原代码中main.py与增加一层隐藏层的代码对比：

|  |  |  |
| --- | --- | --- |
|  | **原代码** | **增加一层隐藏层** |
| **16行** | network =  network.Network([784, 30, 10]) | network =  network.Network([784, 60, 30, 10]) |

原代码中network.py 与使用cos激活函数的代码对比：

|  |  |  |
| --- | --- | --- |
|  | **原代码** | **cos激活函数** |
| **138行** | 1.0/(1.0+np.exp(-z)) | 0.5 \* np.cos(0.05 \* z - 0.5 \* np.pi) + 0.5 |
| **143行** | sigmoid(z)\*(1-sigmoid(z)) | 0.5 \* 0.05 \* np.cos(0.05 \* z) |

原代码中network.py 与使用交叉熵代价函数的代码对比：

|  |  |  |
| --- | --- | --- |
|  | **原代码** | **交叉熵代价函数** |
| **103行** | delta = self.cost\_derivative(activations[-1], y) | delta =self.cost2(zs[-1], y) |
| **113行** | for l in range(2, self.num\_layers): | delta =  self.cost\_derivative(activations[-1], y) \* sigmoid\_prime(zs[-1])  for l in xrange(2, self.num\_layers): |
| **135行** |  | def cost2(self, zs\_prev, y):  return (sigmoid(zs\_prev) - y) |