

```
In [17]: from torchvision import models
import torch
resnet101 = models.resnet101(pretrained = True)
from torchvision import transforms
imgtransform = transforms.Compose([transforms.Resize(256), transforms.CenterCrop(224)])
```

```
In [34]: from PIL import Image
sampleimage = Image.open("boat.jpg")
```

```
In [35]: image_t = imgtransform(sampleimage)
batch = torch.unsqueeze(image_t, 0)
```

```
In [36]: resnet101.eval();
```

```
In [46]: with open('imagenet_classes.txt') as f:
    classes = [line.strip() for line in f.readlines()]
output = resnet101(batch)
_, indices = torch.sort(output, descending=True)
percentage = torch.nn.functional.softmax(output, dim=1)[0] * 100
[(classes[idx], percentage[idx].item()) for idx in indices[0][:5]]
from ptutils import get_model_complexity_info

with torch.cuda.device(0):
    net = models.resnet101();
    macs, params = get_model_complexity_info(net, (3, 224, 224), as_strings=True, print_per_layer_stat=True, verbose=True)
    print('{:<30}   {:<8}'.format('Computational complexity: ', macs))
    print('{:<30}   {:<8}'.format('Number of parameters: ', params))
```

Warning: module Bottleneck is treated as a zero-op.

Warning: module ResNet is treated as a zero-op.

```
ResNet(
  44.549 M, 100.000% Params, 7.85 GMac, 100.000% MACs,
  (conv1): Conv2d(0.009 M, 0.021% Params, 0.118 GMac, 1.503% MACs, 3, 64, kernel_size=(7, 7), stride=(2, 2), padding=(3, 3), bias=False)
  (bn1): BatchNorm2d(0.0 M, 0.000% Params, 0.002 GMac, 0.020% MACs, 64, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (relu): ReLU(0.0 M, 0.000% Params, 0.001 GMac, 0.010% MACs, inplace=True)
  (maxpool): MaxPool2d(0.0 M, 0.000% Params, 0.001 GMac, 0.010% MACs, kernel_size=3, stride=2, padding=1, dilation=1, ceil_mode=False)
  (layer1): Sequential(
    0.216 M, 0.484% Params, 0.68 GMac, 8.668% MACs,
    (0): Bottleneck(
      0.075 M, 0.168% Params, 0.236 GMac, 3.012% MACs,
      (conv1): Conv2d(0.004 M, 0.009% Params, 0.013 GMac, 0.164% MACs, 64, 64, kernel_size=(1, 1), stride=(1, 1), bias=False)
      (bn1): BatchNorm2d(0.0 M, 0.000% Params, 0.0 GMac, 0.005% MACs, 64, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (conv2): Conv2d(0.037 M, 0.083% Params, 0.116 GMac, 1.473% MACs, 64, 64, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
      (bn2): BatchNorm2d(0.0 M, 0.000% Params, 0.0 GMac, 0.005% MACs, 64, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (conv3): Conv2d(0.016 M, 0.037% Params, 0.051 GMac, 0.655% MACs, 64, 256, kernel_size=(1, 1), stride=(1, 1), bias=False)
      (bn3): BatchNorm2d(0.001 M, 0.001% Params, 0.002 GMac, 0.020% MACs, 256, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (relu): ReLU(0.0 M, 0.000% Params, 0.001 GMac, 0.015% MACs, inplace=True)
      (downsample): Sequential(
```

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        0.017 M, 0.038% Params, 0.053 GMac, 0.675% MACs,
        (0): Conv2d(0.016 M, 0.037% Params, 0.051 GMac, 0.655% MACs, 64, 25
6, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (1): BatchNorm2d(0.001 M, 0.001% Params, 0.002 GMac, 0.020% MACs, 2
56, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    )
    (1): Bottleneck(
        0.07 M, 0.158% Params, 0.222 GMac, 2.828% MACs,
        (conv1): Conv2d(0.016 M, 0.037% Params, 0.051 GMac, 0.655% MACs, 256,
64, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (bn1): BatchNorm2d(0.0 M, 0.000% Params, 0.0 GMac, 0.005% MACs, 64, e
ps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (conv2): Conv2d(0.037 M, 0.083% Params, 0.116 GMac, 1.473% MACs, 64,
64, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
        (bn2): BatchNorm2d(0.0 M, 0.000% Params, 0.0 GMac, 0.005% MACs, 64, e
ps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (conv3): Conv2d(0.016 M, 0.037% Params, 0.051 GMac, 0.655% MACs, 64,
256, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (bn3): BatchNorm2d(0.001 M, 0.001% Params, 0.002 GMac, 0.020% MACs, 2
56, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (relu): ReLU(0.0 M, 0.000% Params, 0.001 GMac, 0.015% MACs, inplace=T
rue)
    )
    (2): Bottleneck(
        0.07 M, 0.158% Params, 0.222 GMac, 2.828% MACs,
        (conv1): Conv2d(0.016 M, 0.037% Params, 0.051 GMac, 0.655% MACs, 256,
64, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (bn1): BatchNorm2d(0.0 M, 0.000% Params, 0.0 GMac, 0.005% MACs, 64, e
ps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (conv2): Conv2d(0.037 M, 0.083% Params, 0.116 GMac, 1.473% MACs, 64,
64, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
        (bn2): BatchNorm2d(0.0 M, 0.000% Params, 0.0 GMac, 0.005% MACs, 64, e
ps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (conv3): Conv2d(0.016 M, 0.037% Params, 0.051 GMac, 0.655% MACs, 64,
256, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (bn3): BatchNorm2d(0.001 M, 0.001% Params, 0.002 GMac, 0.020% MACs, 2
56, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (relu): ReLU(0.0 M, 0.000% Params, 0.001 GMac, 0.015% MACs, inplace=T
rue)
    )
    )
    (layer2): Sequential(
        1.22 M, 2.738% Params, 1.037 GMac, 13.205% MACs,
        (0): Bottleneck(
            0.379 M, 0.852% Params, 0.376 GMac, 4.790% MACs,
            (conv1): Conv2d(0.033 M, 0.074% Params, 0.103 GMac, 1.309% MACs, 256,
128, kernel_size=(1, 1), stride=(1, 1), bias=False)
            (bn1): BatchNorm2d(0.0 M, 0.001% Params, 0.001 GMac, 0.010% MACs, 12
8, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
            (conv2): Conv2d(0.147 M, 0.331% Params, 0.116 GMac, 1.473% MACs, 128,
128, kernel_size=(3, 3), stride=(2, 2), padding=(1, 1), bias=False)
            (bn2): BatchNorm2d(0.0 M, 0.001% Params, 0.0 GMac, 0.003% MACs, 128,
eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
            (conv3): Conv2d(0.066 M, 0.147% Params, 0.051 GMac, 0.655% MACs, 128,
512, kernel_size=(1, 1), stride=(1, 1), bias=False)
            (bn3): BatchNorm2d(0.001 M, 0.002% Params, 0.001 GMac, 0.010% MACs, 5
12, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
            (relu): ReLU(0.0 M, 0.000% Params, 0.001 GMac, 0.012% MACs, inplace=T
rue)
        )
        (downsample): Sequential(
            0.132 M, 0.297% Params, 0.104 GMac, 1.319% MACs,
            (0): Conv2d(0.131 M, 0.294% Params, 0.103 GMac, 1.309% MACs, 256, 5
12, kernel_size=(1, 1), stride=(2, 2), bias=False)
            (1): BatchNorm2d(0.001 M, 0.002% Params, 0.001 GMac, 0.010% MACs, 5
12, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        )
    )
    (1): Bottleneck(
        0.28 M, 0.629% Params, 0.22 GMac, 2.805% MACs,

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    (conv1): Conv2d(0.066 M, 0.147% Params, 0.051 GMac, 0.655% MACs, 512,
128, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (bn1): BatchNorm2d(0.0 M, 0.001% Params, 0.0 GMac, 0.003% MACs, 128,
eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (conv2): Conv2d(0.147 M, 0.331% Params, 0.116 GMac, 1.473% MACs, 128,
128, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
    (bn2): BatchNorm2d(0.0 M, 0.001% Params, 0.0 GMac, 0.003% MACs, 128,
eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (conv3): Conv2d(0.066 M, 0.147% Params, 0.051 GMac, 0.655% MACs, 128,
512, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (bn3): BatchNorm2d(0.001 M, 0.002% Params, 0.001 GMac, 0.010% MACs, 5
12, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (relu): ReLU(0.0 M, 0.000% Params, 0.001 GMac, 0.008% MACs, inplace=T
rue)
  )
  (2): Bottleneck(
    0.28 M, 0.629% Params, 0.22 GMac, 2.805% MACs,
    (conv1): Conv2d(0.066 M, 0.147% Params, 0.051 GMac, 0.655% MACs, 512,
128, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (bn1): BatchNorm2d(0.0 M, 0.001% Params, 0.0 GMac, 0.003% MACs, 128,
eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (conv2): Conv2d(0.147 M, 0.331% Params, 0.116 GMac, 1.473% MACs, 128,
128, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
    (bn2): BatchNorm2d(0.0 M, 0.001% Params, 0.0 GMac, 0.003% MACs, 128,
eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (conv3): Conv2d(0.066 M, 0.147% Params, 0.051 GMac, 0.655% MACs, 128,
512, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (bn3): BatchNorm2d(0.001 M, 0.002% Params, 0.001 GMac, 0.010% MACs, 5
12, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (relu): ReLU(0.0 M, 0.000% Params, 0.001 GMac, 0.008% MACs, inplace=T
rue)
  )
  (3): Bottleneck(
    0.28 M, 0.629% Params, 0.22 GMac, 2.805% MACs,
    (conv1): Conv2d(0.066 M, 0.147% Params, 0.051 GMac, 0.655% MACs, 512,
128, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (bn1): BatchNorm2d(0.0 M, 0.001% Params, 0.0 GMac, 0.003% MACs, 128,
eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (conv2): Conv2d(0.147 M, 0.331% Params, 0.116 GMac, 1.473% MACs, 128,
128, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
    (bn2): BatchNorm2d(0.0 M, 0.001% Params, 0.0 GMac, 0.003% MACs, 128,
eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (conv3): Conv2d(0.066 M, 0.147% Params, 0.051 GMac, 0.655% MACs, 128,
512, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (bn3): BatchNorm2d(0.001 M, 0.002% Params, 0.001 GMac, 0.010% MACs, 5
12, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (relu): ReLU(0.0 M, 0.000% Params, 0.001 GMac, 0.008% MACs, inplace=T
rue)
  )
  )
  (layer3): Sequential(
    26.09 M, 58.566% Params, 5.198 GMac, 66.223% MACs,
    (0): Bottleneck(
      1.512 M, 3.395% Params, 0.374 GMac, 4.768% MACs,
      (conv1): Conv2d(0.131 M, 0.294% Params, 0.103 GMac, 1.309% MACs, 512,
256, kernel_size=(1, 1), stride=(1, 1), bias=False)
      (bn1): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.005% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (conv2): Conv2d(0.59 M, 1.324% Params, 0.116 GMac, 1.473% MACs, 256,
256, kernel_size=(3, 3), stride=(2, 2), padding=(1, 1), bias=False)
      (bn2): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (conv3): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 256,
1024, kernel_size=(1, 1), stride=(1, 1), bias=False)
      (bn3): BatchNorm2d(0.002 M, 0.005% Params, 0.0 GMac, 0.005% MACs, 102
4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.006% MACs, inplace=Tru
e)
    )
    (downsample): Sequential(
      0.526 M, 1.181% Params, 0.103 GMac, 1.314% MACs,

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        (0): Conv2d(0.524 M, 1.177% Params, 0.103 GMac, 1.309% MACs, 512, 1
024, kernel_size=(1, 1), stride=(2, 2), bias=False)
        (1): BatchNorm2d(0.002 M, 0.005% Params, 0.0 GMac, 0.005% MACs, 102
4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    )
    (1): Bottleneck(
        1.117 M, 2.508% Params, 0.219 GMac, 2.793% MACs,
        (conv1): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 102
4, 256, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (bn1): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (conv2): Conv2d(0.59 M, 1.324% Params, 0.116 GMac, 1.473% MACs, 256,
256, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
        (bn2): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (conv3): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 256,
1024, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (bn3): BatchNorm2d(0.002 M, 0.005% Params, 0.0 GMac, 0.005% MACs, 102
4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.004% MACs, inplace=Tru
e)
    )
    (2): Bottleneck(
        1.117 M, 2.508% Params, 0.219 GMac, 2.793% MACs,
        (conv1): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 102
4, 256, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (bn1): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (conv2): Conv2d(0.59 M, 1.324% Params, 0.116 GMac, 1.473% MACs, 256,
256, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
        (bn2): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (conv3): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 256,
1024, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (bn3): BatchNorm2d(0.002 M, 0.005% Params, 0.0 GMac, 0.005% MACs, 102
4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.004% MACs, inplace=Tru
e)
    )
    (3): Bottleneck(
        1.117 M, 2.508% Params, 0.219 GMac, 2.793% MACs,
        (conv1): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 102
4, 256, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (bn1): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (conv2): Conv2d(0.59 M, 1.324% Params, 0.116 GMac, 1.473% MACs, 256,
256, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
        (bn2): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (conv3): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 256,
1024, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (bn3): BatchNorm2d(0.002 M, 0.005% Params, 0.0 GMac, 0.005% MACs, 102
4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.004% MACs, inplace=Tru
e)
    )
    (4): Bottleneck(
        1.117 M, 2.508% Params, 0.219 GMac, 2.793% MACs,
        (conv1): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 102
4, 256, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (bn1): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (conv2): Conv2d(0.59 M, 1.324% Params, 0.116 GMac, 1.473% MACs, 256,
256, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
        (bn2): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (conv3): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 256,
1024, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (bn3): BatchNorm2d(0.002 M, 0.005% Params, 0.0 GMac, 0.005% MACs, 102

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4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.004% MACs, inplace=Tru
e)
)
(5): Bottleneck(
  1.117 M, 2.508% Params, 0.219 GMac, 2.793% MACs,
  (conv1): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 102
4, 256, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (bn1): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (conv2): Conv2d(0.59 M, 1.324% Params, 0.116 GMac, 1.473% MACs, 256,
256, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
  (bn2): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (conv3): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 256,
1024, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (bn3): BatchNorm2d(0.002 M, 0.005% Params, 0.0 GMac, 0.005% MACs, 102
4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.004% MACs, inplace=Tru
e)
)
(6): Bottleneck(
  1.117 M, 2.508% Params, 0.219 GMac, 2.793% MACs,
  (conv1): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 102
4, 256, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (bn1): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (conv2): Conv2d(0.59 M, 1.324% Params, 0.116 GMac, 1.473% MACs, 256,
256, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
  (bn2): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (conv3): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 256,
1024, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (bn3): BatchNorm2d(0.002 M, 0.005% Params, 0.0 GMac, 0.005% MACs, 102
4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.004% MACs, inplace=Tru
e)
)
(7): Bottleneck(
  1.117 M, 2.508% Params, 0.219 GMac, 2.793% MACs,
  (conv1): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 102
4, 256, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (bn1): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (conv2): Conv2d(0.59 M, 1.324% Params, 0.116 GMac, 1.473% MACs, 256,
256, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
  (bn2): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (conv3): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 256,
1024, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (bn3): BatchNorm2d(0.002 M, 0.005% Params, 0.0 GMac, 0.005% MACs, 102
4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.004% MACs, inplace=Tru
e)
)
(8): Bottleneck(
  1.117 M, 2.508% Params, 0.219 GMac, 2.793% MACs,
  (conv1): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 102
4, 256, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (bn1): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (conv2): Conv2d(0.59 M, 1.324% Params, 0.116 GMac, 1.473% MACs, 256,
256, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
  (bn2): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (conv3): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 256,
1024, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (bn3): BatchNorm2d(0.002 M, 0.005% Params, 0.0 GMac, 0.005% MACs, 102
4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.004% MACs, inplace=Tru

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e)
)
(9): Bottleneck(
  1.117 M, 2.508% Params, 0.219 GMac, 2.793% MACs,
  (conv1): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 102
4, 256, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (bn1): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (conv2): Conv2d(0.59 M, 1.324% Params, 0.116 GMac, 1.473% MACs, 256,
256, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
  (bn2): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (conv3): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 256,
1024, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (bn3): BatchNorm2d(0.002 M, 0.005% Params, 0.0 GMac, 0.005% MACs, 102
4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.004% MACs, inplace=Tru
e)
)
(10): Bottleneck(
  1.117 M, 2.508% Params, 0.219 GMac, 2.793% MACs,
  (conv1): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 102
4, 256, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (bn1): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (conv2): Conv2d(0.59 M, 1.324% Params, 0.116 GMac, 1.473% MACs, 256,
256, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
  (bn2): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (conv3): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 256,
1024, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (bn3): BatchNorm2d(0.002 M, 0.005% Params, 0.0 GMac, 0.005% MACs, 102
4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.004% MACs, inplace=Tru
e)
)
(11): Bottleneck(
  1.117 M, 2.508% Params, 0.219 GMac, 2.793% MACs,
  (conv1): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 102
4, 256, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (bn1): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (conv2): Conv2d(0.59 M, 1.324% Params, 0.116 GMac, 1.473% MACs, 256,
256, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
  (bn2): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (conv3): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 256,
1024, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (bn3): BatchNorm2d(0.002 M, 0.005% Params, 0.0 GMac, 0.005% MACs, 102
4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.004% MACs, inplace=Tru
e)
)
(12): Bottleneck(
  1.117 M, 2.508% Params, 0.219 GMac, 2.793% MACs,
  (conv1): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 102
4, 256, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (bn1): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (conv2): Conv2d(0.59 M, 1.324% Params, 0.116 GMac, 1.473% MACs, 256,
256, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
  (bn2): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (conv3): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 256,
1024, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (bn3): BatchNorm2d(0.002 M, 0.005% Params, 0.0 GMac, 0.005% MACs, 102
4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.004% MACs, inplace=Tru
e)
)

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(13): Bottleneck(
  1.117 M, 2.508% Params, 0.219 GMac, 2.793% MACs,
  (conv1): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 102
4, 256, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (bn1): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (conv2): Conv2d(0.59 M, 1.324% Params, 0.116 GMac, 1.473% MACs, 256,
256, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
  (bn2): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (conv3): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 256,
1024, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (bn3): BatchNorm2d(0.002 M, 0.005% Params, 0.0 GMac, 0.005% MACs, 102
4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.004% MACs, inplace=Tru
e)
)
(14): Bottleneck(
  1.117 M, 2.508% Params, 0.219 GMac, 2.793% MACs,
  (conv1): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 102
4, 256, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (bn1): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (conv2): Conv2d(0.59 M, 1.324% Params, 0.116 GMac, 1.473% MACs, 256,
256, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
  (bn2): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (conv3): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 256,
1024, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (bn3): BatchNorm2d(0.002 M, 0.005% Params, 0.0 GMac, 0.005% MACs, 102
4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.004% MACs, inplace=Tru
e)
)
(15): Bottleneck(
  1.117 M, 2.508% Params, 0.219 GMac, 2.793% MACs,
  (conv1): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 102
4, 256, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (bn1): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (conv2): Conv2d(0.59 M, 1.324% Params, 0.116 GMac, 1.473% MACs, 256,
256, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
  (bn2): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (conv3): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 256,
1024, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (bn3): BatchNorm2d(0.002 M, 0.005% Params, 0.0 GMac, 0.005% MACs, 102
4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.004% MACs, inplace=Tru
e)
)
(16): Bottleneck(
  1.117 M, 2.508% Params, 0.219 GMac, 2.793% MACs,
  (conv1): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 102
4, 256, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (bn1): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (conv2): Conv2d(0.59 M, 1.324% Params, 0.116 GMac, 1.473% MACs, 256,
256, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
  (bn2): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (conv3): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 256,
1024, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (bn3): BatchNorm2d(0.002 M, 0.005% Params, 0.0 GMac, 0.005% MACs, 102
4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.004% MACs, inplace=Tru
e)
)
(17): Bottleneck(
  1.117 M, 2.508% Params, 0.219 GMac, 2.793% MACs,

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        (conv1): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 102
4, 256, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (bn1): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (conv2): Conv2d(0.59 M, 1.324% Params, 0.116 GMac, 1.473% MACs, 256,
256, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
        (bn2): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (conv3): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 256,
1024, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (bn3): BatchNorm2d(0.002 M, 0.005% Params, 0.0 GMac, 0.005% MACs, 102
4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.004% MACs, inplace=Tru
e)
    )
    (18): Bottleneck(
        1.117 M, 2.508% Params, 0.219 GMac, 2.793% MACs,
        (conv1): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 102
4, 256, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (bn1): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (conv2): Conv2d(0.59 M, 1.324% Params, 0.116 GMac, 1.473% MACs, 256,
256, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
        (bn2): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (conv3): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 256,
1024, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (bn3): BatchNorm2d(0.002 M, 0.005% Params, 0.0 GMac, 0.005% MACs, 102
4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.004% MACs, inplace=Tru
e)
    )
    (19): Bottleneck(
        1.117 M, 2.508% Params, 0.219 GMac, 2.793% MACs,
        (conv1): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 102
4, 256, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (bn1): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (conv2): Conv2d(0.59 M, 1.324% Params, 0.116 GMac, 1.473% MACs, 256,
256, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
        (bn2): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (conv3): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 256,
1024, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (bn3): BatchNorm2d(0.002 M, 0.005% Params, 0.0 GMac, 0.005% MACs, 102
4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.004% MACs, inplace=Tru
e)
    )
    (20): Bottleneck(
        1.117 M, 2.508% Params, 0.219 GMac, 2.793% MACs,
        (conv1): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 102
4, 256, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (bn1): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (conv2): Conv2d(0.59 M, 1.324% Params, 0.116 GMac, 1.473% MACs, 256,
256, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
        (bn2): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (conv3): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 256,
1024, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (bn3): BatchNorm2d(0.002 M, 0.005% Params, 0.0 GMac, 0.005% MACs, 102
4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.004% MACs, inplace=Tru
e)
    )
    (21): Bottleneck(
        1.117 M, 2.508% Params, 0.219 GMac, 2.793% MACs,
        (conv1): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 102
4, 256, kernel_size=(1, 1), stride=(1, 1), bias=False)

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        (bn1): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (conv2): Conv2d(0.59 M, 1.324% Params, 0.116 GMac, 1.473% MACs, 256,
256, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
        (bn2): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (conv3): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 256,
1024, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (bn3): BatchNorm2d(0.002 M, 0.005% Params, 0.0 GMac, 0.005% MACs, 102
4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.004% MACs, inplace=Tru
e)
    )
    (22): Bottleneck(
        1.117 M, 2.508% Params, 0.219 GMac, 2.793% MACs,
        (conv1): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 102
4, 256, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (bn1): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (conv2): Conv2d(0.59 M, 1.324% Params, 0.116 GMac, 1.473% MACs, 256,
256, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
        (bn2): BatchNorm2d(0.001 M, 0.001% Params, 0.0 GMac, 0.001% MACs, 25
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (conv3): Conv2d(0.262 M, 0.588% Params, 0.051 GMac, 0.655% MACs, 256,
1024, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (bn3): BatchNorm2d(0.002 M, 0.005% Params, 0.0 GMac, 0.005% MACs, 102
4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.004% MACs, inplace=Tru
e)
    )
)
(layer4): Sequential(
  14.965 M, 33.592% Params, 0.811 GMac, 10.332% MACs,
  (0): Bottleneck(
    6.04 M, 13.557% Params, 0.373 GMac, 4.757% MACs,
    (conv1): Conv2d(0.524 M, 1.177% Params, 0.103 GMac, 1.309% MACs, 102
4, 512, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (bn1): BatchNorm2d(0.001 M, 0.002% Params, 0.0 GMac, 0.003% MACs, 51
2, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (conv2): Conv2d(2.359 M, 5.296% Params, 0.116 GMac, 1.473% MACs, 512,
512, kernel_size=(3, 3), stride=(2, 2), padding=(1, 1), bias=False)
    (bn2): BatchNorm2d(0.001 M, 0.002% Params, 0.0 GMac, 0.001% MACs, 51
2, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (conv3): Conv2d(1.049 M, 2.354% Params, 0.051 GMac, 0.655% MACs, 512,
2048, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (bn3): BatchNorm2d(0.004 M, 0.009% Params, 0.0 GMac, 0.003% MACs, 204
8, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.003% MACs, inplace=Tru
e)
  )
  (downsample): Sequential(
    2.101 M, 4.717% Params, 0.103 GMac, 1.312% MACs,
    (0): Conv2d(2.097 M, 4.708% Params, 0.103 GMac, 1.309% MACs, 1024,
2048, kernel_size=(1, 1), stride=(2, 2), bias=False)
    (1): BatchNorm2d(0.004 M, 0.009% Params, 0.0 GMac, 0.003% MACs, 204
8, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  )
)
  (1): Bottleneck(
    4.463 M, 10.017% Params, 0.219 GMac, 2.788% MACs,
    (conv1): Conv2d(1.049 M, 2.354% Params, 0.051 GMac, 0.655% MACs, 204
8, 512, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (bn1): BatchNorm2d(0.001 M, 0.002% Params, 0.0 GMac, 0.001% MACs, 51
2, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (conv2): Conv2d(2.359 M, 5.296% Params, 0.116 GMac, 1.473% MACs, 512,
512, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
    (bn2): BatchNorm2d(0.001 M, 0.002% Params, 0.0 GMac, 0.001% MACs, 51
2, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (conv3): Conv2d(1.049 M, 2.354% Params, 0.051 GMac, 0.655% MACs, 512,
2048, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (bn3): BatchNorm2d(0.004 M, 0.009% Params, 0.0 GMac, 0.003% MACs, 204

```

```

8, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.002% MACs, inplace=True)
  )
  (2): Bottleneck(
    4.463 M, 10.017% Params, 0.219 GMac, 2.788% MACs,
    (conv1): Conv2d(1.049 M, 2.354% Params, 0.051 GMac, 0.655% MACs, 2048, 512, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (bn1): BatchNorm2d(0.001 M, 0.002% Params, 0.0 GMac, 0.001% MACs, 512, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (conv2): Conv2d(2.359 M, 5.296% Params, 0.116 GMac, 1.473% MACs, 512, 512, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)
    (bn2): BatchNorm2d(0.001 M, 0.002% Params, 0.0 GMac, 0.001% MACs, 512, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (conv3): Conv2d(1.049 M, 2.354% Params, 0.051 GMac, 0.655% MACs, 512, 2048, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (bn3): BatchNorm2d(0.004 M, 0.009% Params, 0.0 GMac, 0.003% MACs, 2048, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (relu): ReLU(0.0 M, 0.000% Params, 0.0 GMac, 0.002% MACs, inplace=True)
  )
)
(avgpool): AdaptiveAvgPool2d(0.0 M, 0.000% Params, 0.0 GMac, 0.001% MACs, output_size=(1, 1))
(fc): Linear(2.049 M, 4.599% Params, 0.002 GMac, 0.026% MACs, in_features=2048, out_features=1000, bias=True)
)
Computational complexity:      7.85 GMac
Number of parameters:          44.55 M

```

In [39]:

```

import torch.nn as nn

class ResNetBlock(nn.Module): # <1>

    def __init__(self, dim):
        super(ResNetBlock, self).__init__()
        self.conv_block = self.build_conv_block(dim)

    def build_conv_block(self, dim):
        conv_block = []

        conv_block += [nn.ReflectionPad2d(1)]

        conv_block += [nn.Conv2d(dim, dim, kernel_size=3, padding=0, bias=True),
                        nn.InstanceNorm2d(dim),
                        nn.ReLU(True)]

        conv_block += [nn.ReflectionPad2d(1)]

        conv_block += [nn.Conv2d(dim, dim, kernel_size=3, padding=0, bias=True),
                        nn.InstanceNorm2d(dim)]

        return nn.Sequential(*conv_block)

    def forward(self, x):
        out = x + self.conv_block(x) # <2>
        return out

class ResNetGenerator(nn.Module):

    def __init__(self, input_nc=3, output_nc=3, ngf=64, n_blocks=9): # <3>

        assert(n_blocks >= 0)
        super(ResNetGenerator, self).__init__()

        self.input_nc = input_nc
        self.output_nc = output_nc
        self.ngf = ngf

        model = [nn.ReflectionPad2d(3),
                  nn.Conv2d(input_nc, ngf, kernel_size=7, padding=0, bias=True),
                  nn.InstanceNorm2d(ngf),
                  nn.ReLU(True)]

        n_downsampling = 2
        for i in range(n_downsampling):
            mult = 2**i
            model += [nn.Conv2d(ngf * mult, ngf * mult * 2, kernel_size=3,
                                stride=2, padding=1, bias=True),
                      nn.InstanceNorm2d(ngf * mult * 2),
                      nn.ReLU(True)]

        mult = 2**n_downsampling
        for i in range(n_blocks):
            model += [ResNetBlock(ngf * mult)]

        for i in range(n_downsampling):
            mult = 2**(n_downsampling - i)
            model += [nn.ConvTranspose2d(ngf * mult, int(ngf * mult / 2),
                                          kernel_size=3, stride=2,
                                          padding=1, output_padding=1,

```

```

        self.model = nn.Sequential(*model)

    def forward(self, input): # <3>
        return self.model(input)

```

```

In [40]: netG = ResNetGenerator()
        model_path = 'horse2zebra_0.4.0.pth'
        model_data = torch.load(model_path)
        netG.load_state_dict(model_data)
        netG.eval();

```

```

In [45]: imgtransform = transforms.Compose([transforms.Resize(256), transforms.CenterCrop(256)])
        sampleimage = Image.open("horse5.jpg")
        image_t = imgtransform(sampleimage)
        batch = torch.unsqueeze(image_t, 0)
        batchout = netG(batch)
        imageout = (batchout.data.squeeze()+1)/2
        finalimage = transforms.ToPILImage()(imageout)
        finalimage

```

Out[45]:



```

In [9]: from ptflops import get_model_complexity_info

        with torch.cuda.device(0):
            net = ResNetGenerator()
            macs, params = get_model_complexity_info(net, (3, 224, 224), as_strings=True,
                                                    print_per_layer_stat=True, verbose=True)
            print('{:<30}  {:<8}'.format('Computational complexity: ', macs))
            print('{:<30}  {:<8}'.format('Number of parameters: ', params))

```

Warning: module ReflectionPad2d is treated as a zero-op.
Warning: module ResNetBlock is treated as a zero-op.
Warning: module Tanh is treated as a zero-op.
Warning: module ResNetGenerator is treated as a zero-op.
ResNetGenerator(
 11.378 M, 100.000% Params, 43.555 GMac, 100.000% MACs,
 (model): Sequential(
 11.378 M, 100.000% Params, 43.555 GMac, 100.000% MACs,

```

(0): ReflectionPad2d(0.0 M, 0.000% Params, 0.0 GMac, 0.000% MACs, (3,
3, 3, 3))
(1): Conv2d(0.009 M, 0.083% Params, 0.475 GMac, 1.091% MACs, 3, 64, ker
nel_size=(7, 7), stride=(1, 1))
(2): InstanceNorm2d(0.0 M, 0.000% Params, 0.003 GMac, 0.007% MACs, 64,
eps=1e-05, momentum=0.1, affine=False, track_running_stats=False)
(3): ReLU(0.0 M, 0.000% Params, 0.003 GMac, 0.007% MACs, inplace=True)
(4): Conv2d(0.074 M, 0.649% Params, 0.926 GMac, 2.127% MACs, 64, 128, k
ernel_size=(3, 3), stride=(2, 2), padding=(1, 1))
(5): InstanceNorm2d(0.0 M, 0.000% Params, 0.002 GMac, 0.004% MACs, 128,
eps=1e-05, momentum=0.1, affine=False, track_running_stats=False)
(6): ReLU(0.0 M, 0.000% Params, 0.002 GMac, 0.004% MACs, inplace=True)
(7): Conv2d(0.295 M, 2.594% Params, 0.926 GMac, 2.125% MACs, 128, 256,
kernel_size=(3, 3), stride=(2, 2), padding=(1, 1))
(8): InstanceNorm2d(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs, 256,
eps=1e-05, momentum=0.1, affine=False, track_running_stats=False)
(9): ReLU(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs, inplace=True)
(10): ResNetBlock(
  1.18 M, 10.372% Params, 3.703 GMac, 8.503% MACs,
  (conv_block): Sequential(
    1.18 M, 10.372% Params, 3.703 GMac, 8.503% MACs,
    (0): ReflectionPad2d(0.0 M, 0.000% Params, 0.0 GMac, 0.000% MACs,
(1, 1, 1, 1))
    (1): Conv2d(0.59 M, 5.186% Params, 1.85 GMac, 4.249% MACs, 256, 25
6, kernel_size=(3, 3), stride=(1, 1))
    (2): InstanceNorm2d(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs,
256, eps=1e-05, momentum=0.1, affine=False, track_running_stats=False)
    (3): ReLU(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs, inplace=Tr
ue)
    (4): ReflectionPad2d(0.0 M, 0.000% Params, 0.0 GMac, 0.000% MACs,
(1, 1, 1, 1))
    (5): Conv2d(0.59 M, 5.186% Params, 1.85 GMac, 4.249% MACs, 256, 25
6, kernel_size=(3, 3), stride=(1, 1))
    (6): InstanceNorm2d(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs,
256, eps=1e-05, momentum=0.1, affine=False, track_running_stats=False)
  )
)
(11): ResNetBlock(
  1.18 M, 10.372% Params, 3.703 GMac, 8.503% MACs,
  (conv_block): Sequential(
    1.18 M, 10.372% Params, 3.703 GMac, 8.503% MACs,
    (0): ReflectionPad2d(0.0 M, 0.000% Params, 0.0 GMac, 0.000% MACs,
(1, 1, 1, 1))
    (1): Conv2d(0.59 M, 5.186% Params, 1.85 GMac, 4.249% MACs, 256, 25
6, kernel_size=(3, 3), stride=(1, 1))
    (2): InstanceNorm2d(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs,
256, eps=1e-05, momentum=0.1, affine=False, track_running_stats=False)
    (3): ReLU(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs, inplace=Tr
ue)
    (4): ReflectionPad2d(0.0 M, 0.000% Params, 0.0 GMac, 0.000% MACs,
(1, 1, 1, 1))
    (5): Conv2d(0.59 M, 5.186% Params, 1.85 GMac, 4.249% MACs, 256, 25
6, kernel_size=(3, 3), stride=(1, 1))
    (6): InstanceNorm2d(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs,
256, eps=1e-05, momentum=0.1, affine=False, track_running_stats=False)
  )
)
(12): ResNetBlock(
  1.18 M, 10.372% Params, 3.703 GMac, 8.503% MACs,
  (conv_block): Sequential(
    1.18 M, 10.372% Params, 3.703 GMac, 8.503% MACs,
    (0): ReflectionPad2d(0.0 M, 0.000% Params, 0.0 GMac, 0.000% MACs,
(1, 1, 1, 1))
    (1): Conv2d(0.59 M, 5.186% Params, 1.85 GMac, 4.249% MACs, 256, 25
6, kernel_size=(3, 3), stride=(1, 1))
    (2): InstanceNorm2d(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs,
256, eps=1e-05, momentum=0.1, affine=False, track_running_stats=False)
    (3): ReLU(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs, inplace=Tr
ue)
    (4): ReflectionPad2d(0.0 M, 0.000% Params, 0.0 GMac, 0.000% MACs,

```

```

(1, 1, 1, 1))
    (5): Conv2d(0.59 M, 5.186% Params, 1.85 GMac, 4.249% MACs, 256, 25
6, kernel_size=(3, 3), stride=(1, 1))
    (6): InstanceNorm2d(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs,
256, eps=1e-05, momentum=0.1, affine=False, track_running_stats=False)
    )
  )
  (13): ResNetBlock(
    1.18 M, 10.372% Params, 3.703 GMac, 8.503% MACs,
    (conv_block): Sequential(
      1.18 M, 10.372% Params, 3.703 GMac, 8.503% MACs,
      (0): ReflectionPad2d(0.0 M, 0.000% Params, 0.0 GMac, 0.000% MACs,
(1, 1, 1, 1))
      (1): Conv2d(0.59 M, 5.186% Params, 1.85 GMac, 4.249% MACs, 256, 25
6, kernel_size=(3, 3), stride=(1, 1))
      (2): InstanceNorm2d(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs,
256, eps=1e-05, momentum=0.1, affine=False, track_running_stats=False)
      (3): ReLU(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs, inplace=Tr
ue)
      (4): ReflectionPad2d(0.0 M, 0.000% Params, 0.0 GMac, 0.000% MACs,
(1, 1, 1, 1))
      (5): Conv2d(0.59 M, 5.186% Params, 1.85 GMac, 4.249% MACs, 256, 25
6, kernel_size=(3, 3), stride=(1, 1))
      (6): InstanceNorm2d(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs,
256, eps=1e-05, momentum=0.1, affine=False, track_running_stats=False)
    )
  )
  (14): ResNetBlock(
    1.18 M, 10.372% Params, 3.703 GMac, 8.503% MACs,
    (conv_block): Sequential(
      1.18 M, 10.372% Params, 3.703 GMac, 8.503% MACs,
      (0): ReflectionPad2d(0.0 M, 0.000% Params, 0.0 GMac, 0.000% MACs,
(1, 1, 1, 1))
      (1): Conv2d(0.59 M, 5.186% Params, 1.85 GMac, 4.249% MACs, 256, 25
6, kernel_size=(3, 3), stride=(1, 1))
      (2): InstanceNorm2d(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs,
256, eps=1e-05, momentum=0.1, affine=False, track_running_stats=False)
      (3): ReLU(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs, inplace=Tr
ue)
      (4): ReflectionPad2d(0.0 M, 0.000% Params, 0.0 GMac, 0.000% MACs,
(1, 1, 1, 1))
      (5): Conv2d(0.59 M, 5.186% Params, 1.85 GMac, 4.249% MACs, 256, 25
6, kernel_size=(3, 3), stride=(1, 1))
      (6): InstanceNorm2d(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs,
256, eps=1e-05, momentum=0.1, affine=False, track_running_stats=False)
    )
  )
  (15): ResNetBlock(
    1.18 M, 10.372% Params, 3.703 GMac, 8.503% MACs,
    (conv_block): Sequential(
      1.18 M, 10.372% Params, 3.703 GMac, 8.503% MACs,
      (0): ReflectionPad2d(0.0 M, 0.000% Params, 0.0 GMac, 0.000% MACs,
(1, 1, 1, 1))
      (1): Conv2d(0.59 M, 5.186% Params, 1.85 GMac, 4.249% MACs, 256, 25
6, kernel_size=(3, 3), stride=(1, 1))
      (2): InstanceNorm2d(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs,
256, eps=1e-05, momentum=0.1, affine=False, track_running_stats=False)
      (3): ReLU(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs, inplace=Tr
ue)
      (4): ReflectionPad2d(0.0 M, 0.000% Params, 0.0 GMac, 0.000% MACs,
(1, 1, 1, 1))
      (5): Conv2d(0.59 M, 5.186% Params, 1.85 GMac, 4.249% MACs, 256, 25
6, kernel_size=(3, 3), stride=(1, 1))
      (6): InstanceNorm2d(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs,
256, eps=1e-05, momentum=0.1, affine=False, track_running_stats=False)
    )
  )
  (16): ResNetBlock(
    1.18 M, 10.372% Params, 3.703 GMac, 8.503% MACs,
    (conv_block): Sequential(

```

```

        1.18 M, 10.372% Params, 3.703 GMac, 8.503% MACs,
        (0): ReflectionPad2d(0.0 M, 0.000% Params, 0.0 GMac, 0.000% MACs,
(1, 1, 1, 1))
        (1): Conv2d(0.59 M, 5.186% Params, 1.85 GMac, 4.249% MACs, 256, 25
6, kernel_size=(3, 3), stride=(1, 1))
        (2): InstanceNorm2d(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs,
256, eps=1e-05, momentum=0.1, affine=False, track_running_stats=False)
        (3): ReLU(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs, inplace=Tr
ue)
        (4): ReflectionPad2d(0.0 M, 0.000% Params, 0.0 GMac, 0.000% MACs,
(1, 1, 1, 1))
        (5): Conv2d(0.59 M, 5.186% Params, 1.85 GMac, 4.249% MACs, 256, 25
6, kernel_size=(3, 3), stride=(1, 1))
        (6): InstanceNorm2d(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs,
256, eps=1e-05, momentum=0.1, affine=False, track_running_stats=False)
    )
)
(17): ResNetBlock(
    1.18 M, 10.372% Params, 3.703 GMac, 8.503% MACs,
    (conv_block): Sequential(
        1.18 M, 10.372% Params, 3.703 GMac, 8.503% MACs,
        (0): ReflectionPad2d(0.0 M, 0.000% Params, 0.0 GMac, 0.000% MACs,
(1, 1, 1, 1))
        (1): Conv2d(0.59 M, 5.186% Params, 1.85 GMac, 4.249% MACs, 256, 25
6, kernel_size=(3, 3), stride=(1, 1))
        (2): InstanceNorm2d(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs,
256, eps=1e-05, momentum=0.1, affine=False, track_running_stats=False)
        (3): ReLU(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs, inplace=Tr
ue)
        (4): ReflectionPad2d(0.0 M, 0.000% Params, 0.0 GMac, 0.000% MACs,
(1, 1, 1, 1))
        (5): Conv2d(0.59 M, 5.186% Params, 1.85 GMac, 4.249% MACs, 256, 25
6, kernel_size=(3, 3), stride=(1, 1))
        (6): InstanceNorm2d(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs,
256, eps=1e-05, momentum=0.1, affine=False, track_running_stats=False)
    )
)
(18): ResNetBlock(
    1.18 M, 10.372% Params, 3.703 GMac, 8.503% MACs,
    (conv_block): Sequential(
        1.18 M, 10.372% Params, 3.703 GMac, 8.503% MACs,
        (0): ReflectionPad2d(0.0 M, 0.000% Params, 0.0 GMac, 0.000% MACs,
(1, 1, 1, 1))
        (1): Conv2d(0.59 M, 5.186% Params, 1.85 GMac, 4.249% MACs, 256, 25
6, kernel_size=(3, 3), stride=(1, 1))
        (2): InstanceNorm2d(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs,
256, eps=1e-05, momentum=0.1, affine=False, track_running_stats=False)
        (3): ReLU(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs, inplace=Tr
ue)
        (4): ReflectionPad2d(0.0 M, 0.000% Params, 0.0 GMac, 0.000% MACs,
(1, 1, 1, 1))
        (5): Conv2d(0.59 M, 5.186% Params, 1.85 GMac, 4.249% MACs, 256, 25
6, kernel_size=(3, 3), stride=(1, 1))
        (6): InstanceNorm2d(0.0 M, 0.000% Params, 0.001 GMac, 0.002% MACs,
256, eps=1e-05, momentum=0.1, affine=False, track_running_stats=False)
    )
)
(19): ConvTranspose2d(0.295 M, 2.593% Params, 3.701 GMac, 8.497% MACs,
256, 128, kernel_size=(3, 3), stride=(2, 2), padding=(1, 1), output_padding
=(1, 1))
(20): InstanceNorm2d(0.0 M, 0.000% Params, 0.002 GMac, 0.004% MACs, 12
8, eps=1e-05, momentum=0.1, affine=False, track_running_stats=False)
(21): ReLU(0.0 M, 0.000% Params, 0.002 GMac, 0.004% MACs, inplace=True)
(22): ConvTranspose2d(0.074 M, 0.649% Params, 3.703 GMac, 8.501% MACs,
128, 64, kernel_size=(3, 3), stride=(2, 2), padding=(1, 1), output_padding=
(1, 1))
(23): InstanceNorm2d(0.0 M, 0.000% Params, 0.003 GMac, 0.007% MACs, 64,
eps=1e-05, momentum=0.1, affine=False, track_running_stats=False)
(24): ReLU(0.0 M, 0.000% Params, 0.003 GMac, 0.007% MACs, inplace=True)
(25): ReflectionPad2d(0.0 M, 0.000% Params, 0.0 GMac, 0.000% MACs, (3,

```

```

3, 3, 3))
(26): Conv2d(0.009 M, 0.083% Params, 0.472 GMac, 1.084% MACs, 64, 3, kernel_size=(7, 7), stride=(1, 1))
(27): Tanh(0.0 M, 0.000% Params, 0.0 GMac, 0.000% MACs, )
)
)
Computational complexity:      43.55 GMac
-- -- --

```

```

In [51]: dir(models)
mobilenetv2 = models.mobilenet_v2(pretrained = True)
from torchvision import transforms
imgtransform = transforms.Compose([transforms.Resize(256), transforms.CenterCrop(256)])
mobilenetv2.eval()
from PIL import Image
sampleimage = Image.open("boat.jpg")
image_t = imgtransform(sampleimage)
batch = torch.unsqueeze(image_t, 0)
with open('imagenet_classes.txt') as f:
    classes = [line.strip() for line in f.readlines()]
output = mobilenetv2(batch)
_, indices = torch.sort(output, descending=True)
percentage = torch.nn.functional.softmax(output, dim=1)[0] * 100
[(classes[idx], percentage[idx].item()) for idx in indices[0][:5]]

```

```

Out[51]: [('speedboat', 63.66163635253906),
('gondola', 21.458023071289062),
('canoe', 2.5368568897247314),
('seashore, coast, seacoast, sea-coast', 1.9517611265182495),
('catamaran', 1.79120934009552)]

```

```

In [11]: with torch.cuda.device(0):
net = models.mobilenet_v2()
macs, params = get_model_complexity_info(net, (3, 224, 224), as_strings=True, print_per_layer_stat=True, verbose=True)
print('{:<30}   {:<8}'.format('Computational complexity: ', macs))
print('{:<30}   {:<8}'.format('Number of parameters: ', params))

```

Warning: module ConvNormActivation is treated as a zero-op.

Warning: module InvertedResidual is treated as a zero-op.

Warning: module Dropout is treated as a zero-op.

Warning: module MobileNetV2 is treated as a zero-op.

```

MobileNetV2(
  3.505 M, 100.000% Params, 0.32 GMac, 100.000% MACs,
  (features): Sequential(
    2.224 M, 63.451% Params, 0.319 GMac, 99.600% MACs,
    (0): ConvNormActivation(
      0.001 M, 0.026% Params, 0.012 GMac, 3.760% MACs,
      (0): Conv2d(0.001 M, 0.025% Params, 0.011 GMac, 3.384% MACs, 3, 32, kernel_size=(3, 3), stride=(2, 2), padding=(1, 1), bias=False)
      (1): BatchNorm2d(0.0 M, 0.002% Params, 0.001 GMac, 0.251% MACs, 32, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.125% MACs, inplace=True)
    )
    (1): InvertedResidual(
      0.001 M, 0.026% Params, 0.012 GMac, 3.635% MACs,
      (conv): Sequential(
        0.001 M, 0.026% Params, 0.012 GMac, 3.635% MACs,
        (0): ConvNormActivation(
          0.0 M, 0.010% Params, 0.005 GMac, 1.504% MACs,
          (0): Conv2d(0.0 M, 0.008% Params, 0.004 GMac, 1.128% MACs, 32, 32, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), groups=32, bias=False)
          (1): BatchNorm2d(0.0 M, 0.002% Params, 0.001 GMac, 0.251% MACs, 32, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
          (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.125% MACs, inplace=True)
        )
      )
    )
  )
)

```



```

rue)
    )
    (1): Conv2d(0.001 M, 0.015% Params, 0.006 GMac, 2.006% MACs, 32, 1
6, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (2): BatchNorm2d(0.0 M, 0.001% Params, 0.0 GMac, 0.125% MACs, 16, e
ps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    )
    )
    (2): InvertedResidual(
    0.005 M, 0.147% Params, 0.034 GMac, 10.576% MACs,
    (conv): Sequential(
    0.005 M, 0.147% Params, 0.034 GMac, 10.576% MACs,
    (0): ConvNormActivation(
    0.002 M, 0.049% Params, 0.023 GMac, 7.145% MACs,
    (0): Conv2d(0.002 M, 0.044% Params, 0.019 GMac, 6.017% MACs, 16,
96, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (1): BatchNorm2d(0.0 M, 0.005% Params, 0.002 GMac, 0.752% MACs, 9
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (2): ReLU6(0.0 M, 0.000% Params, 0.001 GMac, 0.376% MACs, inplace
=True)
    )
    (1): ConvNormActivation(
    0.001 M, 0.030% Params, 0.004 GMac, 1.128% MACs,
    (0): Conv2d(0.001 M, 0.025% Params, 0.003 GMac, 0.846% MACs, 96,
96, kernel_size=(3, 3), stride=(2, 2), padding=(1, 1), groups=96, bias=Fals
e)
    (1): BatchNorm2d(0.0 M, 0.005% Params, 0.001 GMac, 0.188% MACs, 9
6, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.094% MACs, inplace=T
rue)
    )
    (2): Conv2d(0.002 M, 0.066% Params, 0.007 GMac, 2.256% MACs, 96, 2
4, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (3): BatchNorm2d(0.0 M, 0.001% Params, 0.0 GMac, 0.047% MACs, 24, e
ps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    )
    )
    (3): InvertedResidual(
    0.009 M, 0.252% Params, 0.029 GMac, 8.931% MACs,
    (conv): Sequential(
    0.009 M, 0.252% Params, 0.029 GMac, 8.931% MACs,
    (0): ConvNormActivation(
    0.004 M, 0.107% Params, 0.012 GMac, 3.807% MACs,
    (0): Conv2d(0.003 M, 0.099% Params, 0.011 GMac, 3.384% MACs, 24,
144, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (1): BatchNorm2d(0.0 M, 0.008% Params, 0.001 GMac, 0.282% MACs, 1
44, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.141% MACs, inplace=T
rue)
    )
    (1): ConvNormActivation(
    0.002 M, 0.045% Params, 0.005 GMac, 1.692% MACs,
    (0): Conv2d(0.001 M, 0.037% Params, 0.004 GMac, 1.269% MACs, 144,
144, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), groups=144, bias=Fa
lse)
    (1): BatchNorm2d(0.0 M, 0.008% Params, 0.001 GMac, 0.282% MACs, 1
44, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.141% MACs, inplace=T
rue)
    )
    (2): Conv2d(0.003 M, 0.099% Params, 0.011 GMac, 3.384% MACs, 144, 2
4, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (3): BatchNorm2d(0.0 M, 0.001% Params, 0.0 GMac, 0.047% MACs, 24, e
ps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    )
    )
    (4): InvertedResidual(
    0.01 M, 0.285% Params, 0.017 GMac, 5.374% MACs,
    (conv): Sequential(
    0.01 M, 0.285% Params, 0.017 GMac, 5.374% MACs,

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        (0): ConvNormActivation(
          0.004 M, 0.107% Params, 0.012 GMac, 3.807% MACs,
          (0): Conv2d(0.003 M, 0.099% Params, 0.011 GMac, 3.384% MACs, 24,
144, kernel_size=(1, 1), stride=(1, 1), bias=False)
          (1): BatchNorm2d(0.0 M, 0.008% Params, 0.001 GMac, 0.282% MACs, 1
44, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
          (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.141% MACs, inplace=T
rue)
        )
        (1): ConvNormActivation(
          0.002 M, 0.045% Params, 0.001 GMac, 0.423% MACs,
          (0): Conv2d(0.001 M, 0.037% Params, 0.001 GMac, 0.317% MACs, 144,
144, kernel_size=(3, 3), stride=(2, 2), padding=(1, 1), groups=144, bias=Fa
lse)
          (1): BatchNorm2d(0.0 M, 0.008% Params, 0.0 GMac, 0.071% MACs, 14
4, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
          (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.035% MACs, inplace=T
rue)
        )
        (2): Conv2d(0.005 M, 0.131% Params, 0.004 GMac, 1.128% MACs, 144, 3
2, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (3): BatchNorm2d(0.0 M, 0.002% Params, 0.0 GMac, 0.016% MACs, 32, e
ps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      )
    (5): InvertedResidual(
      0.015 M, 0.424% Params, 0.012 GMac, 3.729% MACs,
      (conv): Sequential(
        0.015 M, 0.424% Params, 0.012 GMac, 3.729% MACs,
        (0): ConvNormActivation(
          0.007 M, 0.186% Params, 0.005 GMac, 1.645% MACs,
          (0): Conv2d(0.006 M, 0.175% Params, 0.005 GMac, 1.504% MACs, 32,
192, kernel_size=(1, 1), stride=(1, 1), bias=False)
          (1): BatchNorm2d(0.0 M, 0.011% Params, 0.0 GMac, 0.094% MACs, 19
2, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
          (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.047% MACs, inplace=T
rue)
        )
        (1): ConvNormActivation(
          0.002 M, 0.060% Params, 0.002 GMac, 0.564% MACs,
          (0): Conv2d(0.002 M, 0.049% Params, 0.001 GMac, 0.423% MACs, 192,
192, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), groups=192, bias=Fa
lse)
          (1): BatchNorm2d(0.0 M, 0.011% Params, 0.0 GMac, 0.094% MACs, 19
2, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
          (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.047% MACs, inplace=T
rue)
        )
        (2): Conv2d(0.006 M, 0.175% Params, 0.005 GMac, 1.504% MACs, 192, 3
2, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (3): BatchNorm2d(0.0 M, 0.002% Params, 0.0 GMac, 0.016% MACs, 32, e
ps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      )
    (6): InvertedResidual(
      0.015 M, 0.424% Params, 0.012 GMac, 3.729% MACs,
      (conv): Sequential(
        0.015 M, 0.424% Params, 0.012 GMac, 3.729% MACs,
        (0): ConvNormActivation(
          0.007 M, 0.186% Params, 0.005 GMac, 1.645% MACs,
          (0): Conv2d(0.006 M, 0.175% Params, 0.005 GMac, 1.504% MACs, 32,
192, kernel_size=(1, 1), stride=(1, 1), bias=False)
          (1): BatchNorm2d(0.0 M, 0.011% Params, 0.0 GMac, 0.094% MACs, 19
2, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
          (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.047% MACs, inplace=T
rue)
        )
        (1): ConvNormActivation(
          0.002 M, 0.060% Params, 0.002 GMac, 0.564% MACs,
          (0): Conv2d(0.002 M, 0.049% Params, 0.001 GMac, 0.423% MACs, 192,

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192, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), groups=192, bias=False)
    (1): BatchNorm2d(0.0 M, 0.011% Params, 0.0 GMac, 0.094% MACs, 192, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.047% MACs, inplace=True)
  )
  (2): Conv2d(0.006 M, 0.175% Params, 0.005 GMac, 1.504% MACs, 192, 32, kernel_size=(1, 1), stride=(1, 1), bias=False)
  (3): BatchNorm2d(0.0 M, 0.002% Params, 0.0 GMac, 0.016% MACs, 32, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
)
)
(7): InvertedResidual(
  0.021 M, 0.601% Params, 0.008 GMac, 2.546% MACs,
  (conv): Sequential(
    0.021 M, 0.601% Params, 0.008 GMac, 2.546% MACs,
    (0): ConvNormActivation(
      0.007 M, 0.186% Params, 0.005 GMac, 1.645% MACs,
      (0): Conv2d(0.006 M, 0.175% Params, 0.005 GMac, 1.504% MACs, 32, 192, kernel_size=(1, 1), stride=(1, 1), bias=False)
      (1): BatchNorm2d(0.0 M, 0.011% Params, 0.0 GMac, 0.094% MACs, 192, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.047% MACs, inplace=True)
    )
    (1): ConvNormActivation(
      0.002 M, 0.060% Params, 0.0 GMac, 0.141% MACs,
      (0): Conv2d(0.002 M, 0.049% Params, 0.0 GMac, 0.106% MACs, 192, 192, kernel_size=(3, 3), stride=(2, 2), padding=(1, 1), groups=192, bias=False)
      (1): BatchNorm2d(0.0 M, 0.011% Params, 0.0 GMac, 0.024% MACs, 192, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.012% MACs, inplace=True)
    )
    (2): Conv2d(0.012 M, 0.351% Params, 0.002 GMac, 0.752% MACs, 192, 64, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (3): BatchNorm2d(0.0 M, 0.004% Params, 0.0 GMac, 0.008% MACs, 64, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  )
)
(8): InvertedResidual(
  0.054 M, 1.548% Params, 0.011 GMac, 3.369% MACs,
  (conv): Sequential(
    0.054 M, 1.548% Params, 0.011 GMac, 3.369% MACs,
    (0): ConvNormActivation(
      0.025 M, 0.723% Params, 0.005 GMac, 1.575% MACs,
      (0): Conv2d(0.025 M, 0.701% Params, 0.005 GMac, 1.504% MACs, 64, 384, kernel_size=(1, 1), stride=(1, 1), bias=False)
      (1): BatchNorm2d(0.001 M, 0.022% Params, 0.0 GMac, 0.047% MACs, 384, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.024% MACs, inplace=True)
    )
    (1): ConvNormActivation(
      0.004 M, 0.121% Params, 0.001 GMac, 0.282% MACs,
      (0): Conv2d(0.003 M, 0.099% Params, 0.001 GMac, 0.212% MACs, 384, 384, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), groups=384, bias=False)
      (1): BatchNorm2d(0.001 M, 0.022% Params, 0.0 GMac, 0.047% MACs, 384, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.024% MACs, inplace=True)
    )
    (2): Conv2d(0.025 M, 0.701% Params, 0.005 GMac, 1.504% MACs, 384, 64, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (3): BatchNorm2d(0.0 M, 0.004% Params, 0.0 GMac, 0.008% MACs, 64, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  )
)

```

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)
(9): InvertedResidual(
  0.054 M, 1.548% Params, 0.011 GMac, 3.369% MACs,
  (conv): Sequential(
    0.054 M, 1.548% Params, 0.011 GMac, 3.369% MACs,
    (0): ConvNormActivation(
      0.025 M, 0.723% Params, 0.005 GMac, 1.575% MACs,
      (0): Conv2d(0.025 M, 0.701% Params, 0.005 GMac, 1.504% MACs, 64,
384, kernel_size=(1, 1), stride=(1, 1), bias=False)
      (1): BatchNorm2d(0.001 M, 0.022% Params, 0.0 GMac, 0.047% MACs, 3
84, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.024% MACs, inplace=T
rue)
    )
    (1): ConvNormActivation(
      0.004 M, 0.121% Params, 0.001 GMac, 0.282% MACs,
      (0): Conv2d(0.003 M, 0.099% Params, 0.001 GMac, 0.212% MACs, 384,
384, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), groups=384, bias=Fa
lse)
      (1): BatchNorm2d(0.001 M, 0.022% Params, 0.0 GMac, 0.047% MACs, 3
84, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.024% MACs, inplace=T
rue)
    )
    (2): Conv2d(0.025 M, 0.701% Params, 0.005 GMac, 1.504% MACs, 384, 6
4, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (3): BatchNorm2d(0.0 M, 0.004% Params, 0.0 GMac, 0.008% MACs, 64, e
ps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  )
)
(10): InvertedResidual(
  0.054 M, 1.548% Params, 0.011 GMac, 3.369% MACs,
  (conv): Sequential(
    0.054 M, 1.548% Params, 0.011 GMac, 3.369% MACs,
    (0): ConvNormActivation(
      0.025 M, 0.723% Params, 0.005 GMac, 1.575% MACs,
      (0): Conv2d(0.025 M, 0.701% Params, 0.005 GMac, 1.504% MACs, 64,
384, kernel_size=(1, 1), stride=(1, 1), bias=False)
      (1): BatchNorm2d(0.001 M, 0.022% Params, 0.0 GMac, 0.047% MACs, 3
84, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.024% MACs, inplace=T
rue)
    )
    (1): ConvNormActivation(
      0.004 M, 0.121% Params, 0.001 GMac, 0.282% MACs,
      (0): Conv2d(0.003 M, 0.099% Params, 0.001 GMac, 0.212% MACs, 384,
384, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), groups=384, bias=Fa
lse)
      (1): BatchNorm2d(0.001 M, 0.022% Params, 0.0 GMac, 0.047% MACs, 3
84, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.024% MACs, inplace=T
rue)
    )
    (2): Conv2d(0.025 M, 0.701% Params, 0.005 GMac, 1.504% MACs, 384, 6
4, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (3): BatchNorm2d(0.0 M, 0.004% Params, 0.0 GMac, 0.008% MACs, 64, e
ps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  )
)
(11): InvertedResidual(
  0.067 M, 1.901% Params, 0.013 GMac, 4.125% MACs,
  (conv): Sequential(
    0.067 M, 1.901% Params, 0.013 GMac, 4.125% MACs,
    (0): ConvNormActivation(
      0.025 M, 0.723% Params, 0.005 GMac, 1.575% MACs,
      (0): Conv2d(0.025 M, 0.701% Params, 0.005 GMac, 1.504% MACs, 64,
384, kernel_size=(1, 1), stride=(1, 1), bias=False)
      (1): BatchNorm2d(0.001 M, 0.022% Params, 0.0 GMac, 0.047% MACs, 3
84, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.024% MACs, inplace=T

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rue)
    )
    (1): ConvNormActivation(
      0.004 M, 0.121% Params, 0.001 GMac, 0.282% MACs,
      (0): Conv2d(0.003 M, 0.099% Params, 0.001 GMac, 0.212% MACs, 384,
        384, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), groups=384, bias=False)
      (1): BatchNorm2d(0.001 M, 0.022% Params, 0.0 GMac, 0.047% MACs, 384, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.024% MACs, inplace=True)
    )
    (2): Conv2d(0.037 M, 1.052% Params, 0.007 GMac, 2.256% MACs, 384, 96, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (3): BatchNorm2d(0.0 M, 0.005% Params, 0.0 GMac, 0.012% MACs, 96, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  )
)
(12): InvertedResidual(
  0.118 M, 3.375% Params, 0.023 GMac, 7.309% MACs,
  (conv): Sequential(
    0.118 M, 3.375% Params, 0.023 GMac, 7.309% MACs,
    (0): ConvNormActivation(
      0.056 M, 1.611% Params, 0.011 GMac, 3.490% MACs,
      (0): Conv2d(0.055 M, 1.578% Params, 0.011 GMac, 3.384% MACs, 96, 576, kernel_size=(1, 1), stride=(1, 1), bias=False)
      (1): BatchNorm2d(0.001 M, 0.033% Params, 0.0 GMac, 0.071% MACs, 576, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.035% MACs, inplace=True)
    )
    (1): ConvNormActivation(
      0.006 M, 0.181% Params, 0.001 GMac, 0.423% MACs,
      (0): Conv2d(0.005 M, 0.148% Params, 0.001 GMac, 0.317% MACs, 576, 576, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), groups=576, bias=False)
      (1): BatchNorm2d(0.001 M, 0.033% Params, 0.0 GMac, 0.071% MACs, 576, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.035% MACs, inplace=True)
    )
    (2): Conv2d(0.055 M, 1.578% Params, 0.011 GMac, 3.384% MACs, 576, 96, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (3): BatchNorm2d(0.0 M, 0.005% Params, 0.0 GMac, 0.012% MACs, 96, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  )
)
(13): InvertedResidual(
  0.118 M, 3.375% Params, 0.023 GMac, 7.309% MACs,
  (conv): Sequential(
    0.118 M, 3.375% Params, 0.023 GMac, 7.309% MACs,
    (0): ConvNormActivation(
      0.056 M, 1.611% Params, 0.011 GMac, 3.490% MACs,
      (0): Conv2d(0.055 M, 1.578% Params, 0.011 GMac, 3.384% MACs, 96, 576, kernel_size=(1, 1), stride=(1, 1), bias=False)
      (1): BatchNorm2d(0.001 M, 0.033% Params, 0.0 GMac, 0.071% MACs, 576, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.035% MACs, inplace=True)
    )
    (1): ConvNormActivation(
      0.006 M, 0.181% Params, 0.001 GMac, 0.423% MACs,
      (0): Conv2d(0.005 M, 0.148% Params, 0.001 GMac, 0.317% MACs, 576, 576, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), groups=576, bias=False)
      (1): BatchNorm2d(0.001 M, 0.033% Params, 0.0 GMac, 0.071% MACs, 576, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.035% MACs, inplace=True)
    )
  )
)

```

```

        (2): Conv2d(0.055 M, 1.578% Params, 0.011 GMac, 3.384% MACs, 576, 9
6, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (3): BatchNorm2d(0.0 M, 0.005% Params, 0.0 GMac, 0.012% MACs, 96, e
ps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    )
)
(14): InvertedResidual(
  0.155 M, 4.430% Params, 0.016 GMac, 5.011% MACs,
  (conv): Sequential(
    0.155 M, 4.430% Params, 0.016 GMac, 5.011% MACs,
    (0): ConvNormActivation(
      0.056 M, 1.611% Params, 0.011 GMac, 3.490% MACs,
      (0): Conv2d(0.055 M, 1.578% Params, 0.011 GMac, 3.384% MACs, 96,
576, kernel_size=(1, 1), stride=(1, 1), bias=False)
      (1): BatchNorm2d(0.001 M, 0.033% Params, 0.0 GMac, 0.071% MACs, 5
76, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.035% MACs, inplace=T
rue)
    )
    (1): ConvNormActivation(
      0.006 M, 0.181% Params, 0.0 GMac, 0.106% MACs,
      (0): Conv2d(0.005 M, 0.148% Params, 0.0 GMac, 0.079% MACs, 576, 5
76, kernel_size=(3, 3), stride=(2, 2), padding=(1, 1), groups=576, bias=Fal
se)
      (1): BatchNorm2d(0.001 M, 0.033% Params, 0.0 GMac, 0.018% MACs, 5
76, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.009% MACs, inplace=T
rue)
    )
    (2): Conv2d(0.092 M, 2.629% Params, 0.005 GMac, 1.410% MACs, 576, 1
60, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (3): BatchNorm2d(0.0 M, 0.009% Params, 0.0 GMac, 0.005% MACs, 160,
eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  )
)
(15): InvertedResidual(
  0.32 M, 9.130% Params, 0.016 GMac, 4.926% MACs,
  (conv): Sequential(
    0.32 M, 9.130% Params, 0.016 GMac, 4.926% MACs,
    (0): ConvNormActivation(
      0.156 M, 4.437% Params, 0.008 GMac, 2.394% MACs,
      (0): Conv2d(0.154 M, 4.382% Params, 0.008 GMac, 2.350% MACs, 160,
960, kernel_size=(1, 1), stride=(1, 1), bias=False)
      (1): BatchNorm2d(0.002 M, 0.055% Params, 0.0 GMac, 0.029% MACs, 9
60, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.015% MACs, inplace=T
rue)
    )
    (1): ConvNormActivation(
      0.011 M, 0.301% Params, 0.001 GMac, 0.176% MACs,
      (0): Conv2d(0.009 M, 0.247% Params, 0.0 GMac, 0.132% MACs, 960, 9
60, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), groups=960, bias=Fal
se)
      (1): BatchNorm2d(0.002 M, 0.055% Params, 0.0 GMac, 0.029% MACs, 9
60, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
      (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.015% MACs, inplace=T
rue)
    )
    (2): Conv2d(0.154 M, 4.382% Params, 0.008 GMac, 2.350% MACs, 960, 1
60, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (3): BatchNorm2d(0.0 M, 0.009% Params, 0.0 GMac, 0.005% MACs, 160,
eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
  )
)
(16): InvertedResidual(
  0.32 M, 9.130% Params, 0.016 GMac, 4.926% MACs,
  (conv): Sequential(
    0.32 M, 9.130% Params, 0.016 GMac, 4.926% MACs,
    (0): ConvNormActivation(
      0.156 M, 4.437% Params, 0.008 GMac, 2.394% MACs,

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        (0): Conv2d(0.154 M, 4.382% Params, 0.008 GMac, 2.350% MACs, 160,
960, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (1): BatchNorm2d(0.002 M, 0.055% Params, 0.0 GMac, 0.029% MACs, 9
60, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.015% MACs, inplace=T
rue)
    )
    (1): ConvNormActivation(
        0.011 M, 0.301% Params, 0.001 GMac, 0.176% MACs,
        (0): Conv2d(0.009 M, 0.247% Params, 0.0 GMac, 0.132% MACs, 960, 9
60, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), groups=960, bias=Fa
lse)
        (1): BatchNorm2d(0.002 M, 0.055% Params, 0.0 GMac, 0.029% MACs, 9
60, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
        (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.015% MACs, inplace=T
rue)
    )
    (2): Conv2d(0.154 M, 4.382% Params, 0.008 GMac, 2.350% MACs, 960, 1
60, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (3): BatchNorm2d(0.0 M, 0.009% Params, 0.0 GMac, 0.005% MACs, 160,
eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
)
)
(17): InvertedResidual(
    0.474 M, 13.522% Params, 0.023 GMac, 7.281% MACs,
    (conv): Sequential(
        0.474 M, 13.522% Params, 0.023 GMac, 7.281% MACs,
        (0): ConvNormActivation(
            0.156 M, 4.437% Params, 0.008 GMac, 2.394% MACs,
            (0): Conv2d(0.154 M, 4.382% Params, 0.008 GMac, 2.350% MACs, 160,
960, kernel_size=(1, 1), stride=(1, 1), bias=False)
            (1): BatchNorm2d(0.002 M, 0.055% Params, 0.0 GMac, 0.029% MACs, 9
60, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
            (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.015% MACs, inplace=T
rue)
        )
        (1): ConvNormActivation(
            0.011 M, 0.301% Params, 0.001 GMac, 0.176% MACs,
            (0): Conv2d(0.009 M, 0.247% Params, 0.0 GMac, 0.132% MACs, 960, 9
60, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1), groups=960, bias=Fa
lse)
            (1): BatchNorm2d(0.002 M, 0.055% Params, 0.0 GMac, 0.029% MACs, 9
60, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
            (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.015% MACs, inplace=T
rue)
        )
        (2): Conv2d(0.307 M, 8.765% Params, 0.015 GMac, 4.701% MACs, 960, 3
20, kernel_size=(1, 1), stride=(1, 1), bias=False)
        (3): BatchNorm2d(0.001 M, 0.018% Params, 0.0 GMac, 0.010% MACs, 32
0, eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    )
)
(18): ConvNormActivation(
    0.412 M, 11.760% Params, 0.02 GMac, 6.326% MACs,
    (0): Conv2d(0.41 M, 11.687% Params, 0.02 GMac, 6.267% MACs, 320, 128
0, kernel_size=(1, 1), stride=(1, 1), bias=False)
    (1): BatchNorm2d(0.003 M, 0.073% Params, 0.0 GMac, 0.039% MACs, 1280,
eps=1e-05, momentum=0.1, affine=True, track_running_stats=True)
    (2): ReLU6(0.0 M, 0.000% Params, 0.0 GMac, 0.020% MACs, inplace=True)
)
)
(classifier): Sequential(
    1.281 M, 36.549% Params, 0.001 GMac, 0.400% MACs,
    (0): Dropout(0.0 M, 0.000% Params, 0.0 GMac, 0.000% MACs, p=0.2, inplac
e=False)
    (1): Linear(1.281 M, 36.549% Params, 0.001 GMac, 0.400% MACs, in_featur
es=1280, out_features=1000, bias=True)
)
)
Computational complexity:      0.32 GMac

```

Number of parameters: 3.5 M

In []:

In []: