

# GNR 638: Mini Project 2

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## Model Architecture

The code for model architecture is shown below

```
class SimpleAE(nn.Module):
    def __init__(self):
        super(SimpleAE, self).__init__()

        self.encoder = nn.Sequential(
            nn.Conv2d(3, 32, kernel_size=5),
            nn.ReLU(True),
            nn.Conv2d(32, 64, kernel_size=5),
            nn.ReLU(True))
        self.decoder = nn.Sequential(
            nn.ConvTranspose2d(64, 32, kernel_size=5),
            nn.ReLU(True),
            nn.ConvTranspose2d(32, 3, kernel_size=5),
            nn.ReLU(True))

    def forward(self, x):
        x = self.encoder(x)
        x = self.decoder(x)
        return x
```

## Training Detail

Code for adding the noise

```
for i, img in tqdm(enumerate(images), total=len(images)):
    img = cv2.imread(f"{src_dir}/{images[i]}")
    # add gaussian blurring
    blur = cv2.GaussianBlur(img, (11,11), 1.6)
    cv2.imwrite(f"{dst_dir}/{images[i]}", blur)

print('DONE')
```

Loss function used: MSE loss

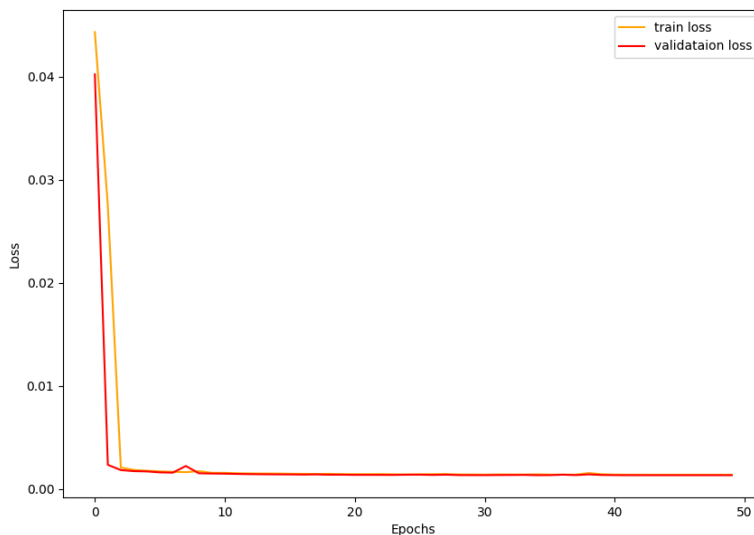
Optimizer: Adam with learning rate 1e-3

Scheduler used: ReduceLROnPlateau

Epochs: 50

Device: CPU

## Training Curve



## Qualitative Results

For comparison we have published a few test results for comparison

Actual sharp images



Sharp images generated by the model



## Quantitative Results

Average PSNR between corresponding images: 23.569125827135732 dB