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Robust Video Data Hiding

T. Chalapathi Rao
Asst Professor,
Department of CSE,
Aditya Institute of Technology and Management,
(AITAM), Tekkali, Srikakulam.

ABSTRACT:

Video data hiding is still an important research topic due to the design complexities involved. We propose a new video data hiding method that makes use of erasure correction capability of repeat accumulate codes Selective embedding is utilized in the proposed method to determine host signal samples suitable for data hiding.This method also contains a temporal synchronization scheme in order to withstand frame drop and insert attacks. The proposed framework is tested by typical broadcast material against MPEG frame-rate conversion attacks, as well as other well-known video data hiding methods. The simulation results indicate that the framework can be successfully utilized in video data hiding applications.

Key words: MPEG, Data Hiding Framework, RSA Algorithm.

1. INTRODUCTION:

Data hiding is the process of embedding information into a host medium. In general, visual and aural media are preferred due to their wide presence and the tolerance of human perceptual systems involved. Although the general structure of data hiding process does not depend on the host media type, the methods vary depending on the nature of such media.

For instance, image and video data hiding share many common points; however video data hiding necessitates more complex designs as a result of the additional temporal dimension. Therefore, video data hiding continues to constitute an active research area. We propose a temporal synchronization technique to cope with temporal attacks, such as frame drop, insert and repeat.

This robustness allows handling resynchronization between embedder and decoder that occurs as a result of the differences in the selected coefficients. Video frames used for data hiding are selected at four stages. First, frame selection is performed. Frames with sufficient number of blocks are selected. Next, only some predetermined low frequency DCT coefficients are permitted to hide data. Then the average energy of the block is expected to be greater than a predetermined threshold. In the final stage, the energy of each coefficient is compared against another threshold. The unselected blocks are labeled as erasures and they are not processed. For each selected block, there exists variable number of coefficients. These coefficients are used to embed and decode single message bit by employing multi-dimensional form.

2. EXISTING WORK :

• In special domain, the hiding process such as least significant bit (LSB) replacement, is done in special domain, while transform domain methods; hide data in another domain such as wavelet domain.

• Least significant bit (LSB) is the simplest form of Steganography. LSB is based on inserting data in the least significant bit of pixels, which lead to a slight change on the cover image that is not noticeable to human eye. Since this method can be easily cracked, it is more vulnerable to attacks.

• LSB method has intense affects on the statistical information of image like histogram. Attackers could be aware of a hidden communication by just checking the Histogram of an image. A good solution to eliminate this defect was LSB matching. LSB-Matching was a great step forward in Steganography methods and many others get ideas from it

3. PROPOSED WORK:

•Data hiding in video sequences is performed instead of dividing the video into frames

•simple rules applied to the frame markers, we introduce certain level of robustness against frame drop, repeat and insert attacks.

ADVANTAGES:

- User cannot find the original data.
-
- It is not easily cracked.
-
- To increase the Security.
-
- To increase the size of stored data.
-
- We can hide more than one bit.

3.1 User Requirement Document Functional Requirements:

Functional Requirements describe the interactions between the system and its environment independent of its implementation. The environment includes the user and any other external system with which the system interacts. Functional requirements of the system are as follows:

1.User needs to hide his/her secret information in a video file

2.The secret information may be a file, text or any other file

3.User should extract the actual information from cover file

4.There should not be any frame drop in video

Non Functional Requirements:

Non functional requirements describe the user-visible aspects of the system that are not directly related with the system.

1.Usability:

Usability is the ease with which a user can learn to operate, prepare inputs for, and interpret outputs of a system or components.Usability requirements for the proposed system are satisfied through user friendly forms and user documentation.

2.Performance:

Performance requirements are concerned with quantifiable attributes of the system, such as response time, throughput, availability and accuracy.The response time is less for the Robust Video Data Hiding. As soon as the user opens the interface, it will be opened.

3.Supportability:

Supportability requirements are concerned with the ease of changes to the system after deployment

4. UML APPROACH: UML Diagrams:

A diagram is the graphical presentation of a set of elements, most often rendered as a connected graph of vertices (things) and arcs (relationships).

4.1 UML DIAGRAMS:

Use Case Diagram:

A use case diagram shows a set of use cases and actors (a special kind of class) and their relationships. Use case diagrams address the static use case view of a system. These diagrams are especially important in organizing and modeling the behaviors of a system Both sequence diagrams and collaboration diagrams are kinds of interaction diagrams.

An shows an interaction, consisting of a set of objects and their relationships, including the messages that may be dispatched among them. Interaction diagrams address the dynamic view of a system.

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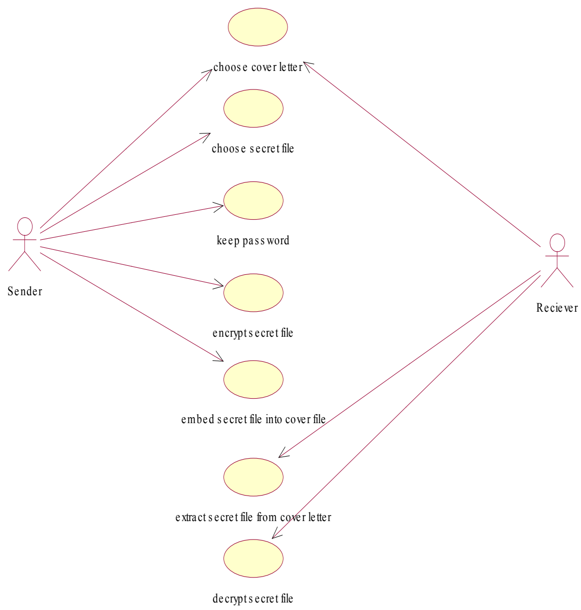
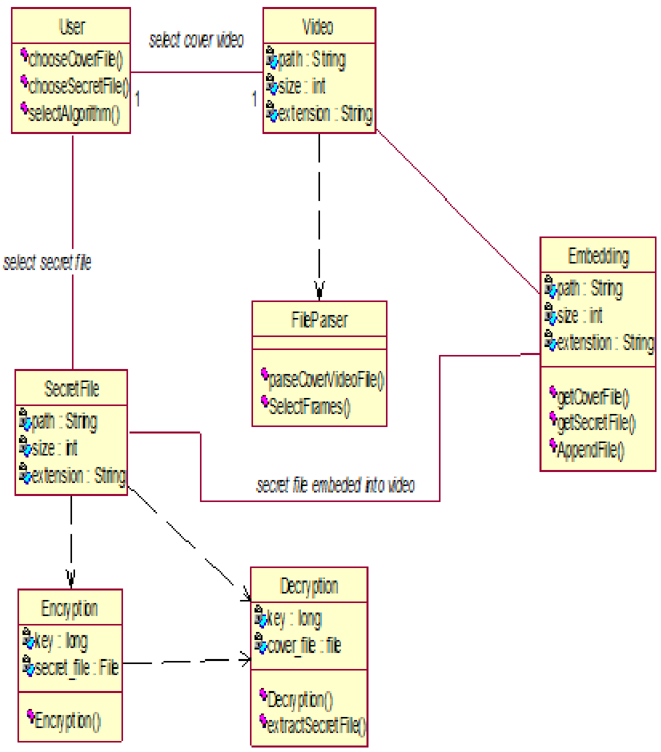


Class Diagram:

A class diagram shows a set of classes, interfaces, and collaborations and their relationships. These diagrams are the most common diagram found in modeling object-oriented systems. Class diagrams address the static design view of a system. Class diagrams that include active classes address the static process view of a system.



5. EXPEREMENTAL ANALYSES:

The below screens shows that the entire process of Robust Video Data Hiding.

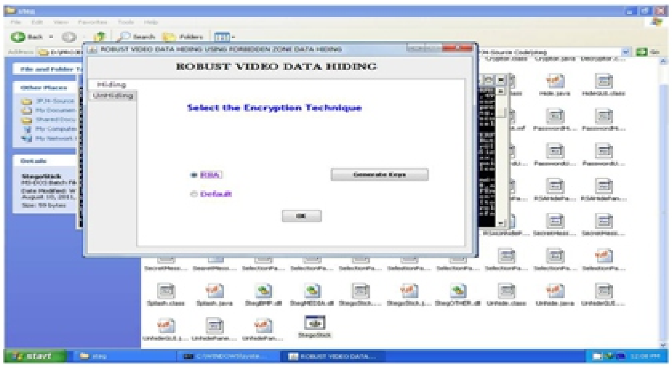


Fig 5.1 Select the Encryption Technique RSA.

Fig 5.2 Select secrete file to apply the hide file or hide message

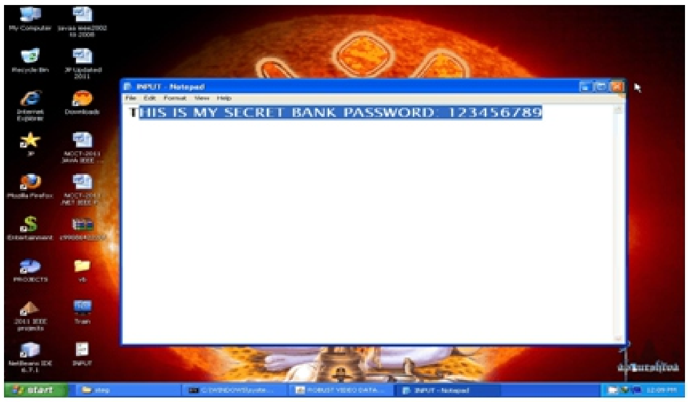


Fig 5.3 displays the secret bank password.

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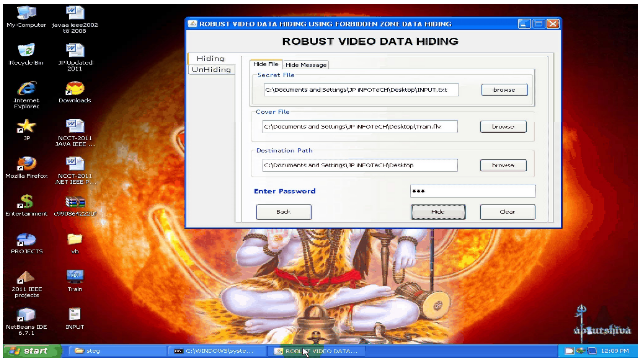

Fig 5.4 Applying Hiding technique.

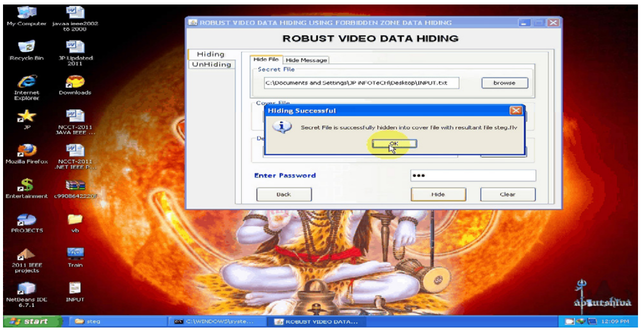

Fig 5.5 Displays the message whether successful or not.

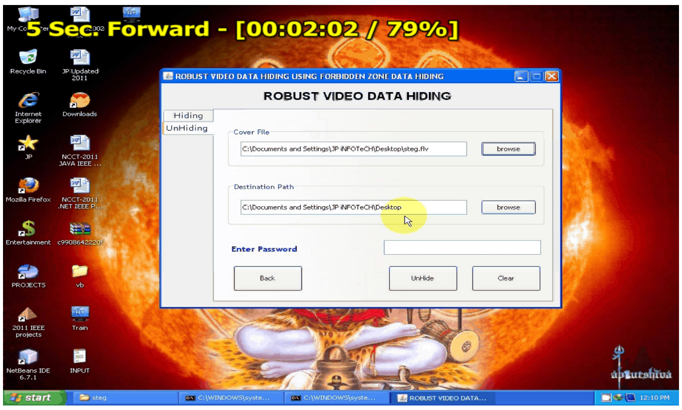

Fig 5.6 Displays the Destination Path.

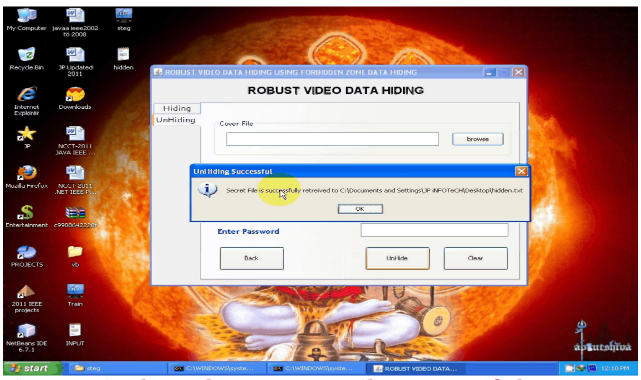

Fig 5.7 Displays the Secrete File successful message

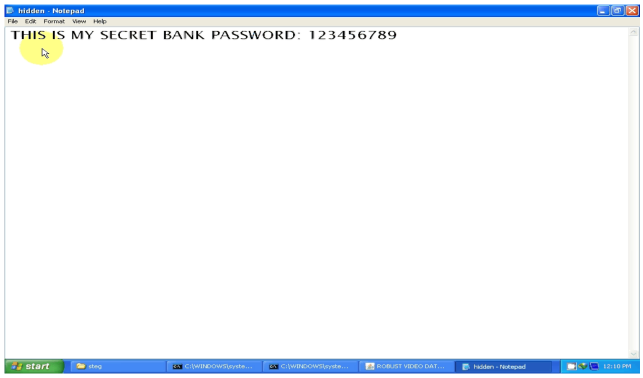

Fig 5.8 Displays the Secrete File password.

6.CONCLUSION:

We develop a new video data hiding framework that makes use of erasure correction capability of frame dropping. The method is also robust to frame manipulation attacks via frame synchronization markers. The framework is tested with MPEG, FLV, VOB H.264 compression, and scaling and frame-rate conversion attacks.

The proposed framework is tested by typical broadcast material against MPEG frame-rate conversion attacks, as well as other well-known video data hiding methods. The simulation results indicate that the framework can be successfully utilized in video data hiding applications.

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Author Details:

TIPPANA CHALAPATHI RAO working as assistant professor in department of cse, aitam, Tekkali, Srikakulam, Andhra Pradesh, INDIA. He received the B.Tech degree in Computer Science and Information Technology from GMRIT, Rajam and M.Tech degree in Computer Science and Engineering from JNTUA , Ananthapuram, A.P, India. His interesting research areas include Computer Networks and Data Mining and Cloud Computing.