Experiments Report

First Neural Network architecture :

```
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 Layer (type)                 Output Shape              Param #
=================================================================
 dense_40 (Dense)             (None, 2048)              8390656

 dense_41 (Dense)             (None, 1024)              2098176

 dense_42 (Dense)             (None, 10)                10250

=================================================================
Total params: 10,499,082
Trainable params: 10,499,082
Non-trainable params: 0
```

First split :

Accuracy = 0.5066666603088379

Second split :

Accuracy : 0.699999988079071

Third split :

Accuracy = :0.7833333611488342

Evaluating :

	precision	recall	f1-score	support
0	0.80	0.80	0.80	35

1	0.98	0.87	0.92	46
2	0.78	0.78	0.78	46
3	0.89	0.84	0.86	38
4	0.81	0.51	0.62	49
5	0.94	0.86	0.90	58
6	0.77	0.74	0.75	62
7	0.48	0.83	0.61	42
8	0.62	0.72	0.67	39
9	0.94	0.81	0.87	36
accuracy			0.77	451
macro avg	0.80	0.78	0.78	451

Second Neural Network architecture :

```
Layer (type)                 Output Shape              Param #
=================================================================
 dense_30 (Dense)             (None, 100)               409700

 dense_31 (Dense)             (None, 400)               40400

 dense_32 (Dense)             (None, 300)               120300

 dense_33 (Dense)             (None, 10)                3010
=================================================================
Total params: 573,410
Trainable params: 573,410
Non-trainable params: 0
```

First split :

Accuracy = 0.4116666615009308

Second split :

Accuracy = 0.4833333194255829

Third split :

Accuracy = 0.6416666507720947

Evaluating :

	precision	recall	f1-score	support
0	0.93	0.80	0.86	46
1	0.60	0.93	0.73	56
2	0.75	0.31	0.44	39
3	0.80	0.79	0.80	42
4	0.71	0.26	0.38	38
5	0.86	0.92	0.89	64
6	0.85	0.41	0.56	41
7	0.48	0.75	0.58	40
8	0.50	0.87	0.63	38
9	0.91	0.68	0.78	47
accuracy			0.70	451
macro avg	0.74	0.67	0.66	451
weighted avg	0.75	0.70	0.69	451

CNN architecture :

```
Layer (type)                 Output Shape              Param #
=================================================================
 conv2d_5 (Conv2D)           (None, 61, 61, 64)        3136

 max_pooling2d_5 (MaxPooling  (None, 30, 30, 64)       0
 2D)

 flatten_5 (Flatten)         (None, 57600)             0

 dense_28 (Dense)            (None, 64)                3686464

 dense_29 (Dense)            (None, 10)                650

=================================================================
Total params: 3,690,250
Trainable params: 3,690,250
Non-trainable params: 0
```

First split :

Accuracy = 0.8516666889190674

Second split :

Accuracy = 0.9733333587646484

Third split :

Accuracy = 0.9933333396911621

Evaluating :

	precision	recall	f1-score	support
0	0.93	1.00	0.96	51
1	0.81	1.00	0.90	35
2	0.70	0.84	0.76	44
3	0.98	0.90	0.94	52
4	0.85	0.63	0.72	46
5	0.94	1.00	0.97	50
6	0.97	0.71	0.82	49
7	0.67	0.78	0.72	41
8	0.87	0.83	0.85	54
9	0.90	0.90	0.90	29
accuracy			0.86	451
macro avg	0.86	0.86	0.85	451
weighted avg	0.87	0.86	0.86	451

SVM Evaluating :

	precision	recall	f1-score	support
0	0.90	0.93	0.91	46
1	0.89	0.91	0.90	45
2	0.76	0.83	0.79	41
3	0.97	0.86	0.91	43
4	0.82	0.67	0.74	49
5	0.96	0.96	0.96	54
6	0.82	0.84	0.83	43
7	0.72	0.81	0.76	47
8	0.82	0.84	0.83	43
9	0.87	0.85	0.86	40
accuracy			0.85	451
macro avg	0.85	0.85	0.85	451
weighted avg	0.85	0.85	0.85	451

Comparing between models (NN vs SVM):

Model	ANN1	ANN2	CNN(using RGB image)	SVM(using RGB image)
Accuracy	77 %	70%	86%	85%