Powerful Generative Steganography With Generative Adversarial Networks

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Powerful Generative Steganography With Generative Adversarial Networks

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- ► What is Steganography?
 - simmon's prisoners.
 - ► Hiding Information in plain sight.

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What is a GAN?

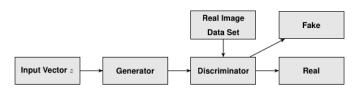


Figure: GAN

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 $\min_{G} \max_{D} V(D,G) = E_{x \ p_{data}(x)}[logD(x)] + E_{z \ p_{z}(z)}[log(1-D(G(z)))].$

Imperceptibility

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- Imperceptibility
- Robustness
- payload capacity

Different approaches to steganography

- cover modification
- cover synthesis: Fridrich, K.-C. Wu & Wang

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Volkhonskiy, Shi, Dong, Tang, Hayes

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Observed problems:

- Instability of Training
- ► Slow convergence
- ► Inadequately realistic image generation

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Problem Statement

Observed problems:

- Instability of Training
- Slow convergence
- Inadequately realistic image generation

"This is mainly associated to the GAN technique used in the framework."

Objectives

Design and implement a powerful generative steganographic framework using a most suitable GAN.

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Objectives

Objectives

Specific objectives:

- Improve stability of Training and convergence speed.
- ► Generate more realistic image.
- Maintain state of the art security.

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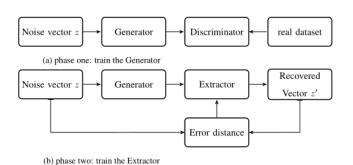


Figure: System Architecture

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Methodology

Choice of GAN:

- ► BEGAN
- **RGAN**
- WGAN-DIV
- ▶ WGAN-GP

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Choice of dataset:

- ► CelebA
- ► LFW
- ► Food101
- ► MNIST

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Choice of dataset:

- Visual instpection
- ► Inception score
- ► Visual Turing test
- MOS

Robustness

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- le de la companya de
- ► Robustness
- Passive Adversary

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Rudget

- Robustness
- ► Passive Adversary
- ► Payload Capacity

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- Robustness
- ► Passive Adversary
- Payload Capacity
- Imperceptibility

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The main problem in generative steganography

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