

OpenSW Team Project

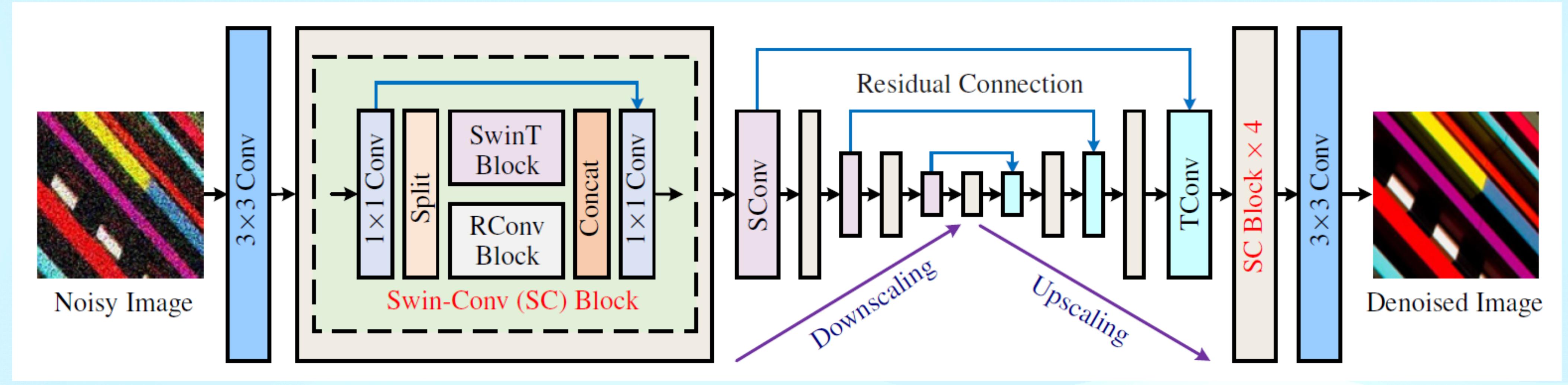
Practical Blind Denoting via SCUNet

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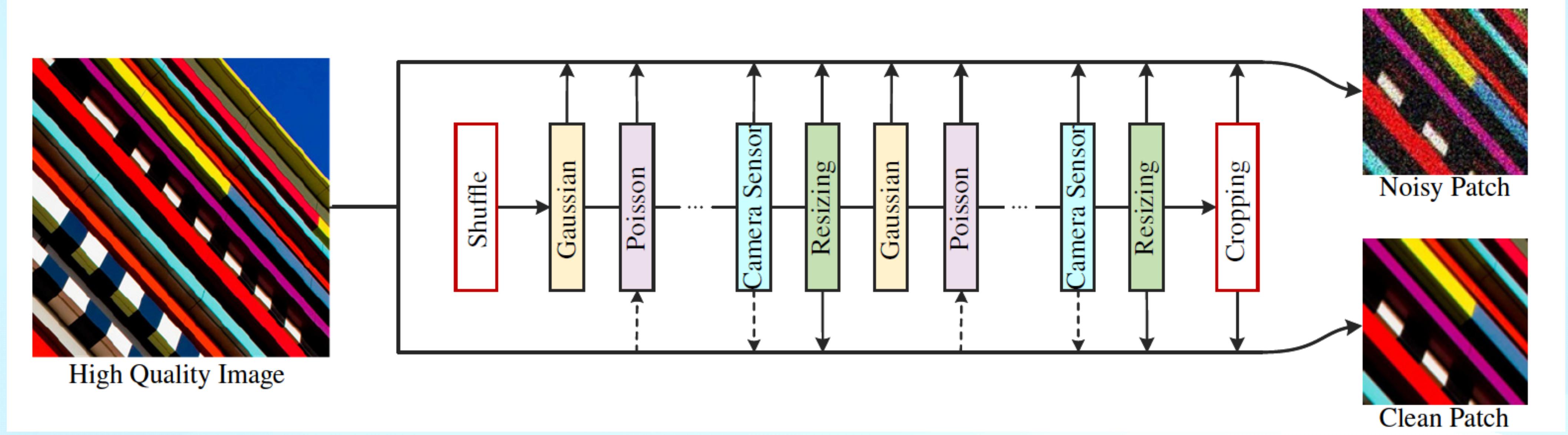
Research Topic Introduction

SCUNet

- Stable Diffusion Upscaler의 종류 중 하나
 - AI 기반 저해상도 이미지의 해상도를 높이는 알고리즘
- 이미지 초해상도를 위한 딥러닝 기반 알고리즘
- 비교적 매개변수가 적고, 속도가 빠름
- 저해상도 이미지를 처리하도록 설계됨
- 확대된 이미지의 시각적 품질을 향상시키는 데에 효과적



- Swin-Conv (SC) 블록을 UNet 구조의 주요 구성 요소로 활용
 - 입력을 1×1 합성곱에 통과
 - 두 개의 피쳐 맵 그룹으로 균등하게 분할
 - 각 그룹을 Swin Transformer 블록과 3×3 합성곱 블록으로 전달
- SwinT 블록과 RConv 블록의 출력은 결합
- 다시 1×1 합성곱을 통과하여 입력의 잔여값을 생성



- Paired training patch synthesis pipeline
 - Degradation sequence
 - 노이즈가 있는 이미지를 생성
 - 크기를 조정
 - 역-정방향 톤 매핑 적용

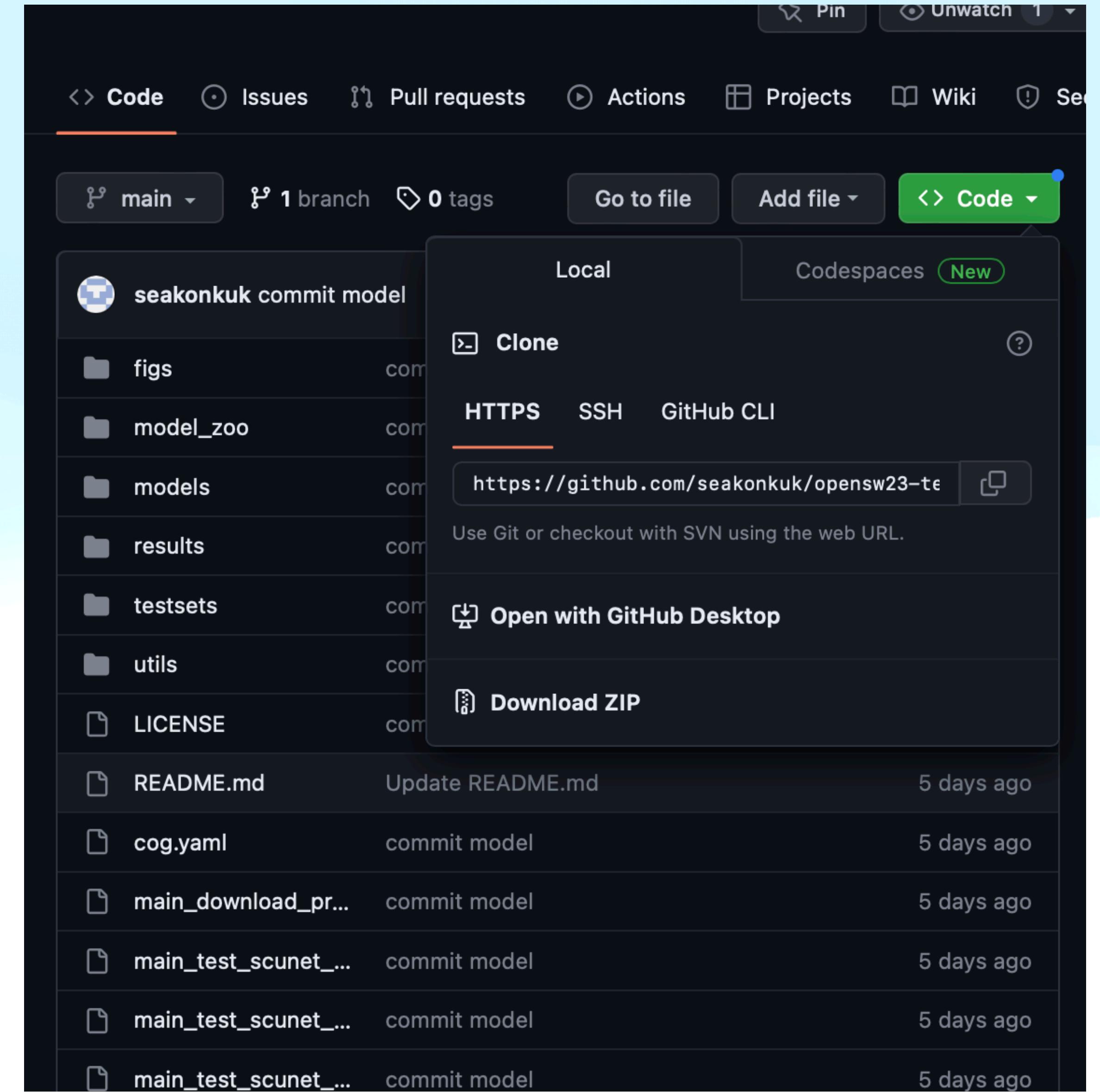


scUNet

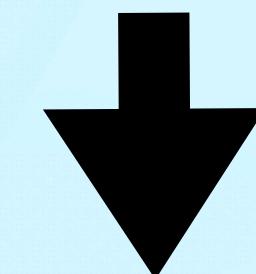
Installation Instructions

Git clone

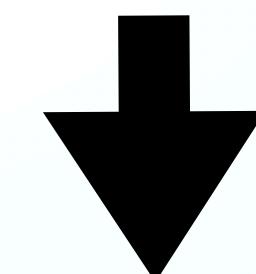
해당 깃허브 주소를 clone



Gaussian denoising
- gray scale image

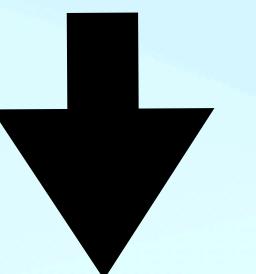


testsets/set12

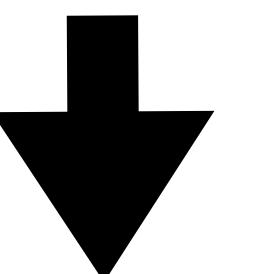


**results/
set12_scunet_gray_25**

Gaussian denoising
- color image

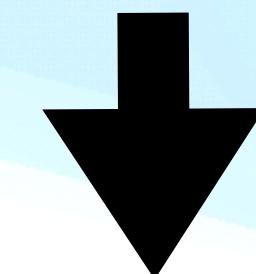


testsets/bsd68

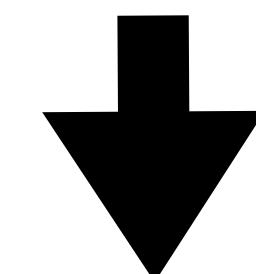


**results/
bsd68_scunet_color_25**

**Blind real image
denoising**



testsets/real3



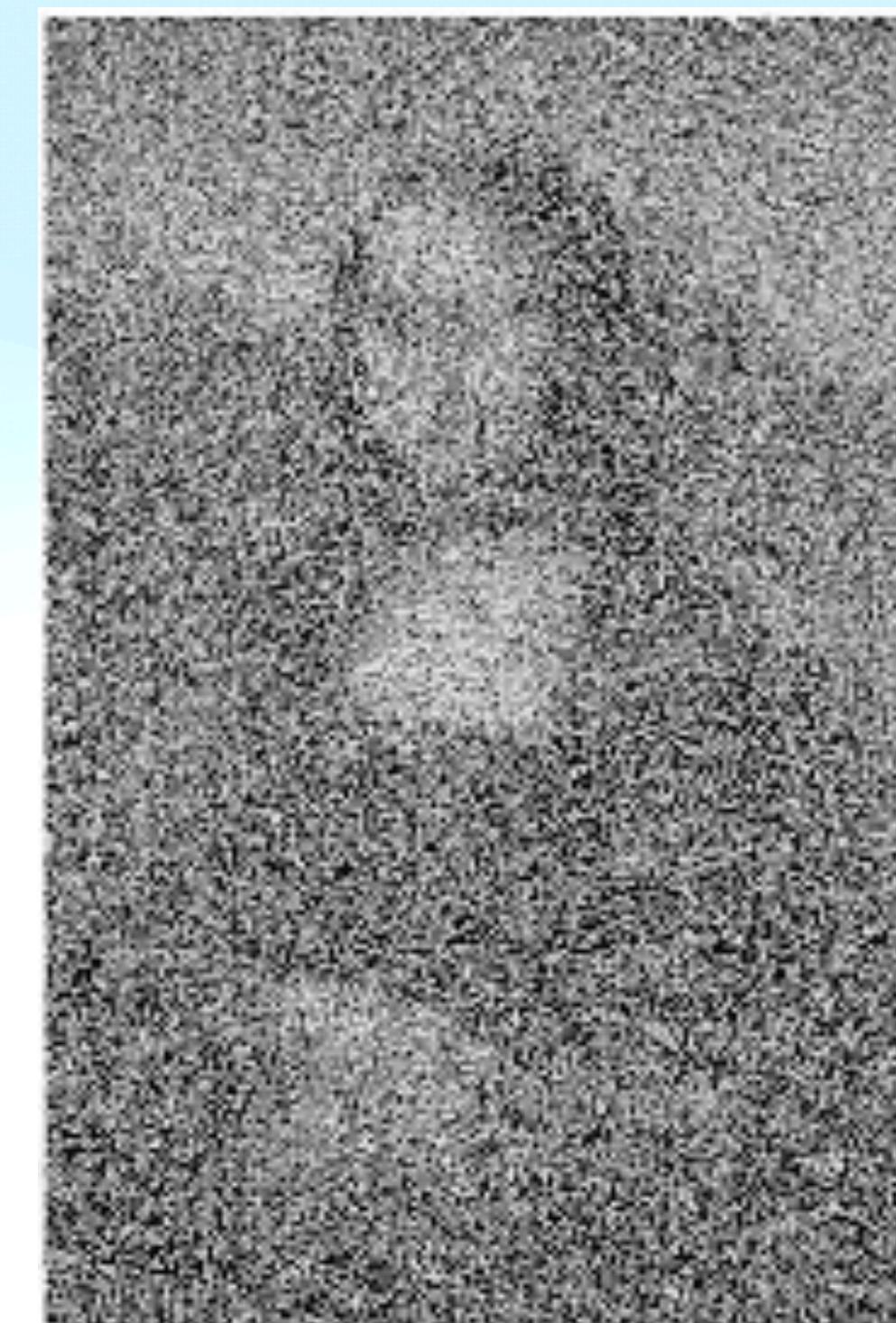
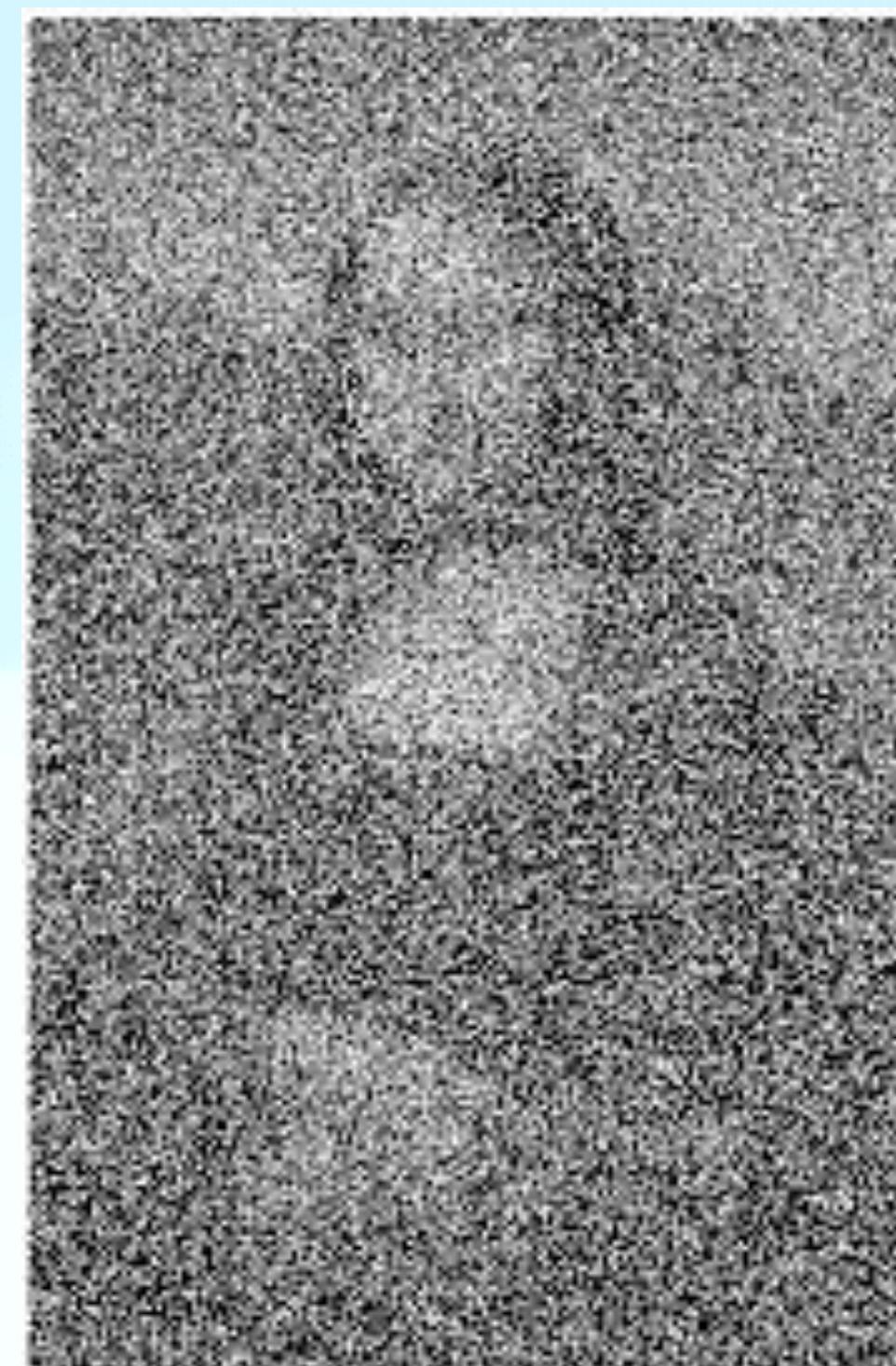
**results/
real3_scunet_color_real
_psnr**

Results & Analysis

Gaussian Denoising - gray scale image



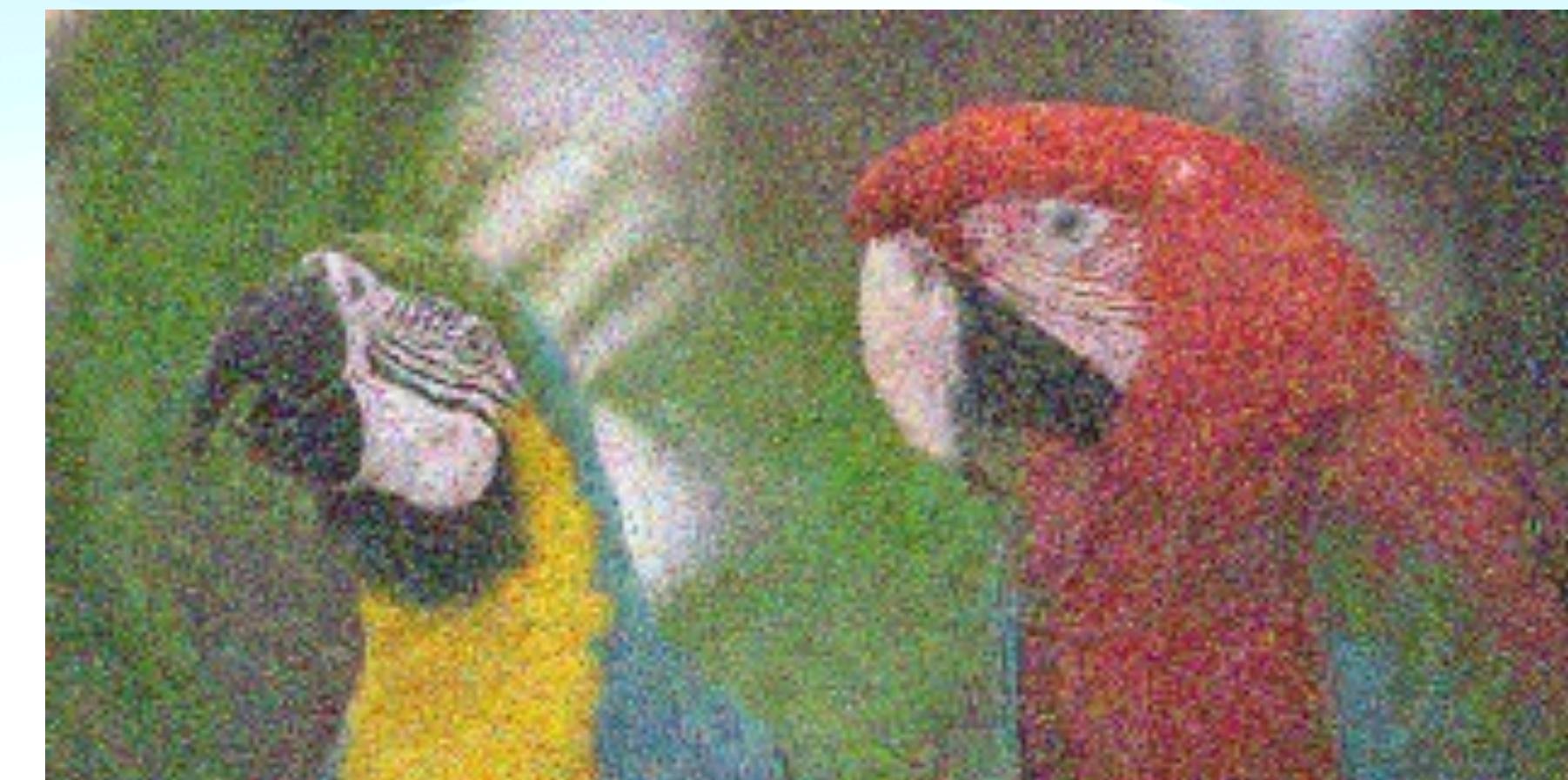
Gaussian Denoising - gray scale image



Gaussian Denoising - color image



Gaussian Denoising - color image



Blind real image denoising



Blind real image denoising



Discussion or Thoughts

감사합니다