as a wrapper, the existence of the information is concealed during transmission.

A. Steganography

The term Steganography refers to the art of covert communications. By implementing steganography, it is possible for two parties to communicate in such a way that no one else will know that the message exists[1]. Typically, the message is embedded within another object known as a cover Work, by tweaking its properties. The resulting output, known as a stegogramme is engineered such that it is a near identical

perceptual model of the cover Work, but it will also contain the hidden message. It is this stegogramme that is sent between the two parties. If anybody intercepts the communication, they will obtain the stegogramme, but as it is so similar to the cover, it is a difficult task for them to tell that the stegogramme is anything but innocent. It is therefore the duty of steganography to ensure that the adversary regards the stegogramme - and thus, the communication - as innocuous.

In modern days, steganography is usually implemented computationally, where cover works such as text files, images, audio files, and video files are tweaked in such a way that a secret message can be embedded within them [5].

Steganography also has its applications in preventing the duplication of products, by embedding some secret text inside the company logo of original product.

II. JAVA PROGRAM COMPONENTS

The Swing package is part of Java Foundation Classes (JFC) in the Java platform. The JFC encompasses a group of features to help people build Graphical user Interface (GUI); Swing provides all the components from buttons to split panes and tables[2].

The Swing package was first available as an add-on to Java Development Kit (JDK). Prior to the introduction of the Swing package, the Abstract Window Toolkit (AWT) components provided all the UI components in the JDK1.0 and 1.1 platforms. Although the Java2 Platform still supports the AWT components, we strongly encourage using Swing components instead. The AWT button class, for example, is named Button, whereas the Swing button class is named JButton. In addition, the AWT components are in the java.awt package, whereas the swing components are in the javax.swing package.

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Swain, Gandharba



Image Steganography Using Java Swing Templates :

An Interdisciplinary Introduction to Image Processing Steven L. Tanimoto, 2012-04-27 Basic principles of image processing and programming explained without college level mathematics This book explores image processing from several perspectives the creative the theoretical mainly mathematical and the programmatical It explains the basic principles of image processing drawing on key concepts and techniques from mathematics psychology of perception computer science and art and introduces computer programming as a way to get more control over image processing operations It does so without requiring college level mathematics or prior programming experience The content is supported by PixelMath a freely available software program that helps the reader understand images as both visual and mathematical objects The first part of the book covers such topics as digital image representation sampling brightness and contrast color models geometric transformations synthesizing images stereograms photomosaics and fractals The second part of the book introduces computer programming using an open source version of the easy to learn Python language It covers the basics of image analysis and pattern recognition including edge detection convolution thresholding contour representation and K nearest neighbor classification A chapter on computational photography explores such subjects as high dynamic range imaging autofocusing and methods for automatically inpainting to fill gaps or remove unwanted objects in a scene Applications described include the design and implementation of an image based game The PixelMath software provides a transparent view of digital images by allowing the user to view the RGB values of pixels by zooming in on an image PixelMath provides three interfaces the pixel calculator the formula page an advanced extension of the calculator and the Python window

Advanced Digital Image Steganography Using LSB, PVD, and EMD: Emerging Research and Opportunities Swain, Gandharba, 2019-06-28 In the last few decades the use of the Internet has grown tremendously and the use of online communications has grown even more The lack of security in private messages between individuals however allows hackers to collect loads of sensitive information Modern security measures are required to prevent this attack on the world s communication technologies *Advanced Digital Image Steganography Using LSB PVD and EMD Emerging Research and Opportunities* provides evolving research exploring the theoretical and practical aspects of data encryption techniques and applications within computer science The book provides introductory knowledge on steganography and its importance detailed analysis of how RS and PDH are performed discussion on pixel value differencing principles and hybrid approaches using substitution PVD and EMD principles It is ideally designed for researchers and graduate and under graduate students seeking current research on the security of data during transit [Image in Image Steganography Using Pifs](#) Ahmed Hussain Ali, 2013 Steganography encompasses techniques of transmitting secret data through innocuous covers such as that its presence cannot be detected The aim of this book is to design and implement Image in Image Steganography System IISS that hides secret image into cover image without causing any a significant effect on the quality of the cover image In this

work an adaptive hiding method has been implemented to hide the gray scale or color image into color image only the main objective is to increase the hiding rate *Implementing Image Steganography Using Least Significant Bit in Mobile Device* Siti Dhalila Mohd Satar,2012 **Enhancing the Security of High Payload Image Steganography Using Chaos** Rezza Moieni,2013

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