Neural Style Transfer - Report

1. Main Code Snippet

```
def get_features(image, model, layers=None):
    layers = {
        '0': 'conv1_1',
        '5': 'conv2_1',
        '10': 'conv3_1',
        '19': 'conv4_1',
        '21': 'conv4_2',
        '28': 'conv5_1'
    }
    features = {}
    x = image
    for name, layer in model._modules.items():
        x = layer(x)
        if name in layers:
            features[layers[name]] = x
    return features
```

2. Findings

- Using content_weight=1e4 and style_weight=1e2 produced balanced output.
- Higher style weight made the image more artistic but less recognizable.
- A learning rate of 0.003 and 2000 steps gave stable convergence.
- More steps beyond 3000 didn't significantly improve quality.

3. Conclusion

Tuning style and content weights is crucial. A moderate learning rate and 2000-3000 steps yield good visual results. Neural style transfer can generate artistic images when parameters are well-balanced.