## 1.1 Forward Process

✓ Original 64×64 Campanile image

Original Campanile (64x64)
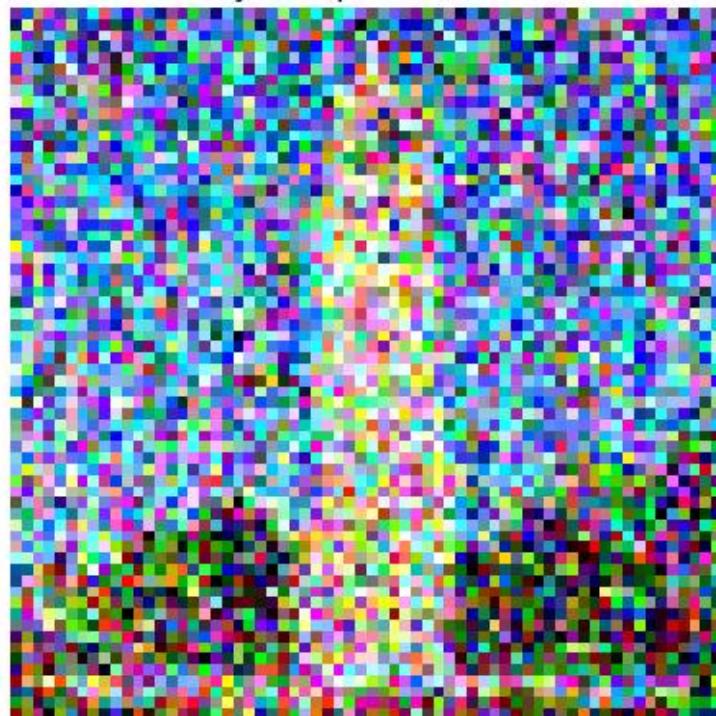

✓ Noisy image at t = 250

### Noisy Campanile (t=250)
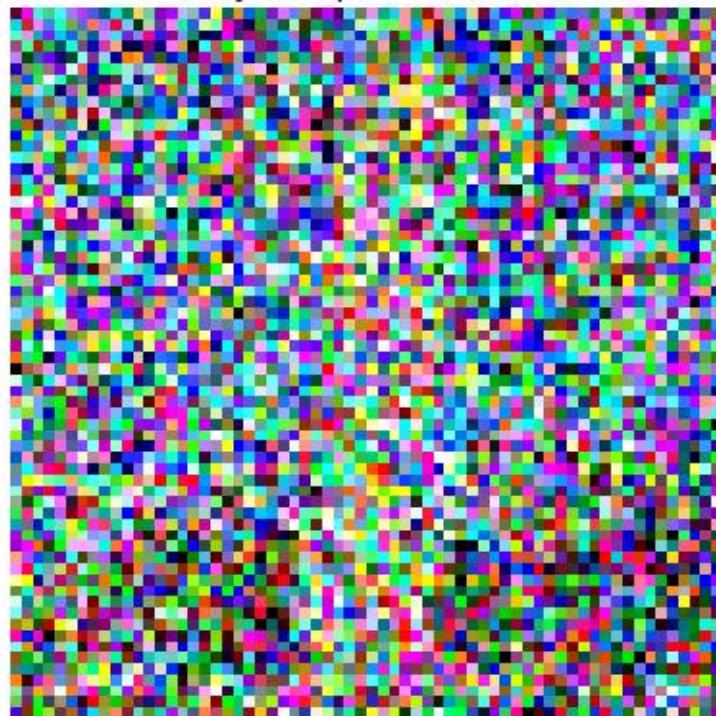
✓ Noisy image at t = 500

Noisy Campanile (t=500)

✓ Noisy image at t = 750
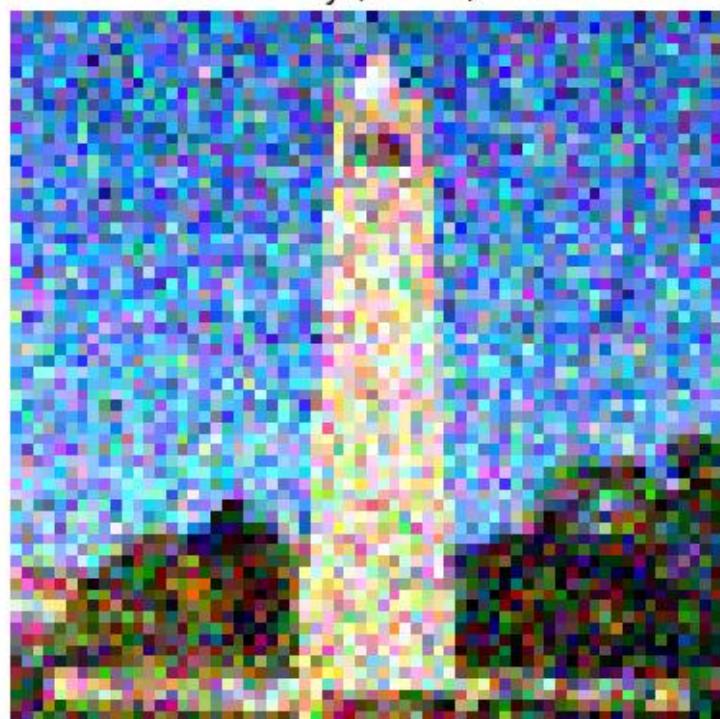
Noisy Campanile (t=750)

1.2 Gaussian Blur Denoising (Traditional Denoising)

✓ Gaussian-denoised image at t = 250

Noisy (t=250)
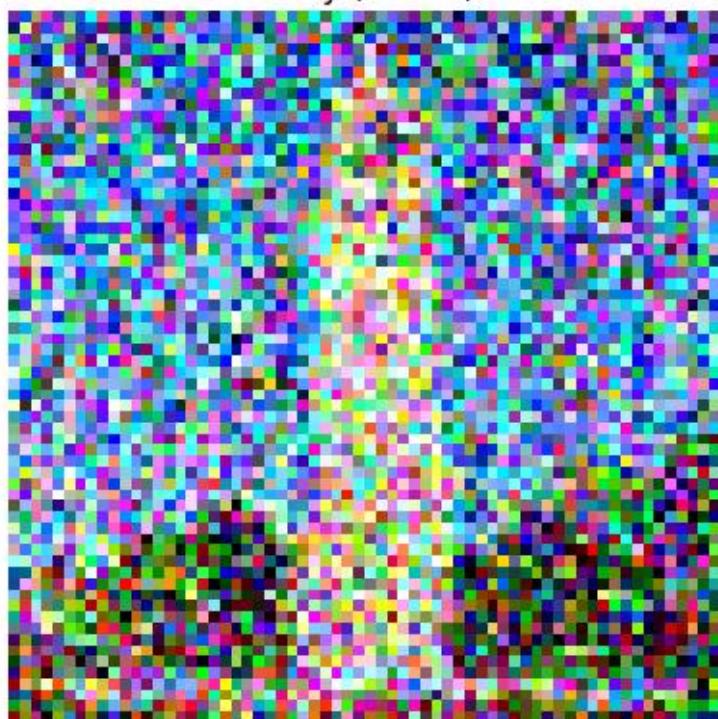
Gaussian Denoised (t=250)
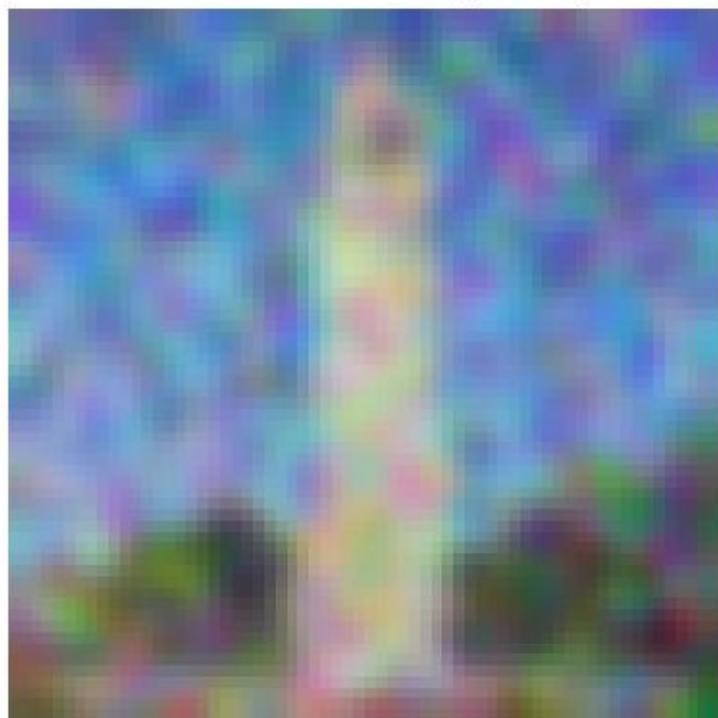
✓ Gaussian-denoised image at t = 500

Noisy (t=500)
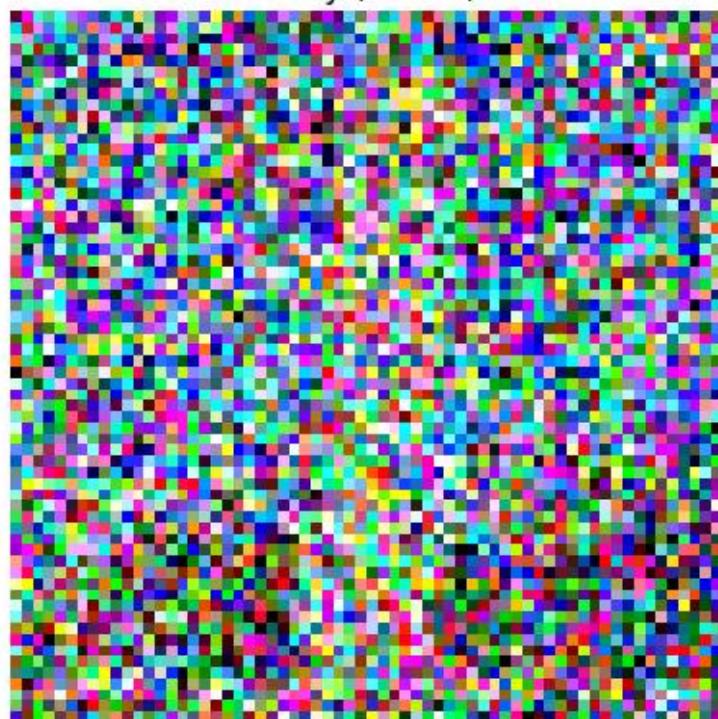
Gaussian Denoised (t=500)
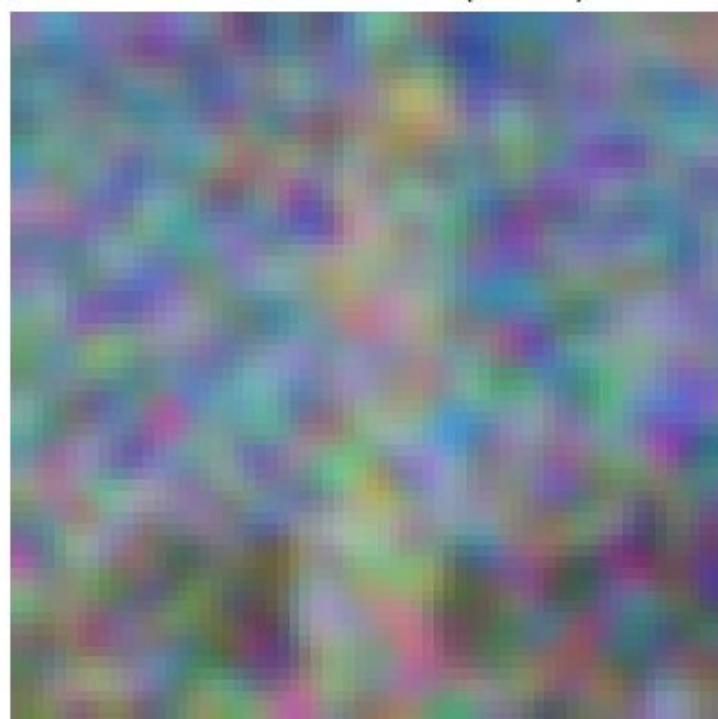
✓ Gaussian-denoised image at t = 750

Noisy (t=750)
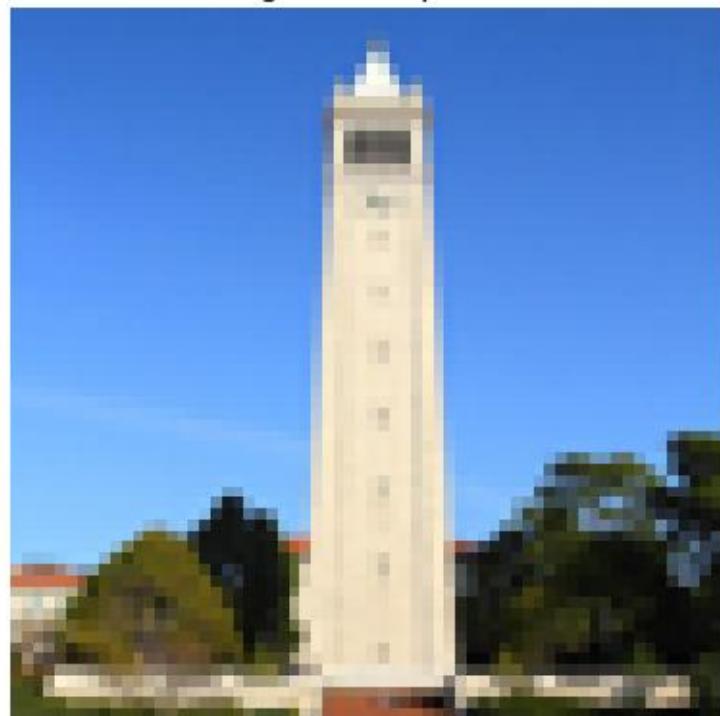

Gaussian Denoised (t=750)
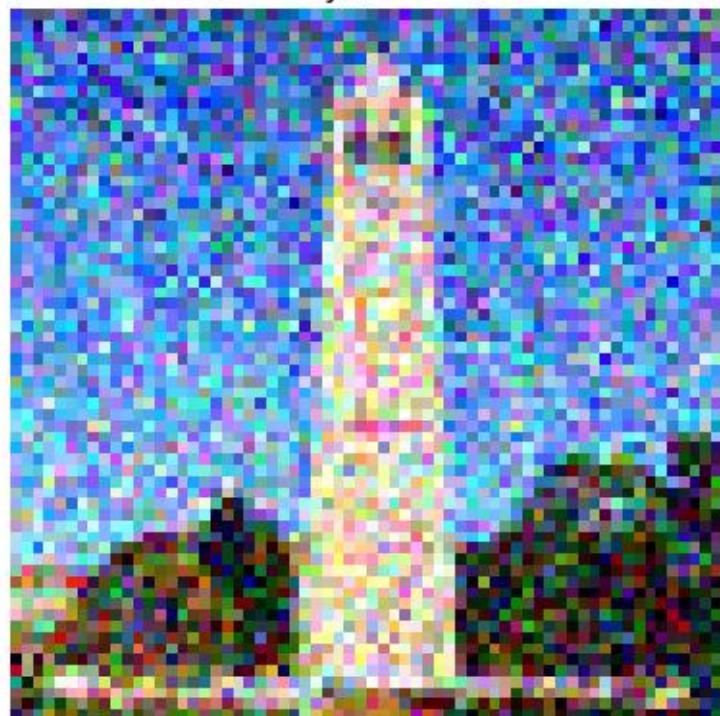
1.3 Single-step Denoising

Original Campanile
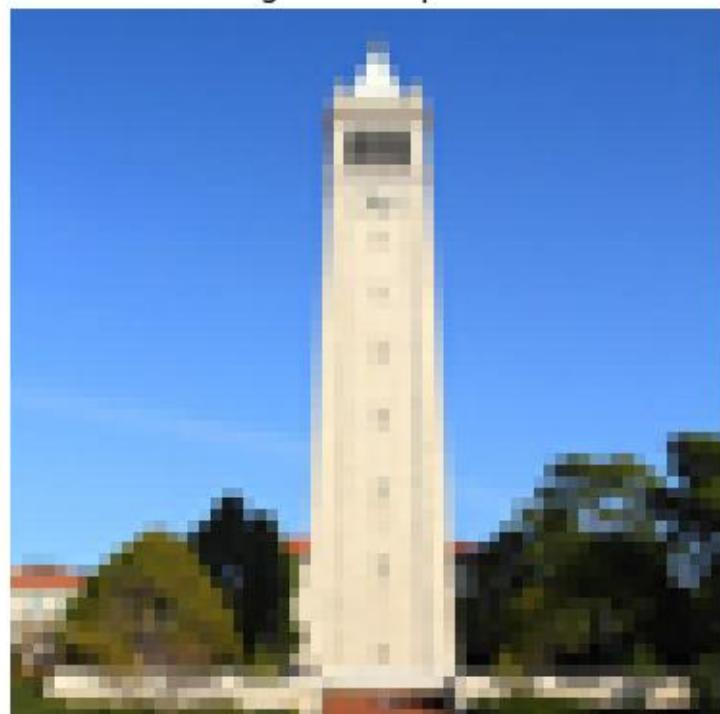
Noisy (t=250)
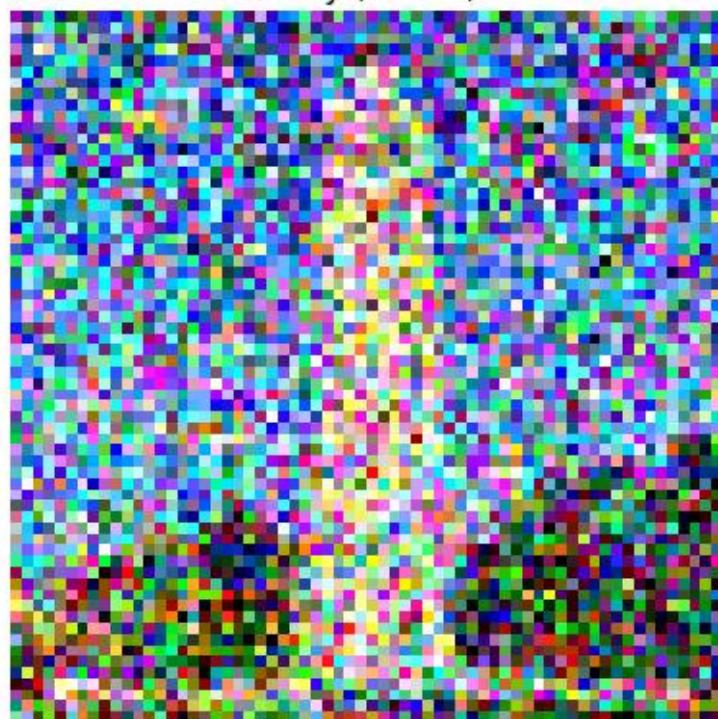
## One-step Denoised (t=250)

Original Campanile
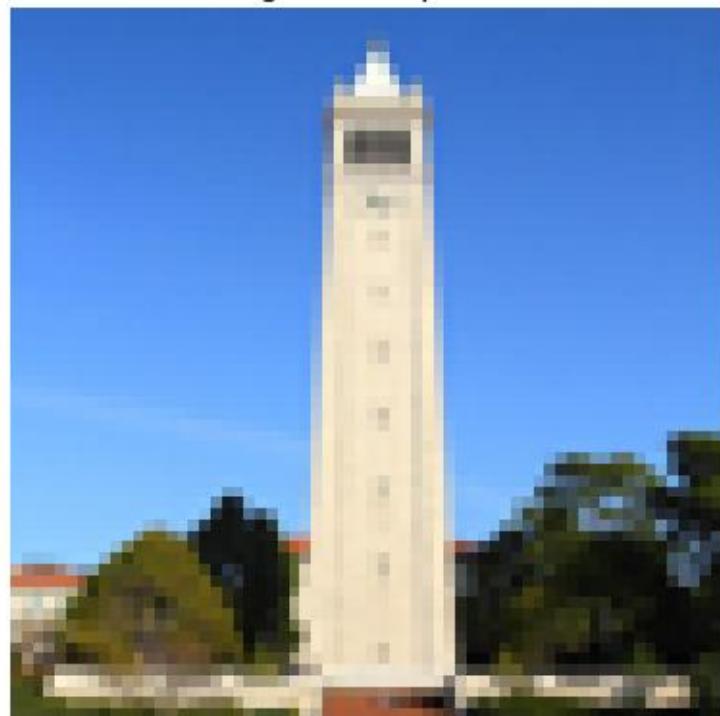
Noisy (t=500)
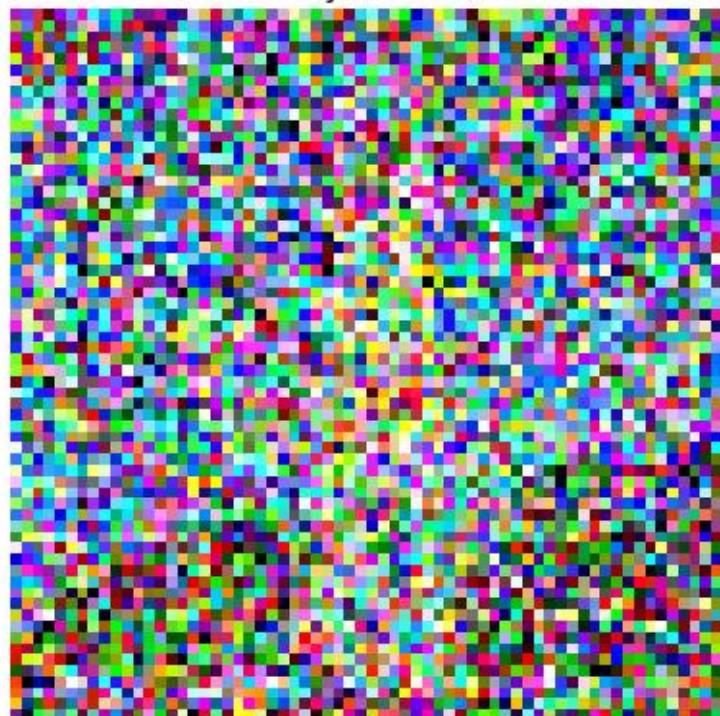
One-step Denoised (t=500)

Original Campanile

Noisy (t=750)
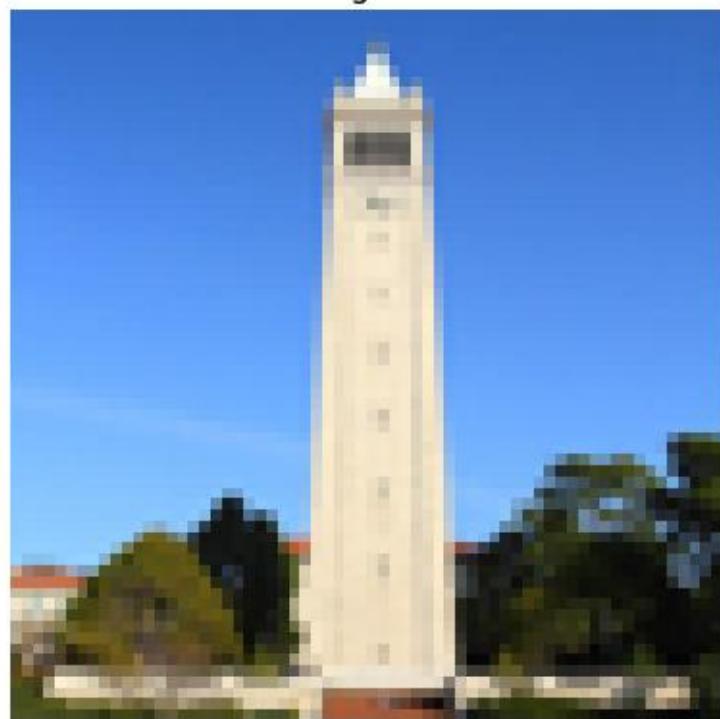
One-step Denoised (t=750)

---
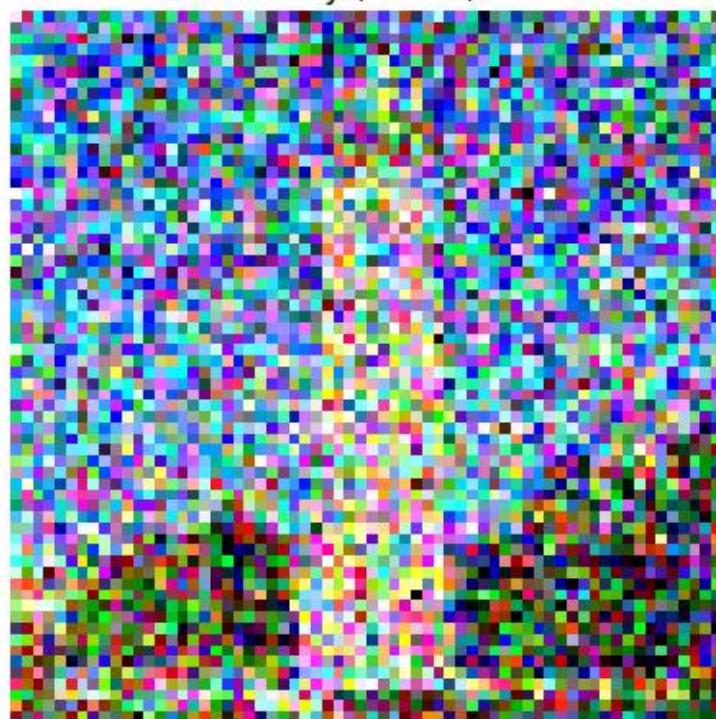
1.4 Iterative Denoising
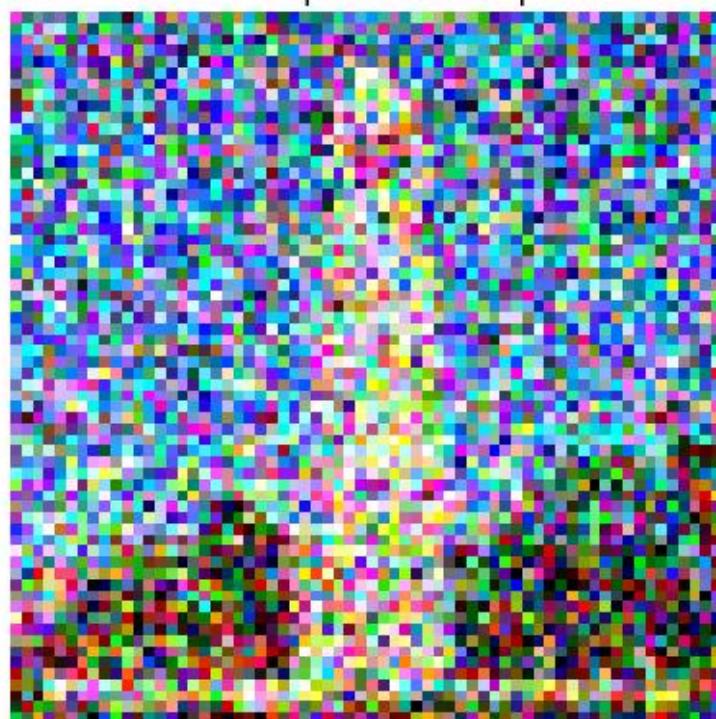

Original

## Noisy (t=500)
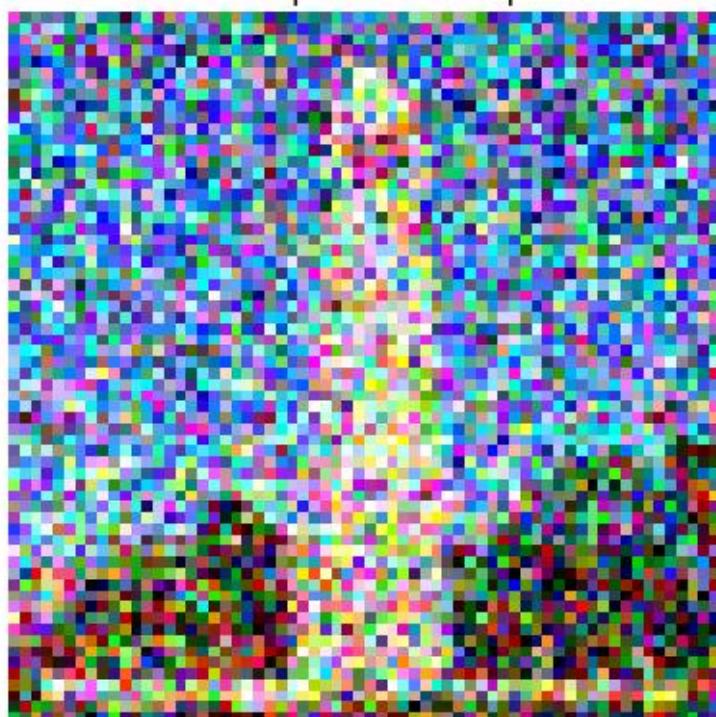
Multi-step denoise step 0
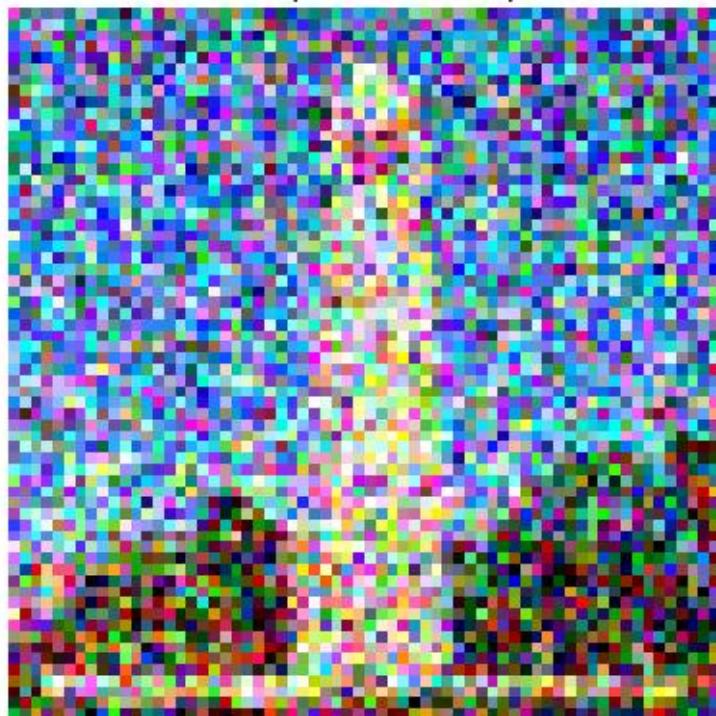
Multi-step denoise step 10
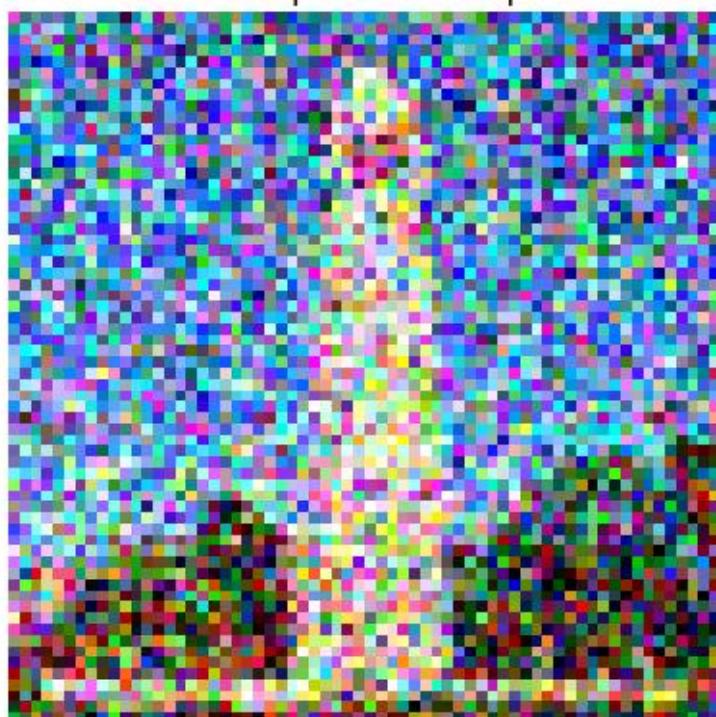
Multi-step denoise step 20
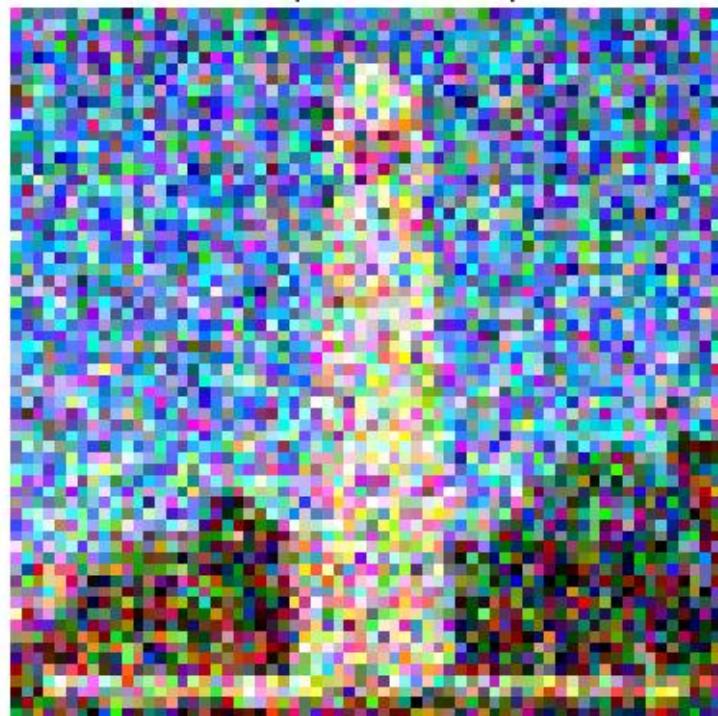
Multi-step denoise step 30

Multi-step denoise step 40

Multi-step denoise step 50

===
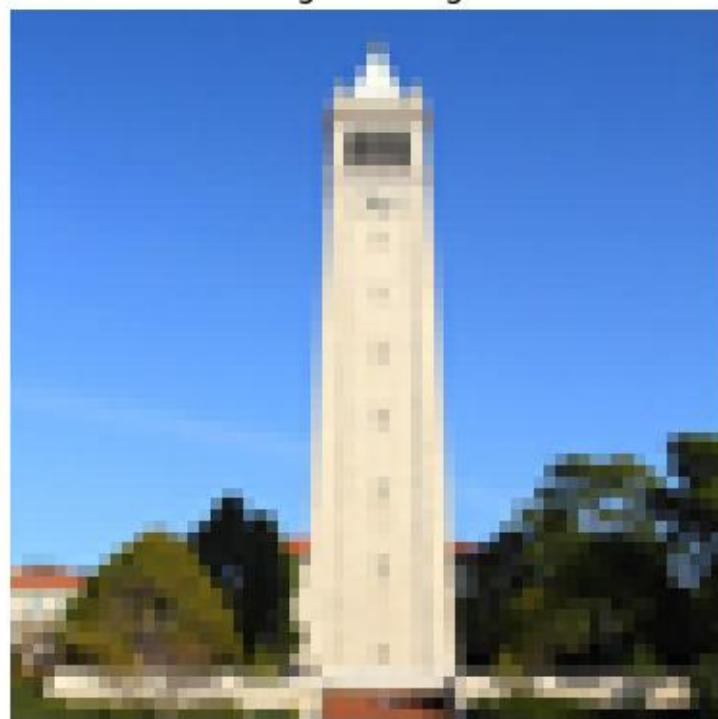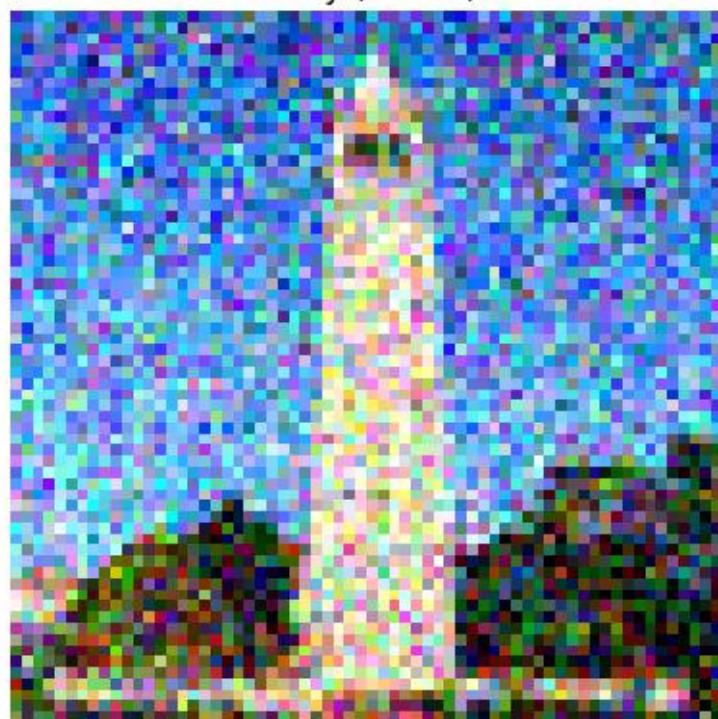
Results for t = 250

===
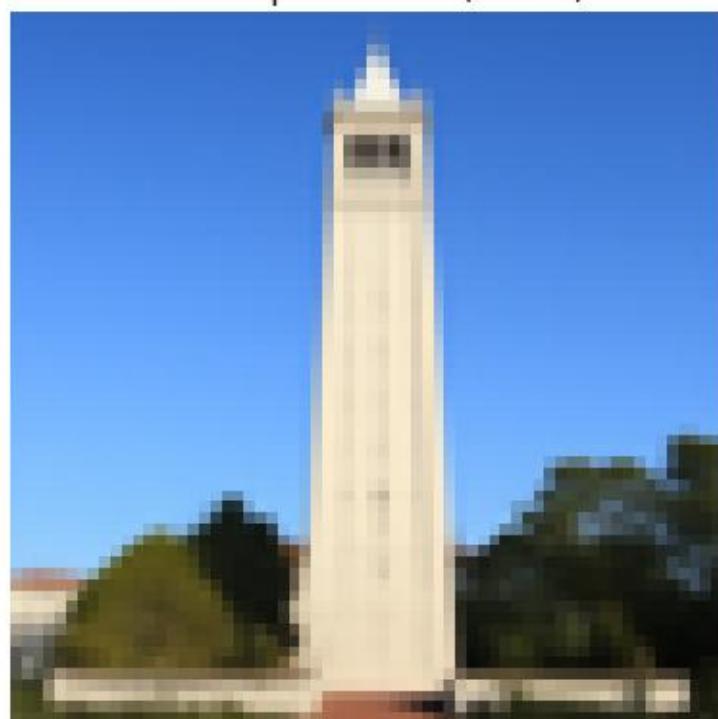
Original Image

Noisy (t=250)
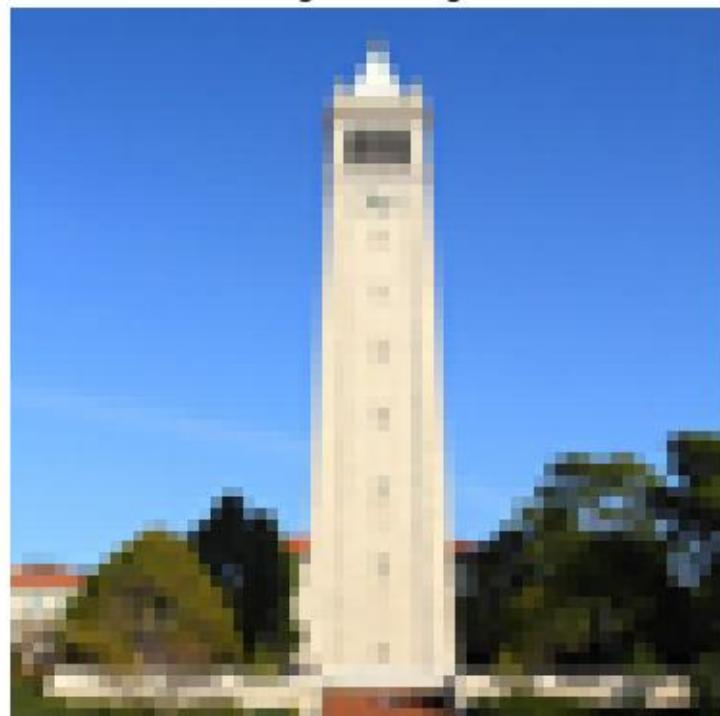
One-step Denoised (t=250)

==
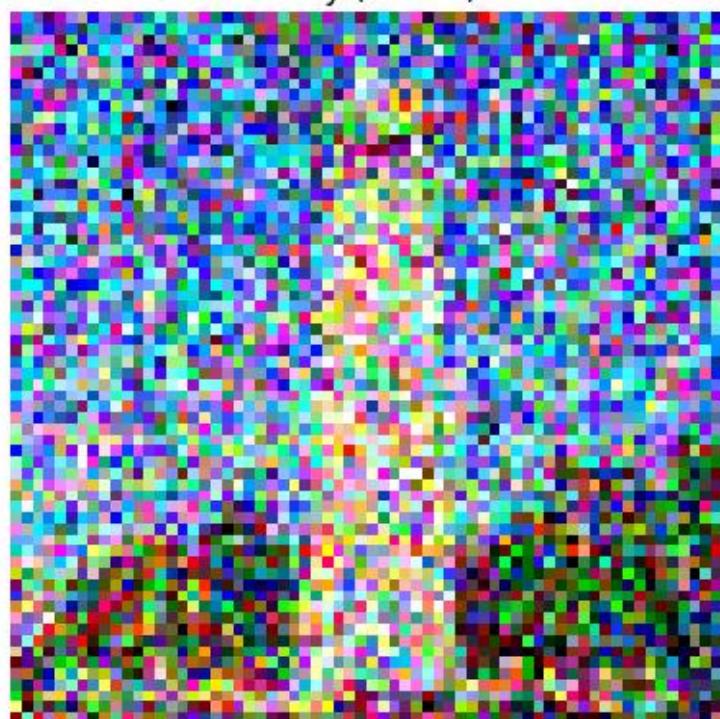
Results for t = 500

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Original Image

Noisy (t=500)

One-step Denoised (t=500)

===
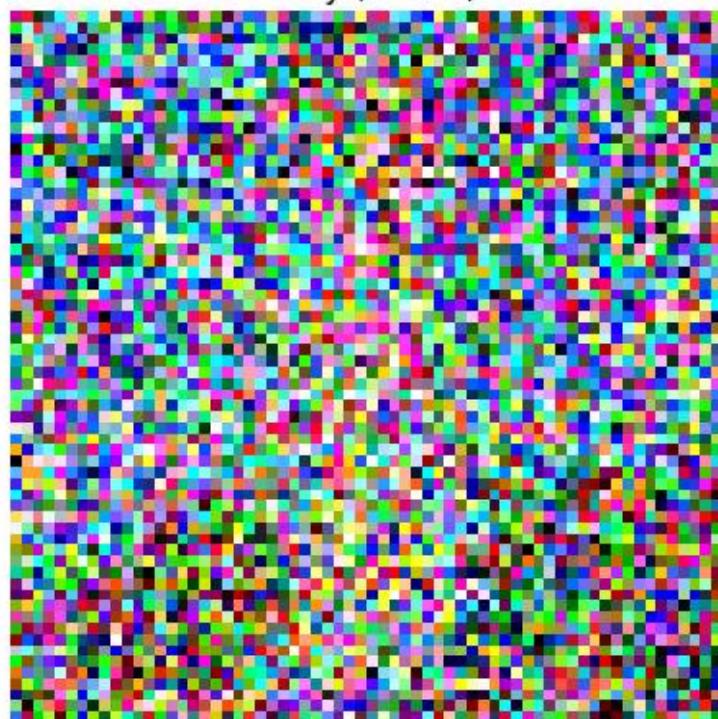
Results for t = 750

===

Original Image

Noisy (t=750)
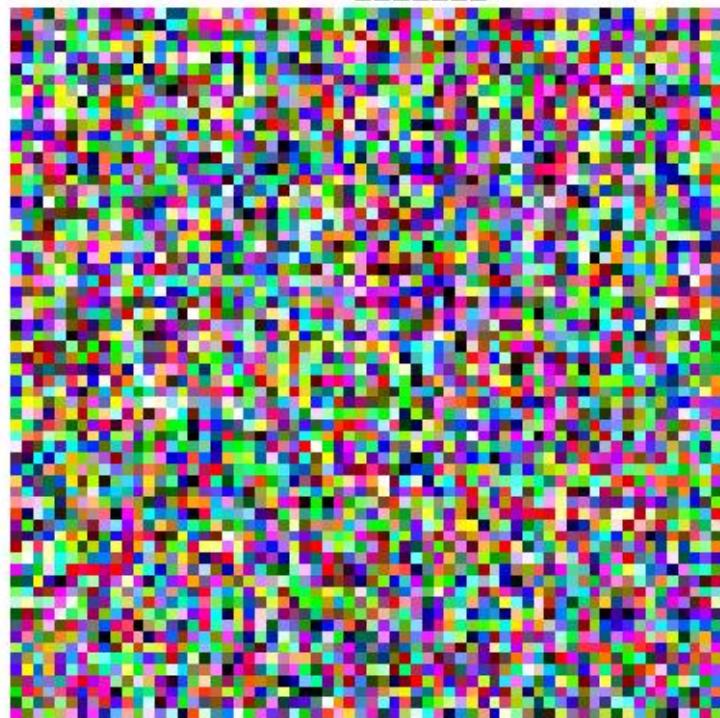
One-step Denoised (t=750)

1.5 Sampling from Noise (Diffusion Model Sampling)
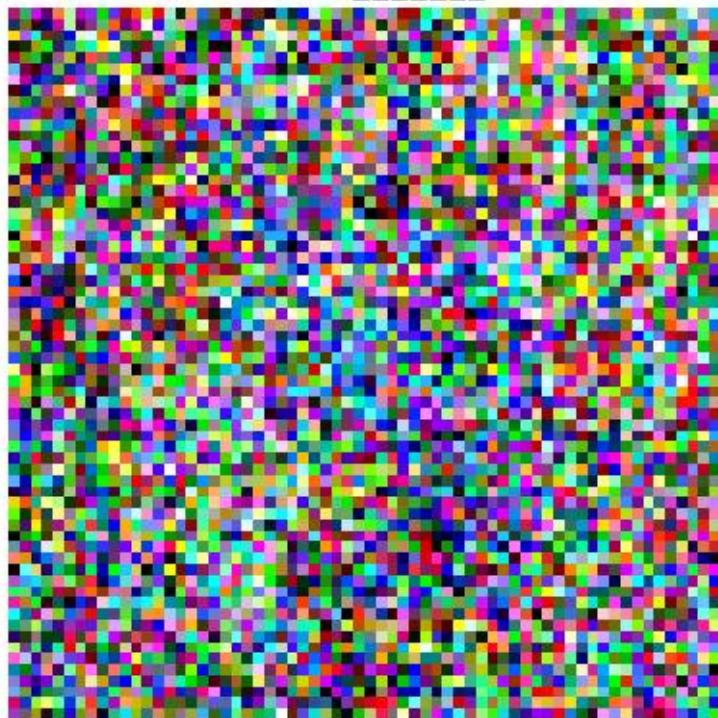
t=999 的随机噪声图像
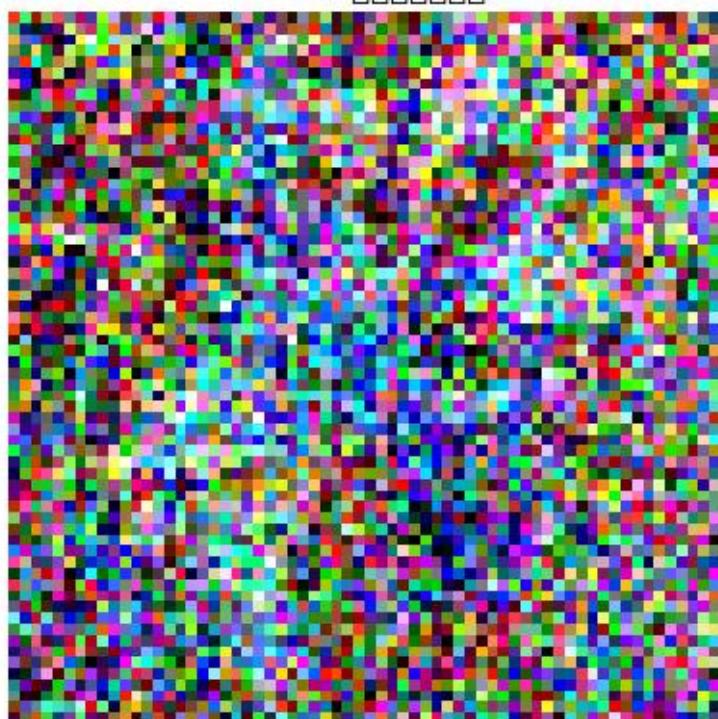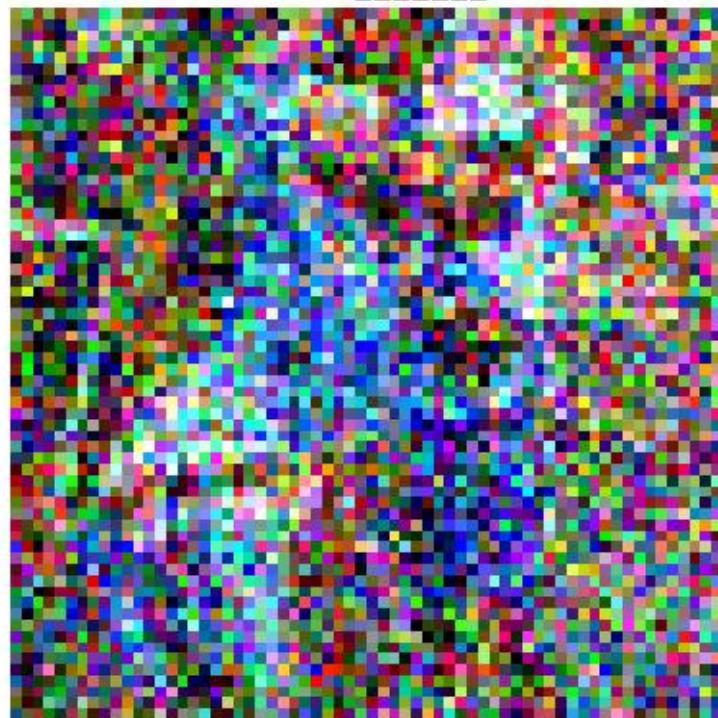
t=856 的随机噪声图像

t=713 のノイズ画像

t=570 のノイズ画像

t=428 ▢▢▢▢▢▢

t=285 ▢▢▢▢▢▢

t=142 的加噪图片

t=0 的加噪图片

原始图像标题

t=500 时的噪声图

t=500 □□□□□□□□□

□□□□□□□□□□□□□ (t=0)

图像 1

图像 2

图片 3

图片 4

样本 5
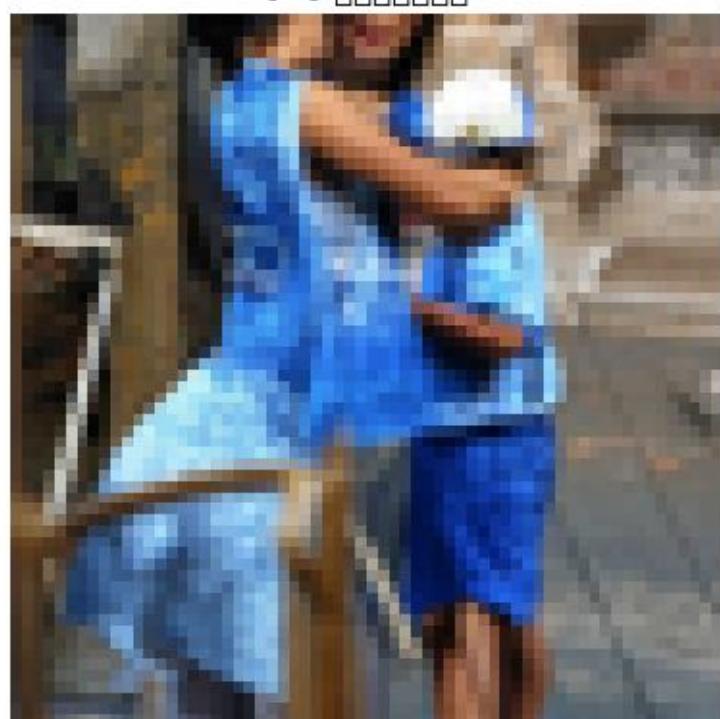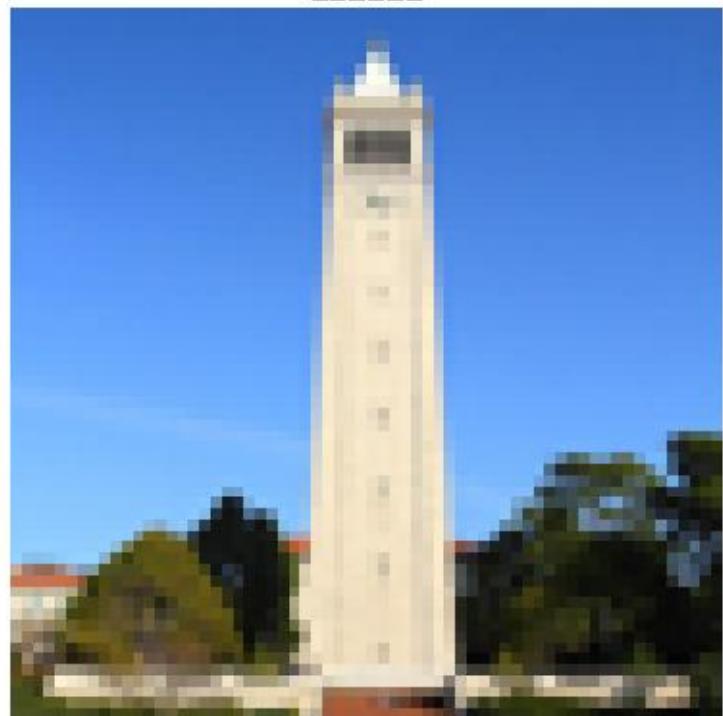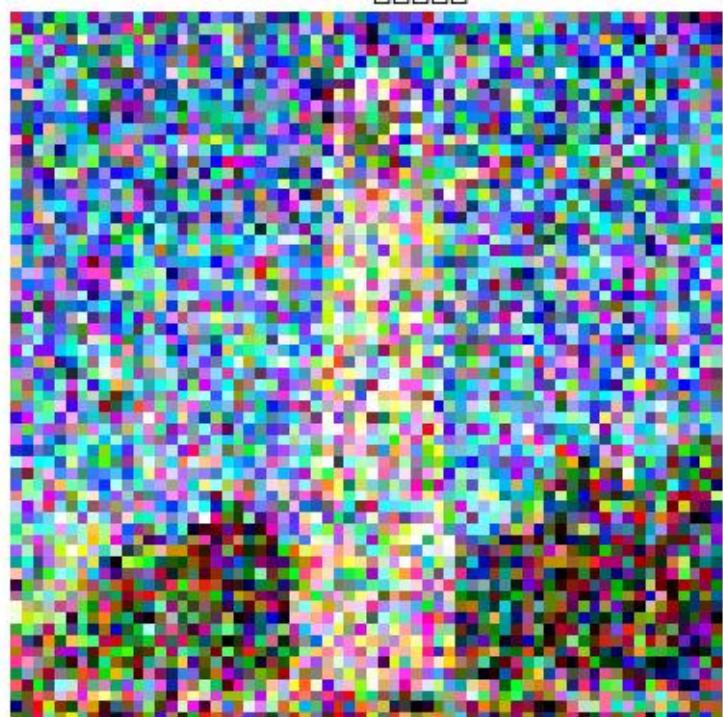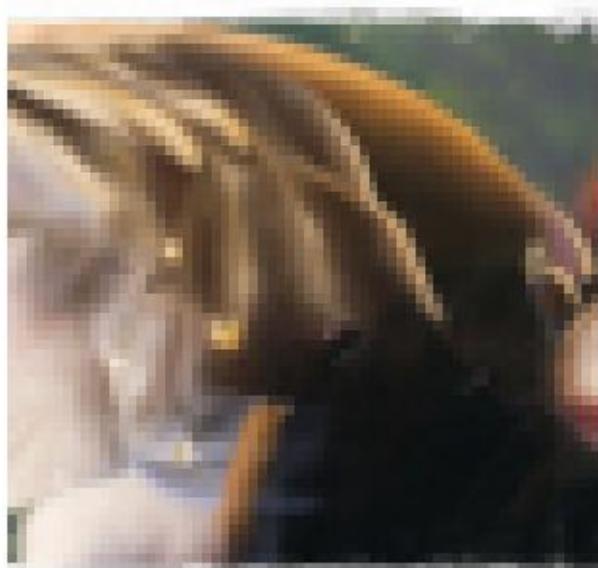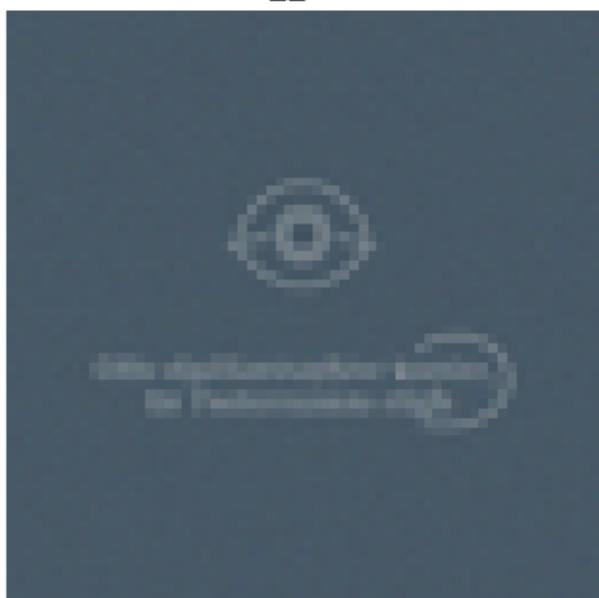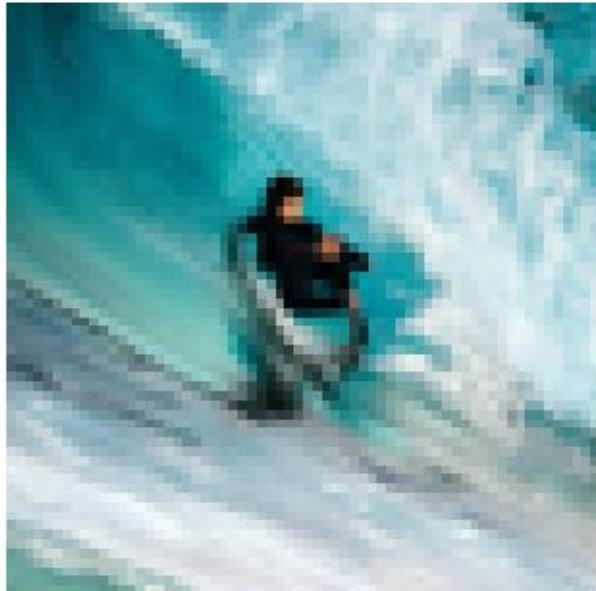
## 1.6 Classifier-Free Guidance (CFG)

Sample 1 with CFG (γ=7)

Sample 2 with CFG (γ=7)

Sample 3 with CFG (γ=7)

Sample 4 with CFG (γ=7)


Sample 5 with CFG (γ=7)
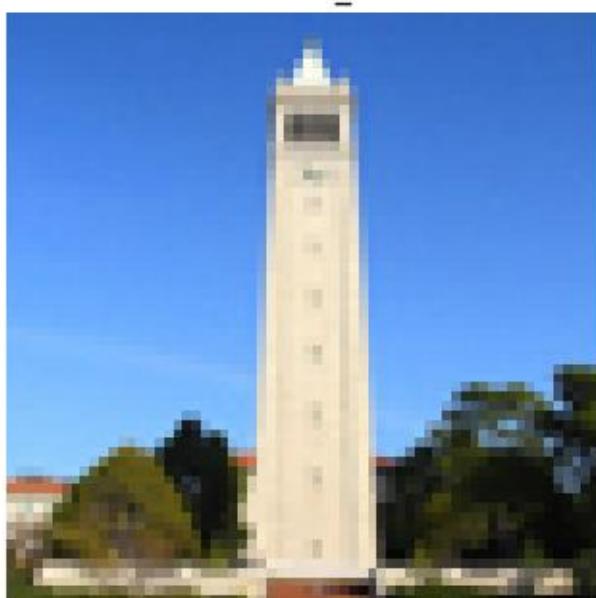
1.7 Image-to-Image Translation (SDEdit)

SDEdit with i_start=1
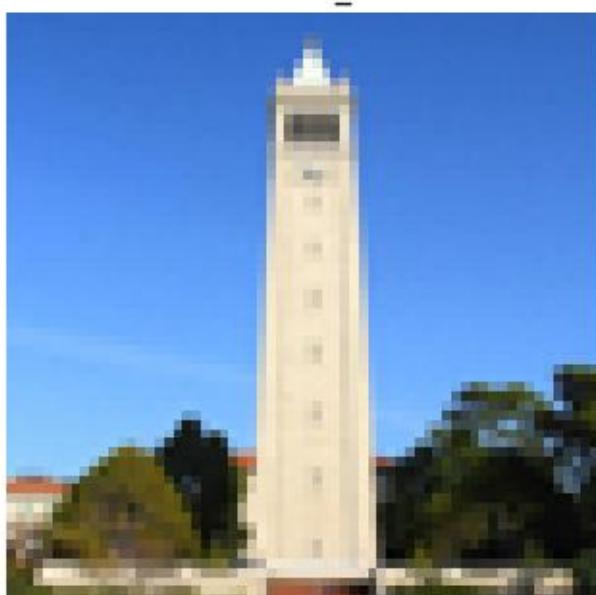
SDEdit with i_start=3

SDEdit with i_start=5

SDEdit with i_start=7

SDEdit with i_start=10

SDEdit with i_start=20
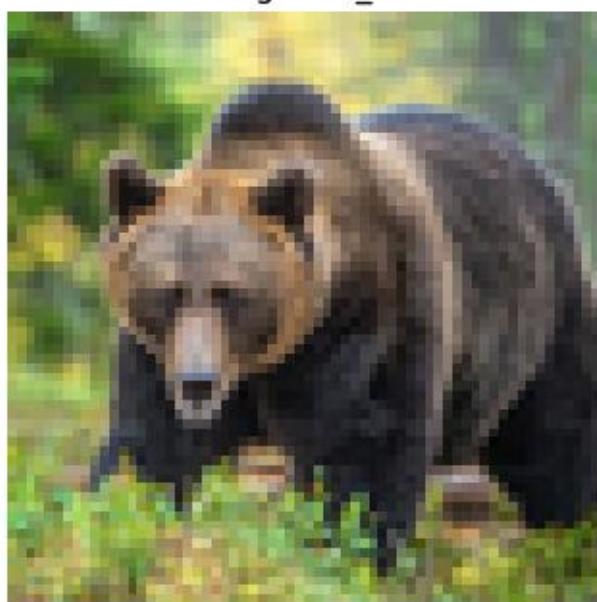
Original Campanile
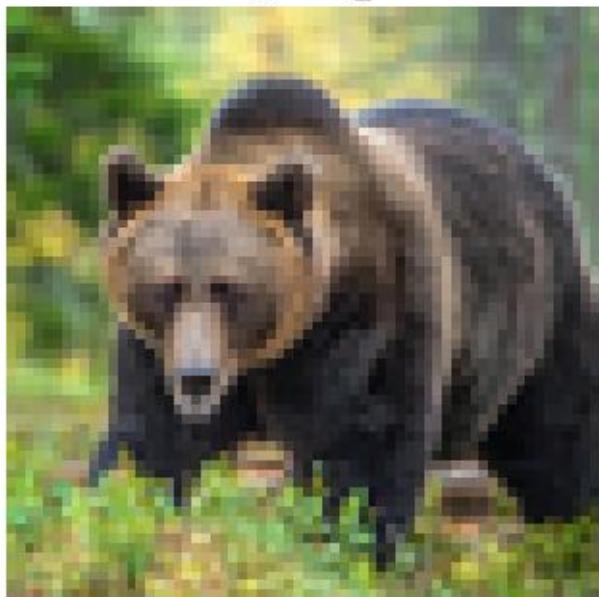
★ 1.7.1 Editing Hand-Drawn + Web Image

(A) One image selected from the internet
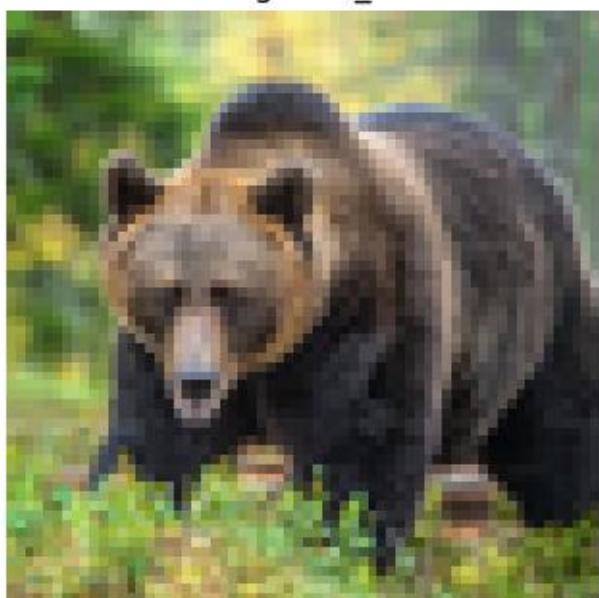
Web image at i_start=1
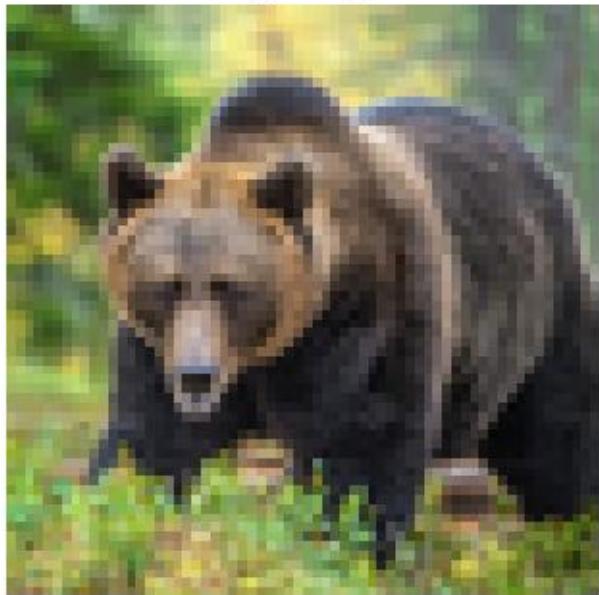
Web image at i_start=3
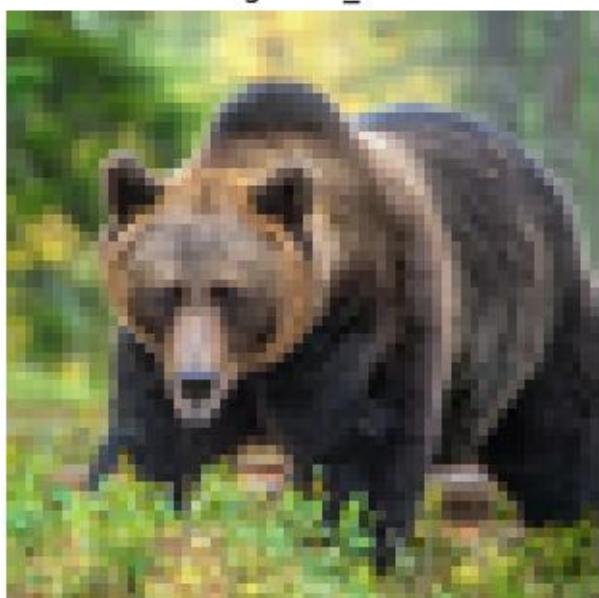
Web image at i_start=5
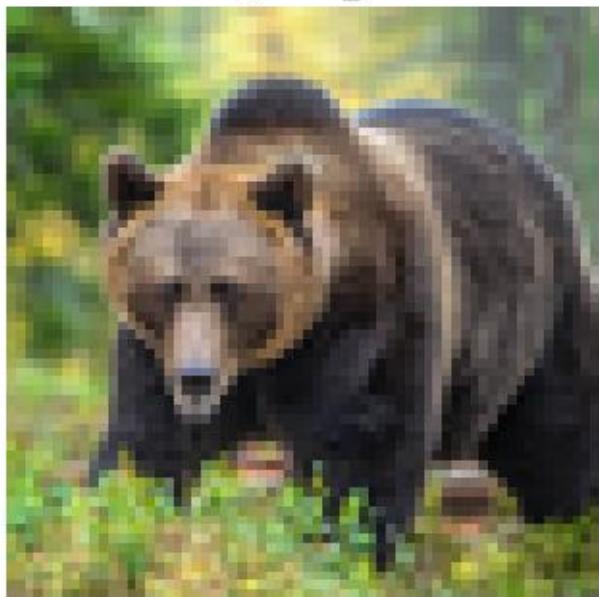
Web image at i_start=7
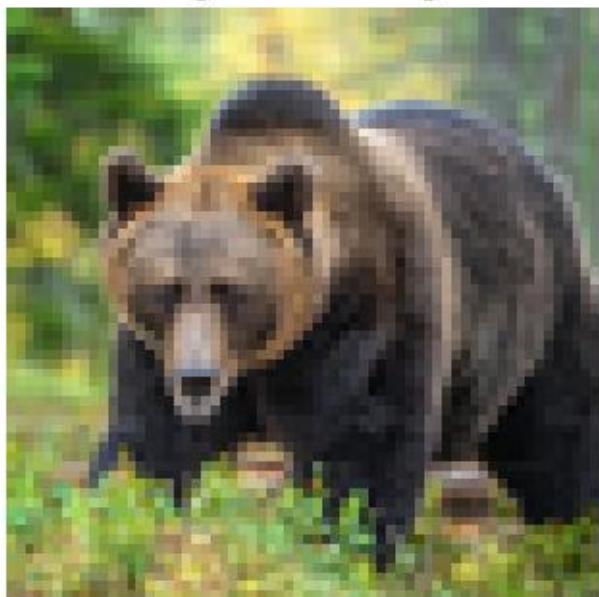
Web image at i_start=10

Web image at i_start=20

Original Web Image

(B) Your own hand-drawn sketch

Sketch at i_start=1

Sketch at i_start=3

Sketch at i_start=5

Sketch at i_start=7

Sketch at i_start=10

Sketch at i_start=20

Original Sketch

Sketch at i_start=1

Sketch at i_start=3

Sketch at i_start=5
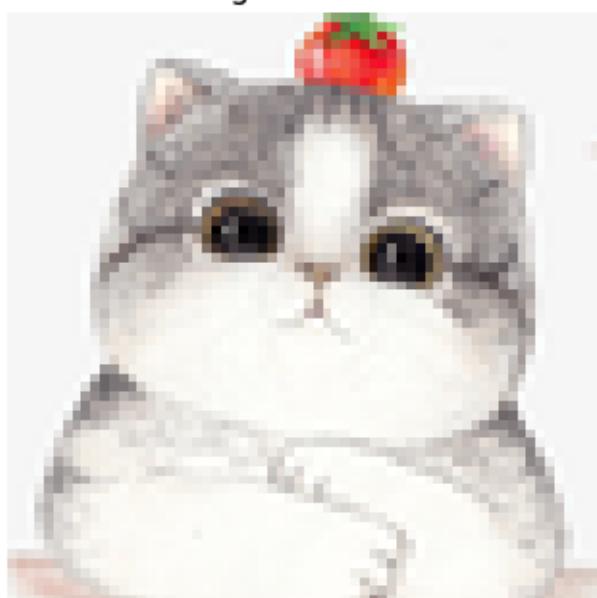
Sketch at i_start=7

Sketch at i_start=10

Sketch at i_start=20
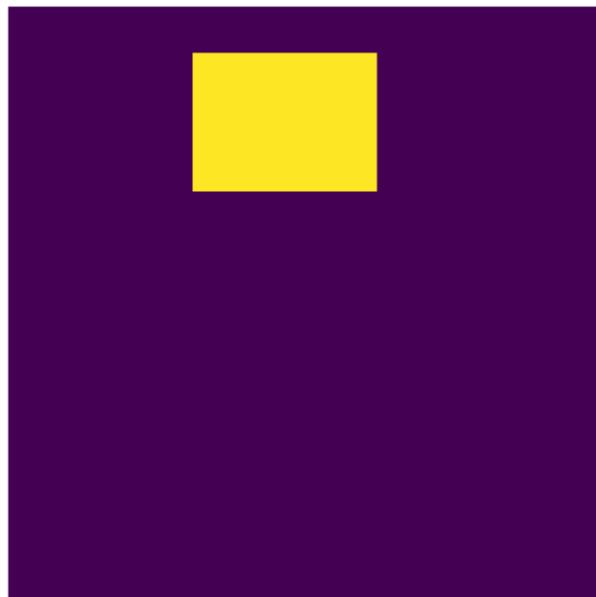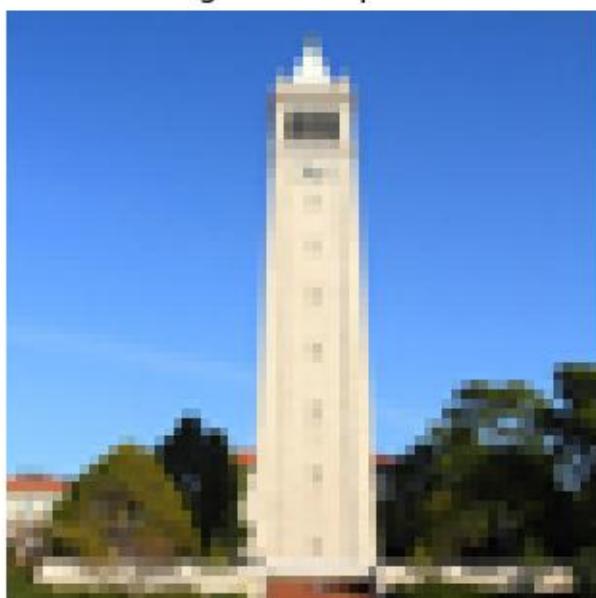
Original Sketch

★ 1.7.2 Inpainting
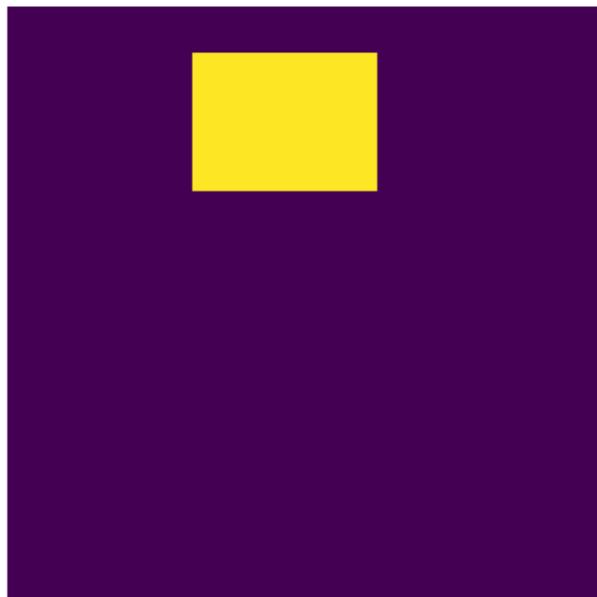
Inpainting Mask
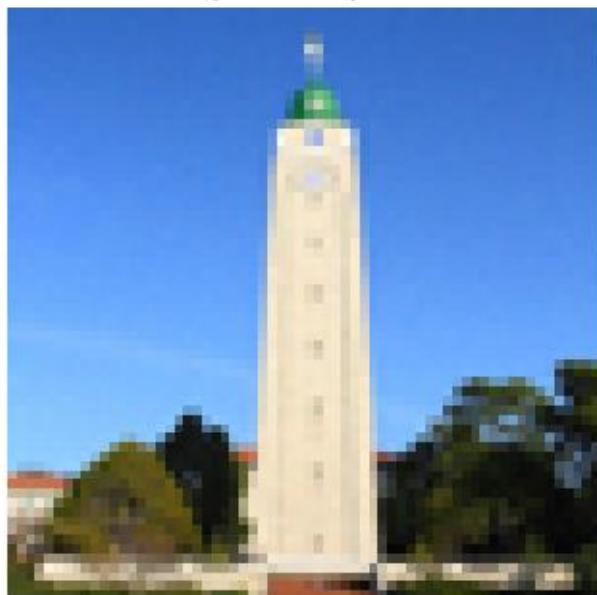


Original Campanile

Mask (white = fill)

Campanile Inpainted


Do inpainting on two additional images of your own.

Original: /content/drive/MyDrive/1805A/sketch1.png
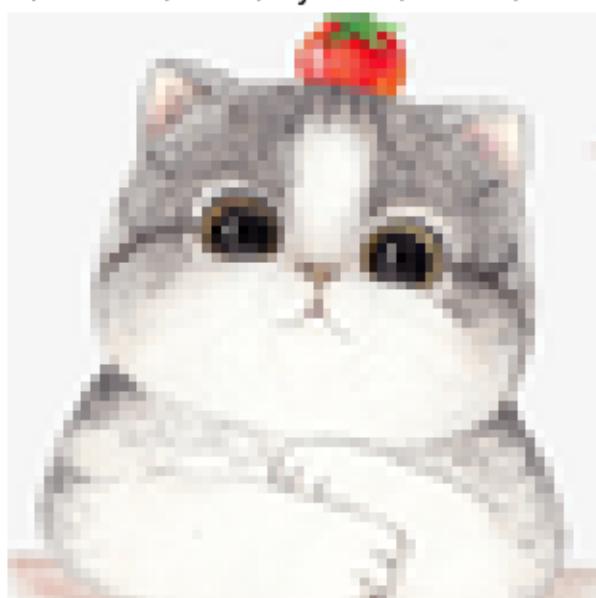
Mask

Inpainted Result

Original: /content/drive/MyDrive/1805A/sketch2.png

Mask

Inpainted Result

1.7.3 Text-guided Image-to-Image Transformation

(A)   Campanile + Text condition

(B)   Two test images of your choice

=== Editing: /content/drive/MyDrive/1805A/sketch1.png

=== Editing: /content/drive/MyDrive/1805A/sketch2.png
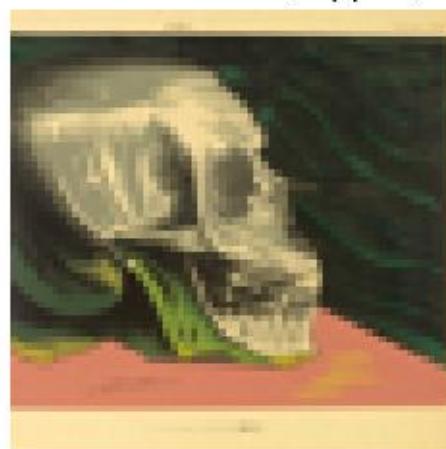
1.8 Visual Anagrams

Illusion 2: waterfalls (upright)

Illusion 2: skull (flipped)

1.9 Hybrid Images

Waterfalls (low) + Skull (high)