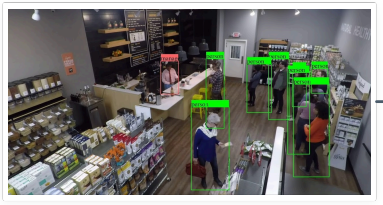
CUSTOM DENSITY RESNET ARCHITECTURE

RGB Image
[B,3,224,224]



STEM Block
- Conv2d(3→64, 7×7, stride=2, pad=3)
- BatchNorm2d(64) + ReLU
- MaxPool2d(3×3, stride=2, pad=1)
- Output: [B, 64, 56, 56]

Layer 1
- 3 × Bottleneck Blocks
- Channels: 64 → 256
- No stride reduction
- Output: [B, 256, 56, 56]

Layer 2
- 4 × Bottleneck Blocks
- Channels: 256 → 512
- First block: stride=2
- Output: [B, 512, 28, 28]

Layer 3
- 6 × Bottleneck Blocks
- Channels: 512 → 1024
- First block: stride=2
- Output: [B, 1024, 14, 14]

Layer 4
- 3 × Bottleneck Blocks
- Channels: 1024 → 2048
- First block: stride=2
- Output: [B, 2048, 7, 7]

Density Conv 1
- Conv2d(2048→1024, 3×3, pad=1)
- ReLU activation
- Output: [B, 1024, 7, 7]

Params: 18,875,392

Density Conv 2
- Conv2d(1024→512, 3×3, pad=1)
- ReLU activation
- Output: [B, 512, 7, 7]

Params: 4,719,104

Density Conv 3
- Conv2d(512→256, 3×3, pad=1)
- ReLU activation
- Output: [B, 256, 7, 7]

Params: 1,179,904

Final Output
- Conv2d(256→1, 1×1, pad=0)
- ReLU (non-negative densities)
- Output: [B, 1, 7, 7]

Params: 257

Upsampling
- F.interpolate(size=(224,224))
- Mode: bilinear, align_corners=False
- Final Output: [B, 1, 224, 224]

Params: 0 (interpolation)

Density Map
- Output: [B,1,224,224]