AI Lab 09
18L-1139

# Q1:

Accuracy

**Sigmoid:**
313/313 - 0s - loss: 0.3414 - accuracy: 0.8762
Test accuracy: 0.8762000203132629

**Tanh:**
313/313 - 0s - loss: 0.3275 - accuracy: 0.8851
Test accuracy: 0.8851000070571899

**Relu:**
313/313 - 0s - loss: 0.3273 - accuracy: 0.8863
Test accuracy: 0.8863000273704529

Selected: relu

# Q2:

**Relu with 128, 128:**

```
model = tf.keras.Sequential([
    tf.keras.layers.Flatten(input_shape=(28, 28)),
    tf.keras.layers.Dense(128, activation='relu'),
    tf.keras.layers.Dense(128, activation='relu'),
    tf.keras.layers.Dense(10)
])
```

313/313 - 0s - loss: 0.3518 - accuracy: 0.8836
Test accuracy: 0.8835999965667725

**Relu with 128, 100:**

```
model = tf.keras.Sequential([
    tf.keras.layers.Flatten(input_shape=(28, 28)),
    tf.keras.layers.Dense(128, activation='relu'),
    tf.keras.layers.Dense(100, activation='relu'),
    tf.keras.layers.Dense(10)
])
```

313/313 - 0s - loss: 0.3306 - accuracy: 0.8802
Test accuracy: 0.8802000284194946

**Relu with 128, 75:**

```
model = tf.keras.Sequential([
    tf.keras.layers.Flatten(input_shape=(28, 28)),
    tf.keras.layers.Dense(128, activation='relu'),
    tf.keras.layers.Dense(75, activation='relu'),
    tf.keras.layers.Dense(10)
])
```

313/313 - 0s - loss: 0.3457 - accuracy: 0.8783
Test accuracy: 0.8783000111579895

Relu with 128,128 has most accuracy.

# Q3:

Changed data to mnist handwritten

**Sigmoid:**
313/313 - 0s - loss: 0.0765 - accuracy: 0.9747
Test accuracy: 0.9746999740600586

**Tanh:**
313/313 - 0s - loss: 0.0733 - accuracy: 0.9783
Test accuracy: 0.9782999753952026

**Relu:**
313/313 - 0s - loss: 0.0900 - accuracy: 0.9784
Test accuracy: 0.9783999919891357

**Selected:** relu (max accuracy)

**Relu with 128,128:**
313/313 - 0s - loss: 0.0992 - accuracy: 0.9761
Test accuracy: 0.9761000275611877

**Relu with 128, 100:**
313/313 - 0s - loss: 0.0812 - accuracy: 0.9806
Test accuracy: 0.9805999994277954

**Relu with 128, 75:**
313/313 - 0s - loss: 0.0950 - accuracy: 0.9778
Test accuracy: 0.9778000116348267

Relu with 128, 100 has most accuracy.