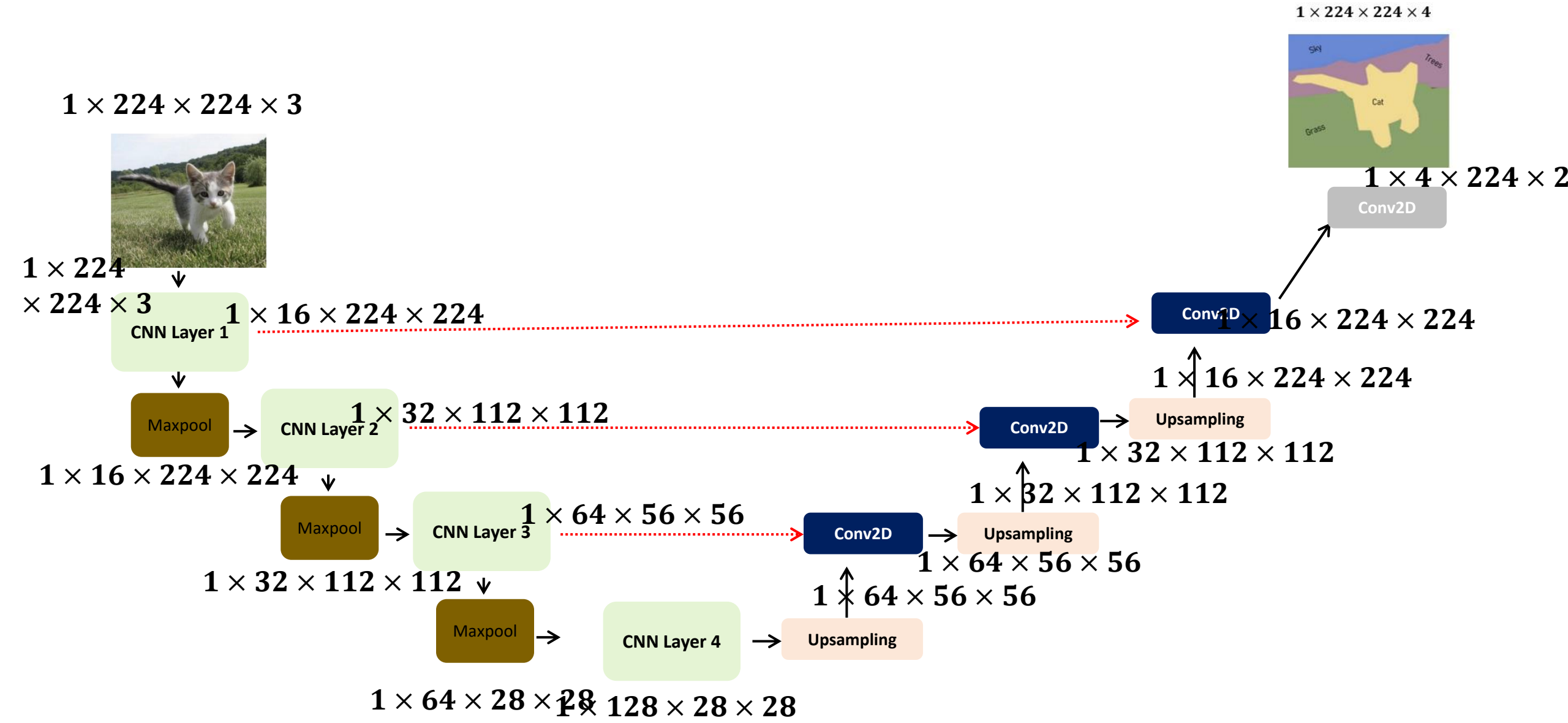
$1 \times 224 \times 224 \times 3$
$1 \times 224 \times 224 \times 3$
CNN Layer 1
$1 \times 16 \times 224 \times 224$
Maxpool
CNN Layer 2
$1 \times 32 \times 112 \times 112$
$1 \times 16 \times 224 \times 224$
Maxpool
CNN Layer 3
$1 \times 64 \times 56 \times 56$
$1 \times 32 \times 112 \times 112$
Maxpool
CNN Layer 4
$1 \times 128 \times 28 \times 28$
$1 \times 64 \times 28 \times 28$
Upsampling
Conv2D
$1 \times 64 \times 56 \times 56$
Upsampling
Conv2D
$1 \times 32 \times 112 \times 112$
Upsampling
Conv2D
$1 \times 16 \times 224 \times 224$
$1 \times 16 \times 224 \times 224$
Conv2D
$1 \times 4 \times 224 \times 2$
$1 \times 224 \times 224 \times 4$
SKY
Trees
Cat
Grass

$1 \times 224 \times 224 \times 3$

CNN Layer 1

```
inp=torch.rand(1,3,224,224)
c1=torch.nn.Conv2d(3,16,3,padding=1)
out=c1(inp)
print(out.shape)
```

```
torch.Size([1, 16, 224, 224])
```

$1 \times 224 \times 224 \times 3$

CNN Layer 1

([1, 16, 224, 224])

outc1

Maxpool

([1, 16, 112, 112])

```
maxp1=torch.nn.MaxPool2d(2,2)
p1=maxp1(outc1)
print(p1.shape)
```

$1 \times 224 \times 224 \times 3$

CNN Layer 1 ([1, 16, 224, 224])

outc1

Maxpool → CNN Layer 2 ([1, 32, 112, 112])

outc2

([1, 16, 112, 112])

```
c2=torch.nn.Conv2d(16,32,3,padding=1)
outc2=c2(p1)
print(outc2.shape)
```

$1 \times 224 \times 224 \times 3$

CNN Layer 1 ([1, 16, 224, 224])

outc1

maxp1 → CNN Layer 2 ([1, 32, 112, 112])

outc2

([1, 16, 112, 112])

maxp2

([1, 32, 56, 56])

```
maxp2=torch.nn.MaxPool2d(2,2)
p2=maxp2(outc2)
print(p2.shape)
```

$1 \times 224 \times 224 \times 3$

CNN Layer 1 ([1, 16, 224, 224])

outc1

maxp1 → CNN Layer 2 ([1, 32, 112, 112])

outc2

([1, 16, 112, 112])

maxp2 → CNN Layer 3 [1, 64, 56, 56]

outc3

([1, 32, 56, 56])

```
c3=torch.nn.Conv2d(32,64,3,padding=1)
outc3=c3(p2)
print(outc3.shape)
```

$1 \times 224 \times 224 \times 3$

CNN Layer 1 ([1, 16, 224, 224])

outc1

maxp1 → CNN Layer 2 ([1, 32, 112, 112])

outc2

([1, 16, 112, 112])

maxp2 → CNN Layer 3 [1, 64, 56, 56]

outc3

([1, 32, 56, 56])

maxp3

([1, 64, 28, 28])

```
maxp3=torch.nn.MaxPool2d(2,2)
p3=maxp3(outc3)
print(p3.shape)
```

$1 \times 224 \times 224 \times 3$

CNN Layer 1 ([1, 16, 224, 224])

outc1

maxp1 → CNN Layer 2 ([1, 32, 112, 112])

outc2

([1, 16, 112, 112])

maxp2 → CNN Layer 3 [1, 64, 56, 56]

outc3

([1, 32, 56, 56])

maxp3 → CNN Layer 4 ([1, 128, 28, 28])

([1, 64, 28, 28])

```
c4=torch.nn.Conv2d(64,128,3,padding
outc4=c4(p3)
print(outc4.shape)
```

$1 \times 224 \times 224 \times 3$

CNN Layer 1 ([1, 16, 224, 224])

outc1

maxp1 → CNN Layer 2 ([1, 32, 112, 112])

outc2

([1, 16, 112, 112])

maxp2 → CNN Layer 3 [1, 64, 56, 56]

outc3

([1, 32, 56, 56])

maxp3 → CNN Layer 4 → Upsampling1

([1, 64, 28, 28])

([1, 128, 28, 28])

```
upsampling1=torch.nn.ConvTranspose
2d(128,64, 2,stride=2)
up1=upsampling1(outc4)
print(up1.shape)
```

([1, 64, 56, 56])

$1 \times 224 \times 224 \times 3$

CNN Layer 1 ([1, 16, 224, 224])

outc1

maxp1 → CNN Layer 2 ([1, 32, 112, 112])

outc2

([1, 16, 112, 112])

maxp2 → CNN Layer 3 [1, 64, 56, 56]

outc3

([1, 32, 56, 56])

maxp3 → CNN Layer 4 → Upsampling1 ([1, 128, 28, 28])

([1, 64, 28, 28])

concat1 → ([1, 128, 56, 56])

([1, 64, 56, 56])

```
concat1= torch.cat([outc3, up1], dim=1)
print(concat1.shape)
```

$1 \times 224 \times 224 \times 3$

CNN Layer 1 ([1, 16, 224, 224])

outc1

maxp1 → CNN Layer 2 ([1, 32, 112, 112])

outc2

([1, 16, 112, 112])

maxp2 → CNN Layer 3 [1, 64, 56, 56]

outc3

([1, 32, 56, 56])

maxp3 → CNN Layer 4 ([1, 64, 28, 28])

```
upconv1=torch.nn.Conv2d(128,64,3,padding=1)
upc1=upconv1(concat1)
print(upc1.shape)
```

([1, 128, 56, 56])

concat1 → Conv2D → ([1, 64, 56, 56])

([1, 64, 56, 56])

Upsampling1 ([1, 128, 28, 28])

$1 \times 224 \times 224 \times 3$

CNN Layer 1 ([1, 16, 224, 224])

outc1

maxp1 → CNN Layer 2 ([1, 32, 112, 112])

outc2

([1, 16, 112, 112])

maxp2 → CNN Layer 3 [1, 64, 56, 56]

outc3

([1, 32, 56, 56])

maxp3 → CNN Layer 4 ([1, 64, 28, 28])

```
upsampling2=torch.nn.ConvTranspose2d(
64,32,2,stride=2)
up2=upsampling2(upc1)
print(up2.shape)
```

([1, 128, 56, 56]) concat1 → Conv2D → Upsampling2 ([1, 32, 112, 1

([1, 64, 56, 56])

([1, 64, 56, 56])

Upsampling1 ([1, 128, 28, 28])

$1 \times 3 \times 224 \times 224$

CNN Layer 1

([1, 16, 224, 224])

outc1

maxp1

outc2

CNN Layer 2

([1, 32, 112, 112])

concat2

Conv2D

([1, 32, 112, 112])

([1, 16, 112, 112])

([1, 128, 56, 56])

outc3

maxp2

CNN Layer 3

[1, 64, 56, 56]

concat1

Conv2D

Upsampling2

([1, 64, 56, 56])

([1, 32, 56, 56])

([1, 64, 56, 56])

maxp3

CNN Layer 4

Upsampling1

([1, 64, 28, 28])

([1, 128, 28, 28])

$1 \times 3 \times 224 \times 224$

CNN Layer 1

([1, 16, 224, 224])

outc1

maxp1

CNN Layer 2

([1, 32, 112, 112])

outc2

([1, 16, 112, 112])

maxp2

CNN Layer 3

[1, 64, 56, 56]

outc3

([1, 32, 56, 56])

maxp3

CNN Layer 4

([1, 64, 28, 28])

Upsampling1

([1, 128, 28, 28])

([1, 128, 56, 56])

concat1

Conv2D

Upsampling2

([1, 64, 56, 56])

([1, 64, 56, 56])

([1, 32, 112, 112])

concat2

Conv2D

Upsampling3

([1, 64, 112, 112])

([1, 32, 112, 112])

[1, 32, 224, 224])[1, 16, 224, 224])

concat3

Conv2D

[1, 16, 224, 224]

$1 \times 3 \times 224 \times 224$

```
final_cpnv=torch.nn.Conv2d(16,4,1)
out=final_cpnv(upc4)
print(out.shape)
```

([1, 4, 224, 224])

Conv2D

[1, 32, 224, 224])[1, 16, 224, 224])

CNN Layer 1

([1, 16, 224, 224])

concat3

Conv2D

[1, 16, 224, 224])

outc1

outc2

([1, 64, 112, 112])

maxp1

CNN Layer 2

([1, 32, 112, 112])

concat2

Conv2D

Upsampling3

([1, 32, 112, 112])

([1, 16, 112, 112])

outc3

([1, 128, 56, 56])

maxp2

CNN Layer 3

[1, 64, 56, 56]

concat1

Conv2D

Upsampling2

([1, 32, 112, 112])

([1, 32, 56, 56])

([1, 64, 56, 56])

([1, 64, 56, 56])

maxp3

CNN Layer 4

Upsampling1

([1, 64, 28, 28])

([1, 128, 28, 28])

$1 \times 3 \times 224 \times 224$

```
final_cpnv=torch.nn.Conv2d(16,4,1)
out=final_cpnv(upc4)
print(out.shape)
```

([1, 4, 224, 224])

Conv2D

[1, 32, 224, 224])[1, 16, 224, 224])

CNN Layer 1

([1, 16, 224, 224])

concat3

Conv2D

[1, 16, 224, 224])

outc1

outc2

([1, 64, 112, 112])

maxp1

CNN Layer 2

([1, 32, 112, 112])

concat2

Conv2D

Upsampling3

([1, 32, 112, 112])

([1, 16, 112, 112])

outc3

([1, 128, 56, 56])

maxp2

CNN Layer 3

[1, 64, 56, 56]

concat1

Conv2D

Upsampling2

([1, 32, 112, 112])

([1, 64, 56, 56])

([1, 32, 56, 56])

maxp3

CNN Layer 4

Upsampling1

([1, 64, 56, 56])

([1, 128, 28, 28])

([1, 64, 28, 28])

$1 \times 3 \times 224 \times 224$

```
final_cpnv=torch.nn.Conv2d(16,4,1)
out=final_cpnv(upc4)
print(out.shape)
```

([1, 4, 224, 224])

Conv2D

[1, 32, 224, 224])[1, 16, 224, 224])

CNN Layer 1

([1, 16, 224, 224])

concat3

Conv2D

[1, 16, 224, 224])

outc1

outc2

([1, 64, 112, 112])

maxp1

CNN Layer 2

([1, 32, 112, 112])

concat2

Conv2D

Upsampling3

([1, 32, 112, 112])

([1, 16, 112, 112])

outc3

([1, 128, 56, 56])

maxp2

CNN Layer 3

[1, 64, 56, 56]

concat1

Conv2D

Upsampling2

([1, 32, 112, 112])

([1, 64, 56, 56])

([1, 32, 56, 56])

([1, 64, 56, 56])

maxp3

CNN Layer 4

Upsampling1

([1, 64, 28, 28])

([1, 128, 28, 28])

$1 \times 3 \times 224 \times 224$

```
final_cpnv=torch.nn.Conv2d(16,4,1)
out=final_cpnv(upc4)
print(out.shape)
```

([1, 4, 224, 224])

Conv2D

[1, 32, 224, 224])[1, 16, 224, 224])

CNN Layer 1

([1, 16, 224, 224])

concat3

Conv2D

[1, 16, 224, 224])

outc1

outc2

([1, 64, 112, 112])

maxp1

CNN Layer 2

([1, 32, 112, 112])

concat2

Conv2D

Upsampling3

([1, 32, 112, 112])

([1, 16, 112, 112])

outc3

([1, 128, 56, 56])

maxp2

CNN Layer 3

[1, 64, 56, 56]

concat1

Conv2D

Upsampling2

([1, 32, 112, 112])

([1, 32, 56, 56])

([1, 64, 56, 56])

([1, 64, 56, 56])

maxp3

CNN Layer 4

Upsampling1

([1, 64, 28, 28])

([1, 128, 28, 28])