**Model Performance Records**

**Student Model v6**

Starting evaluation...

----------------------------------------------------------------

Layer (type) Output Shape Param #

================================================================

Conv2d-1 [-1, 48, 64, 64] 1,344

PixelShuffle-2 [-1, 3, 256, 256] 0

Conv2d-3 [-1, 64, 256, 256] 1,792

ReLU-4 [-1, 64, 256, 256] 0

Conv2d-5 [-1, 64, 256, 256] 36,928

Conv2d-6 [-1, 3, 256, 256] 1,731

================================================================

Total params: 41,795

Trainable params: 41,795

Non-trainable params: 0

----------------------------------------------------------------

Input size (MB): 0.05

Forward/backward pass size (MB): 100.50

Params size (MB): 0.16

Estimated Total Size (MB): 100.71

----------------------------------------------------------------

[INFO] Register count\_convNd() for <class 'torch.nn.modules.conv.Conv2d'>.

[INFO] Register zero\_ops() for <class 'torch.nn.modules.pixelshuffle.PixelShuffle'>.

[INFO] Register zero\_ops() for <class 'torch.nn.modules.container.Sequential'>.

[INFO] Register zero\_ops() for <class 'torch.nn.modules.activation.ReLU'>.

Average Inference Time: 424.94 ms

Average PSNR: 22.98 dB

Number of Parameters: 41,795.0

FLOPs: 2,647,719,936.0

GPU Memory Usage: 1005.43 MB

Total Number of Convolution Layers: 4

**ESRGAN**

Starting evaluation...

----------------------------------------------------------------

Layer (type) Output Shape Param #



Total params: 16,697,987

Trainable params: 16,697,987

Non-trainable params: 0

----------------------------------------------------------------

Input size (MB): 0.05

Forward/backward pass size (MB): 1023.50

Params size (MB): 63.70

Estimated Total Size (MB): 1087.24

----------------------------------------------------------------

[INFO] Register count\_convNd() for <class 'torch.nn.modules.conv.Conv2d'>.

[INFO] Register count\_relu() for <class 'torch.nn.modules.activation.LeakyReLU'>.

[INFO] Register zero\_ops() for <class 'torch.nn.modules.container.Sequential'>.

Teacher Model Evaluation:

Average Inference Time: 12770.72 ms

Average PSNR: 22.06 dB

Average SSIM: 0.67

Number of Parameters: 16,697,987.0

FLOPs: 73,428,369,408.0

GPU Memory Usage: 1312.86 MB

Total Number of Convolution Layers: 351

**SupervisedLossOnFeatureMaps\_v2**

Starting evaluation...

Total params: 115,651

Trainable params: 115,651

Non-trainable params: 0

----------------------------------------------------------------

Input size (MB): 0.05

Forward/backward pass size (MB): 134.00

Params size (MB): 0.44

Estimated Total Size (MB): 134.49

Teacher

Average Inference Time: 889.09 ms

Average PSNR: 9.40 dB

Average SSIM: 0.16

Number of Parameters: 115,651.0

FLOPs: 7,479,558,144.0

GPU Memory Usage: 869.19 MB

Model Architecture: StudentModel(

(upsample): Sequential(

(0): Conv2d(3, 48, kernel\_size=(3, 3), stride=(1, 1), padding=(1, 1))

(1): PixelShuffle(upscale\_factor=4)

)

(conv1): Conv2d(3, 64, kernel\_size=(3, 3), stride=(1, 1), padding=(1, 1))

(conv2): Conv2d(64, 64, kernel\_size=(3, 3), stride=(1, 1), padding=(1, 1))

(conv3): Conv2d(64, 64, kernel\_size=(3, 3), stride=(1, 1), padding=(1, 1))

(conv4): Conv2d(64, 64, kernel\_size=(3, 3), stride=(1, 1), padding=(1, 1))

(conv5): Conv2d(64, 3, kernel\_size=(3, 3), stride=(1, 1), padding=(1, 1))

(relu): ReLU(inplace=True)

)

Total Number of Convolution Layers: 6

**Post-Processing: SupervisedLossOnFeatureMaps v2**

Starting evaluation...

----------------------------------------------------------------

Layer (type) Output Shape Param #

================================================================

Conv2d-1 [-1, 48, 64, 64] 1,344

PixelShuffle-2 [-1, 3, 256, 256] 0

Conv2d-3 [-1, 64, 256, 256] 1,792

Conv2d-4 [-1, 64, 256, 256] 36,928

Conv2d-5 [-1, 64, 256, 256] 36,928

Conv2d-6 [-1, 64, 256, 256] 36,928

Conv2d-7 [-1, 3, 256, 256] 1,731

ReLU-8 [-1, 3, 256, 256] 0

================================================================

Total params: 115,651

Trainable params: 115,651

Non-trainable params: 0

----------------------------------------------------------------

Input size (MB): 0.05

Forward/backward pass size (MB): 134.00

Params size (MB): 0.44

Estimated Total Size (MB): 134.49

----------------------------------------------------------------

[INFO] Register count\_convNd() for <class 'torch.nn.modules.conv.Conv2d'>.

[INFO] Register zero\_ops() for <class 'torch.nn.modules.pixelshuffle.PixelShuffle'>.

[INFO] Register zero\_ops() for <class 'torch.nn.modules.container.Sequential'>.

[INFO] Register zero\_ops() for <class 'torch.nn.modules.activation.ReLU'>.

Student Model Evaluation:

Average Inference Time: 988.63 ms

Average PSNR: 15.67 dB

Average SSIM: 0.5756850838661194

Number of Parameters: 115,651.0

FLOPs: 7,479,558,144.0

GPU Memory Usage: 711.96 MB

SupervisedLossOnFeatureMaps v4

Starting evaluation...

----------------------------------------------------------------

Layer (type) Output Shape Param #

================================================================

Conv2d-1 [-1, 48, 64, 64] 1,344

PixelShuffle-2 [-1, 3, 256, 256] 0

Conv2d-3 [-1, 64, 256, 256] 1,792

ReLU-4 [-1, 64, 256, 256] 0

Conv2d-5 [-1, 128, 256, 256] 73,856

ReLU-6 [-1, 128, 256, 256] 0

Conv2d-7 [-1, 128, 256, 256] 147,584

ReLU-8 [-1, 128, 256, 256] 0

Conv2d-9 [-1, 64, 256, 256] 73,792

ReLU-10 [-1, 64, 256, 256] 0

Conv2d-11 [-1, 3, 256, 256] 1,731

ReLU-12 [-1, 3, 256, 256] 0

================================================================

Total params: 300,099

Trainable params: 300,099

Non-trainable params: 0

----------------------------------------------------------------

Input size (MB): 0.05

Forward/backward pass size (MB): 390.00

Params size (MB): 1.14

Estimated Total Size (MB): 391.19

----------------------------------------------------------------

[INFO] Register count\_convNd() for <class 'torch.nn.modules.conv.Conv2d'>.

[INFO] Register zero\_ops() for <class 'torch.nn.modules.pixelshuffle.PixelShuffle'>.

[INFO] Register zero\_ops() for <class 'torch.nn.modules.container.Sequential'>.

[INFO] Register zero\_ops() for <class 'torch.nn.modules.activation.ReLU'>.

Student Model Evaluation:

Average Inference Time: 2502.43 ms

Average PSNR: 6.80 dB

Average SSIM: 0.0033872968051582575

Number of Parameters: 300,099.0

FLOPs: 19,559,153,664.0

GPU Memory Usage: 151.78 MB