



Secured Transmission using Reversible Data Hiding

Group ID 25

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Lecture Outline

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Reversible Data Hiding

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- **Data Hiding** - Data Hiding is the process of hiding the data into cover media. The cover media is taken as coloured image.
- The data is being hidden into the coloured image. There is no any correlation between the cover media and the embedded data.
- **Reversible Data Hiding** - To maintain image contents confidentiality and to recover original image, there is a need of Reversible Data Hiding scheme



Reversible Data Hiding

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- All previous methods embed data by reversibly vacating room from the encrypted images, which may be subject to some errors on data extraction or image restoration
- Proposed method embeds data by reserving room before encryption with a traditional RDH algorithm.
- It is easy for the data hider to reversibly embed data in the encrypted image.



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Problem In Existing System

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- **A Non Separable Reversible Data Hiding method**
- **A Separable Reversible Data Hiding method**



A Non Separable Reversible Data Hiding method

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- In this method, the data extraction is not separable from the content decryption.
- The additional data must be extracted from the decrypted image, so that the principal content of the original image is revealed before data extraction.
- If some has a data hiding key but not the encryption key, he cannot extract the information from the decrypted image containing additional data.
- Methods embed data by reversibly vacating room from the encrypted images, which may be subject to some errors on data extraction or image restoration.

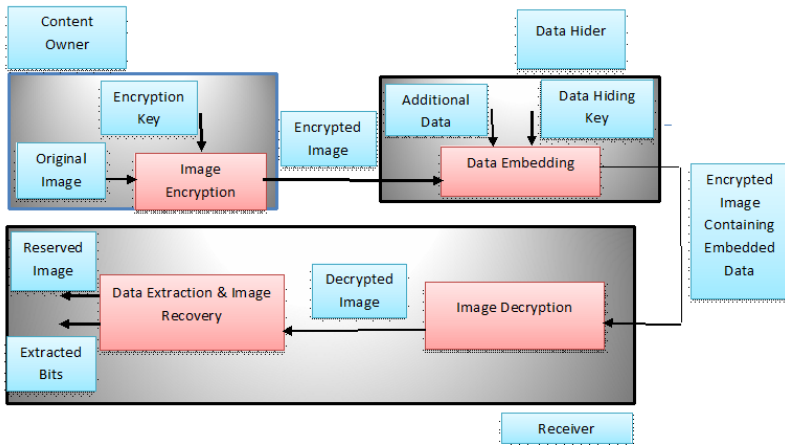


A Non Separable Reversible Data Hiding method

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Separable Reversible Data Hiding method

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- Data Hiding in Encrypted Images using Side Match.
- Exploit the pixels in calculating the smoothness of each block and consider the pixel correlations in the border of neighboring blocks
- These two issues could reduce the correctness of data extraction.
- Methods embed data by reversibly vacating room from the encrypted images, which may be subject to some errors on data extraction or image restoration.



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Problem Solution

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- Reversible Data Hiding in encrypted images by Reserving Room Before Encryption.
- The method reserves room before encryption with a traditional RDH algorithm.
- Hence it is easy for the data hider to reversibly embed data in the encrypted image
- This method can achieve real reversibility, that is, data extraction and image recovery are free of any error.



Use Case Diagram of RDH Technique

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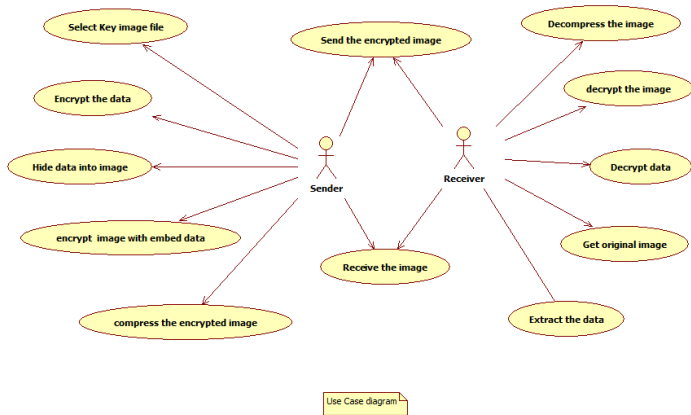
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Reversible Data Hiding by Reserving Room before Encryption

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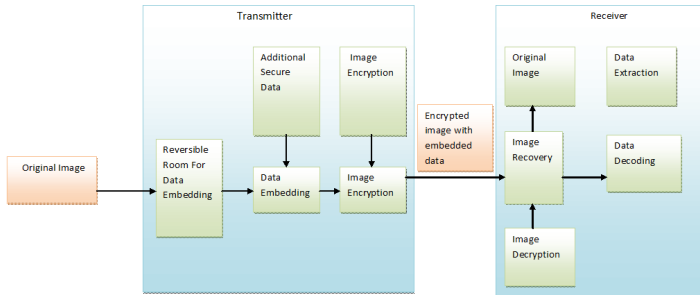
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System Design

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System has designed and implemented with the following modules:

- **Reserving Room for Data Embedding**
- **Data Hiding**
- **Image Encryption**
 - Filtering
 - Division
 - Shuffling
- **Image Decryption**
- **Data Extraction**



Working of RDH Algorithm

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- Sender before transmitting message to receiver first hide the message or data into cover media.
- The cover media can be taken as colored image.
- Data hiding process links two set of data, a set of embedded data and another set of cover media data.
- There is no any correlation between the embedded data and cover media.
- Vacating the room from encrypted images is relatively difficult and inefficient.



Working of RDH Algorithm

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- This method may subject to error on data extraction or on image.
- Hacker can recover embedding data is placed at particular bit position.
- For removing this problem Reversible data hiding technique reserves room before encryption at content owner side.
- Encrypt data before embedding data into reserved room.
- Image and embed encrypted data are again encrypted for confidentiality.



Working of RDH Algorithm

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- Encrypted image with embed data are transmit by sender to transmission media.
- Receiver receives the encrypted image. Receiver decrypt the image and recover original image.
- Using key receiver extract the embed data from image successfully.



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- An enhanced reversible data hiding schemes are used for hiding the secrete data into colored images.
- As previous supports only black and white images for hiding the data.
- Its provides more security and confidentiality of data.
- This method does not affect on covered media after extracting data from receiver.



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