STEGANOGRAPHY

Kriptografi, Week 13
Steganography is the hiding secret message technique into the media, therefore the hidden message hard to known by human sense.
*The main goal = to hide the secure message

*In order to the message is not appear the people, steganography is use the other media (image, video, audio, text) to avoid suspicion the people on the message.
* **Cryptography**: the secure message is pattern random, therefore the message is does not read by the other people. It is cause the suspicion the people, because there is the encrypted message.

* **Steganography**: the secure message packed by the other media (text, image, video, audio), therefore hard to know by the people that there are the message in the media. It is more secure than cryptography because the media is look like the normal media without message inside.
*The secure message:* is the message or text that will be sent and it is secure.

*The media:* is the media that used to pack the secure message. There are text, image, audio, or video.
Steganalysis is the science which learn the hiding message characteristic on the media (steganography) and how to detect and break the hidden message.
Steganalysis method on image:

1. Persuasive method:
   normal view with the eye and feel there is the awkwardness on the media.
2. **Visual Attack:**

Visual Attack is same with the method EzStego, Hide & Seek, Scytale, Snow, Steganos, White Noise Storm. The main point of this method:

* Attack Carrier Medium (steganogram) : the part which possible to hide is consist of the hidden bit message.

* Extract the potential of message bit : use the certain algorithm to extract the bit from sender.

* View the visual illustration from the extract bit, because still use the ability of eye which know the object based on the pattern recognition.
3. Statistical method
   step of this method:
   a. **Signal Cover Estimation**: the step which use the De-Nosing process. Example: apply the Wavelet Shrinkage method on audio video. The output of De-Noising process is clear from noise (hidden message), therefore can be estimated as cover signal.
b. **Extract** the feature of the media

c. Choose the **suitable feature** in order to classification process. We can apply the ANOVA (Analysis of Variance) method to choose the feature.
d. Classification process uses the extracted feature. This process needs the sample to make the pattern.

e. Finishing process will produce the conclusion that decides whether the media carries the secure message or not.
1. **Least Significant Bit (LSB)**
   Insert the message in 8\textsuperscript{th} bit on the each segment pixel.
   - The size of image is not change.
   - The message size is limited which doesn’t exceed the amount of segment pixel on image.

2. **End of File (EoF)**
   insert the message in the end of the image bit.
   - the image size is increase based on the inserted message.
   - the inserted message is not limited.