DATA:

- 500 X-ray images with shape 256 x 256
- Train: 350 images
- Test: 150 images

VDSR network:

- Input: 256 x 256 low-resolution image
- Output: 256 x 256 high-resolution image
- Architecture:
  - 20 convolution layers with 64 filters 3x3 and Relu activation function
  - 1 residual layer (Elementwise sum)

SRGAN network:

- Input: 64 x 64 low-resolution image
- Output: 256 x 256 high-resolution image
- Generator Architecture:
  - 1 convolution layer with 64 filters 9x9 and PRelu activation function
  - 16 residual blocks including 2 convolution layers with 64 filters 3x3, PRelu activation function and Batch normalization layer
  - 1 convolution layer with 64 filters 3x3 and Batch normalization layer
  - Elementwise sum layer
  - 2 Up-sampling blocks
  - 1 convolution layer with 3 filters 9x9 and tanh activation function

- Discriminative Architecture:
  - 1 convolution layer with 64 filters 3x3 and Leaky Relu activation function
  - 7 convolution blocks including 1 convolution layer with Leaky Relu activation function and Batch normalization
  - 1 dense layer with 1024 nodes
  - 1 Leaky Relu activation layer

    - 1 dense layer with 1 node
    - Sigmoid activation layer

New Network (VDSR + SRGAN):

- Input: 128 x 128 low-resolution image
- Output: 256 x 256 high-resolution image
- Generator Architecture:
    - 1 convolution layer with 64 filters 9x9 and PRelu activation function
    - 8 residual blocks including 2 convolution layers with 64 filters 3x3, PRelu activation function and Batch normalization layer
    - 20 convolution layers with 64 filters 3x3 and PRelu activation function
    - 1 Batch normalization layer
    - 1 residual layer (Elementwise sum)
    - 1 convolution layer with 3 filter 3x3 and Tanh activation function (sharpening layer)
    - 1 Up-sampling block
    - 1 convolution layer with 16 filters 3x3 and PRelu activation function
    - 1 convolution layer with 3 filters 5x5 and Tanh activation function

- Discriminative Architecture:
    - 1 convolution layer with 64 filters 3x3 and Leaky Relu activation function
    - 7 convolution blocks including 1 convolution layer with Leaky Relu activation function and Batch normalization
    - 1 dense layer with 1024 nodes
    - 1 Leaky Relu activation layer
    - 1 dense layer with 1 node
    - Sigmoid activation layer

Model/evaluation	PSNR	UQI	SSIM	MS-SSIM
VDSR	28.80188	0.986009	0.912259	0.972789
SRGAN	27.24132	0.956506	0.801246	0.953419
NEW	28.43138	0.957970	0.828199	0.961132

Some examples of outputs from VDSR, SRGAN and new model:

Low- resolution image	VDSR output	SRGAN output	New model output	High-resolution image