GLOBAL ACADEMIC
INTERNSHIP PROGRAMME

QUICK DRAW

Prepared by GROUP J

OVERVIEW

This is a quickdraw application wherein we are predicting the object drawn by the user, to the maximum possible accuracy. The system keeps suggesting the shape while drawing thereby improving the performance.

BUSINESS APPLICATIONS

- Digital Art
- Advantageous to the Handicapped
- To make our system understand complex languages like Arabic

CLASSIFICATION ALGORITHMS USED IN THE STUDY

- K-NEAREST NEIGHBOURS
- SUPPORT VECTOR MACHINE
- FEED FORWARD NEURAL NETWORK
- CONVOLUTIONAL NEURAL NETWORK
- LONG SHORT TERM MEMORY

DEMO

K-NEAREST NEIGHBOURS

The below table shows the evaluation report and Accuracy.

ACCURACY

92.3 %

	precision	recall	f1-score	support
0.0	0.91	0.89	0.90	1534
1.0	0.85	0.97	0.91	1511
2.0	0.93	0.84	0.88	1490
3.0	0.93	0.91	0.92	1465
micro avg	0.90	0.90	0.90	6000
macro avg	0.90	0.90	0.90	6000
weighted avg	0.90	0.90	0.90	6000

SUPPORT VECTOR MACHINE

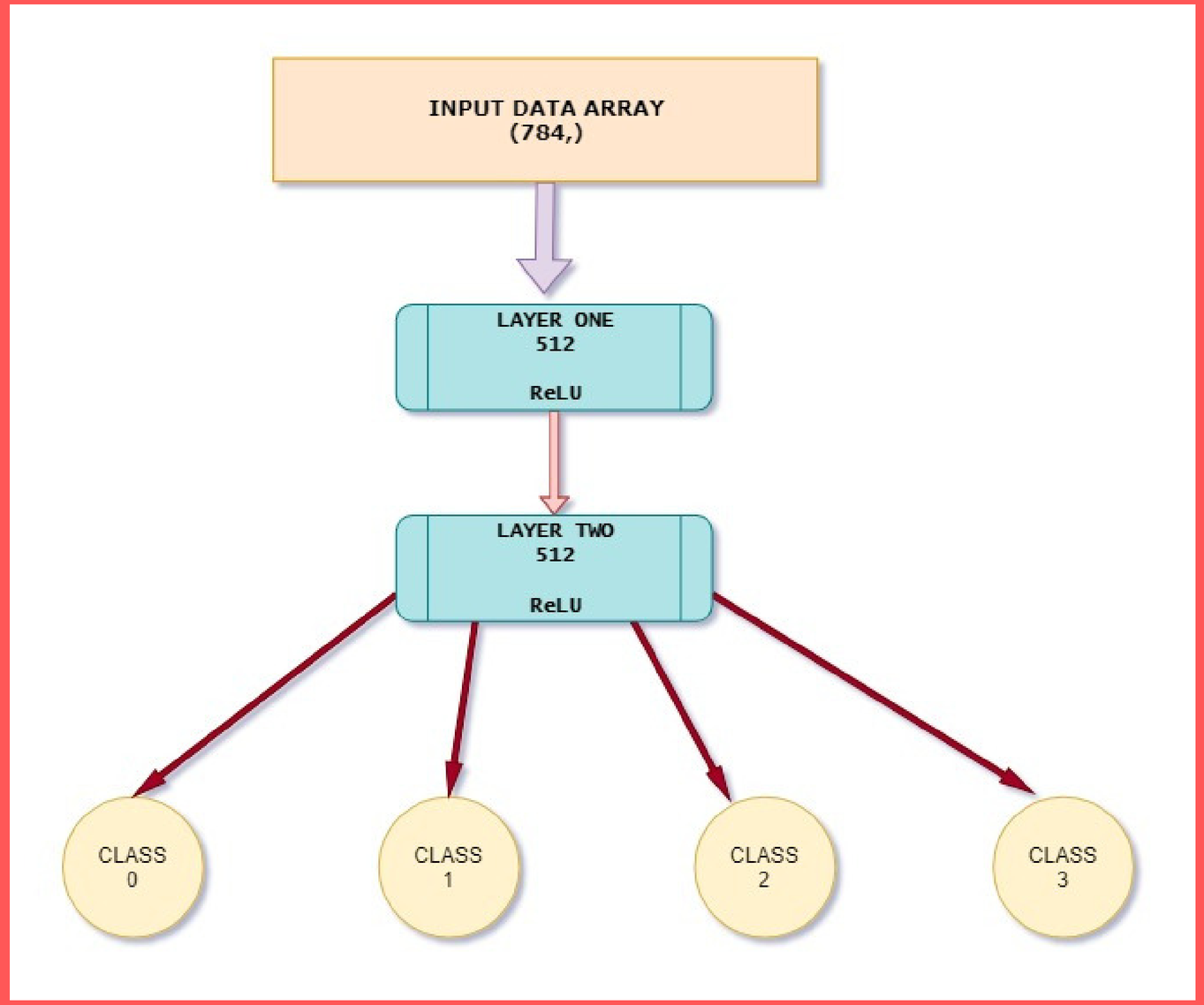
Among the 4 categories of classification techniques, SVM falls under the Seperation Category. The below table shows the evaluation report and Accuracy.

	precision	recall	f1-score	support
0.0	0.80	0.86	0.83	1534
1.0	0.90	0.90	0.90	1511
2.0	0.87	0.80	0.83	1490
3.0	0.88	0.87	0.88	1465
micro avg	0.86	0.86	0.86	6000
macro avg	0.86	0.86	0.86	6000
weighted avg	0.86	0.86	0.86	6000

ACCURACY

85.9 %

FEED-FORWARD NEURAL NETWORK

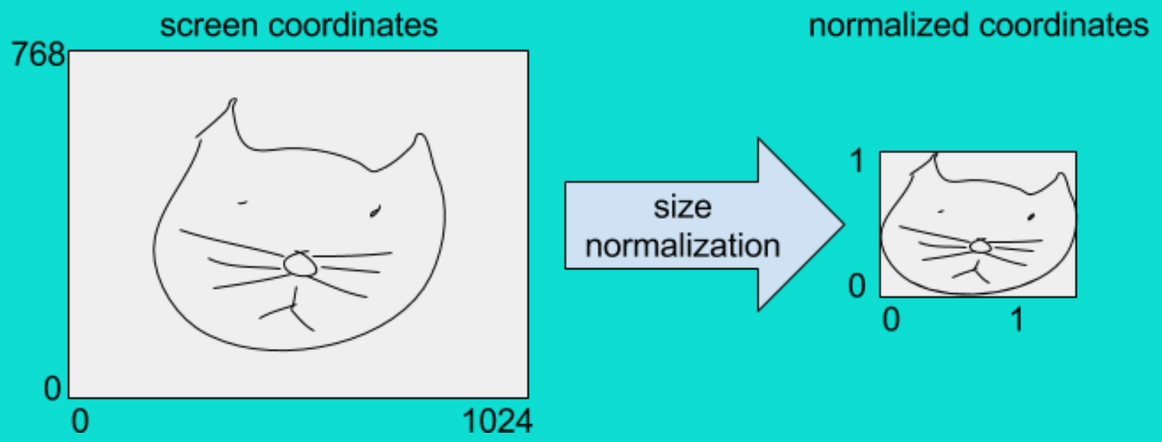


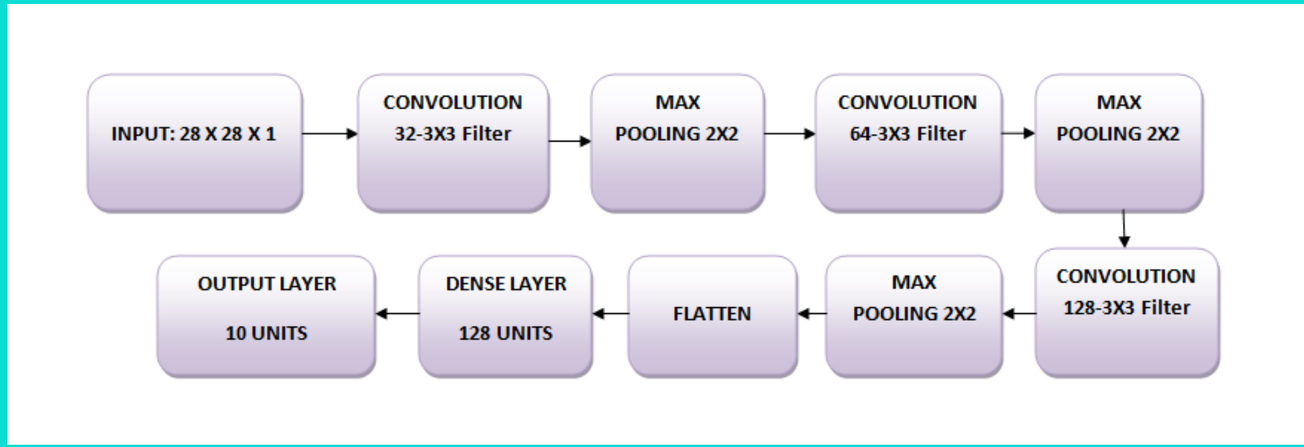
ACCURACY

89.62 %

- Feedforward Neural Network
- Dense (Fully connected)
- Image inputs in the form of array of size 784 each
- Image files of all image classes consolidated into a numpy array
- 2 hidden layers
- 512 neurons , ReLU Activation
- 4 output categorical classes

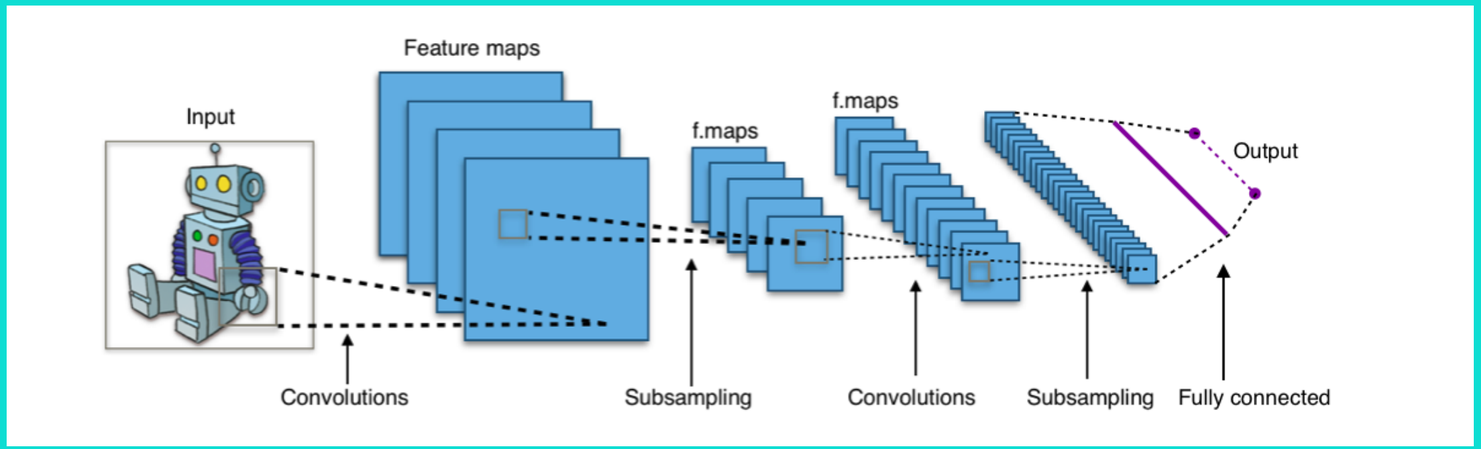
CONVOLUTIONAL NEURAL NETWORK

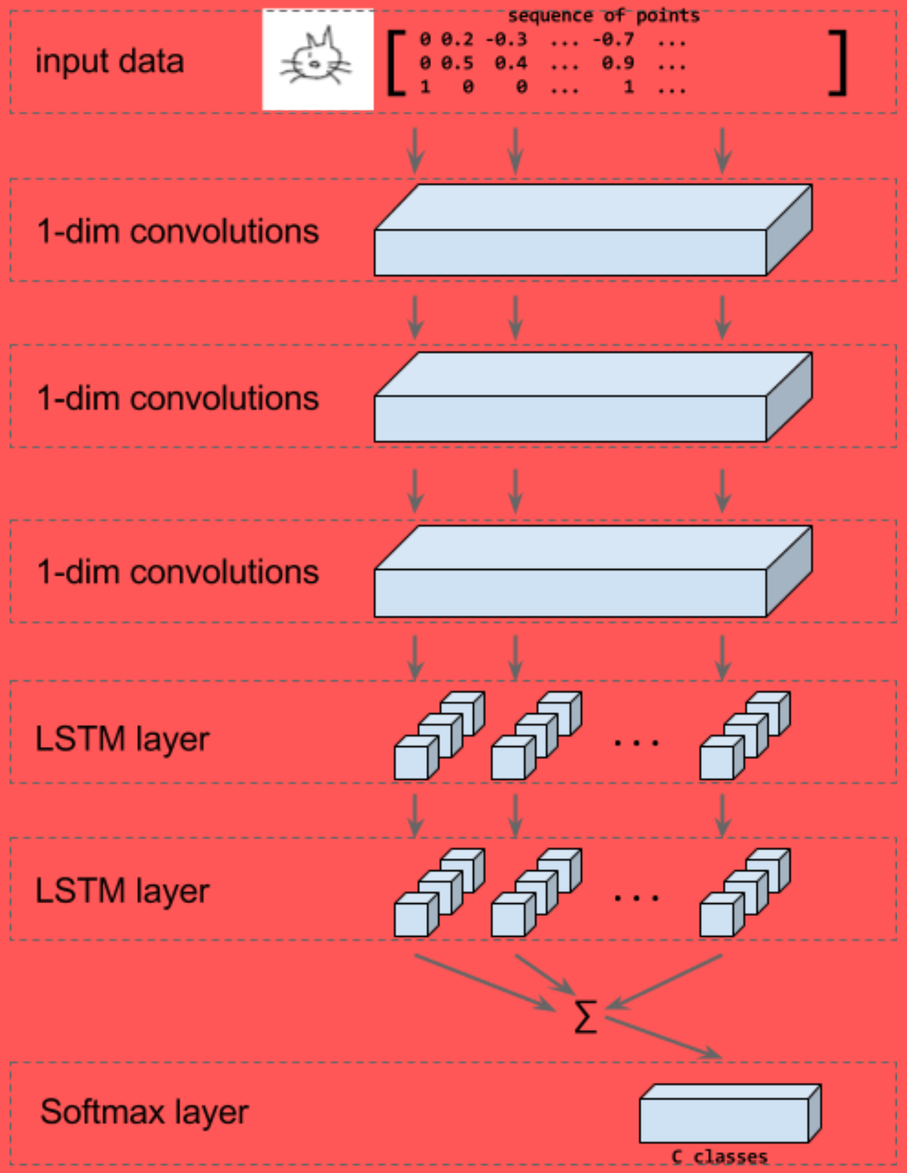




ACCURACY

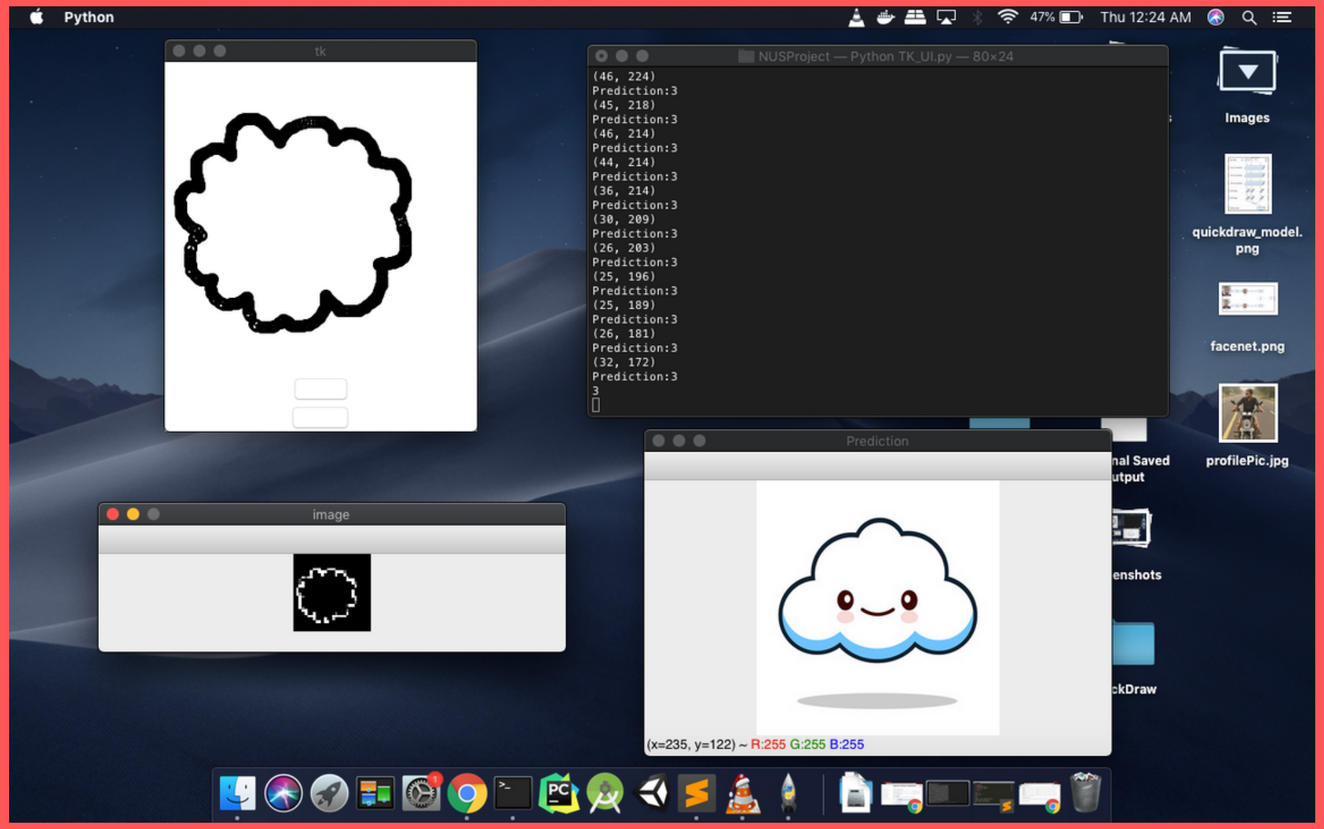
97.45 %



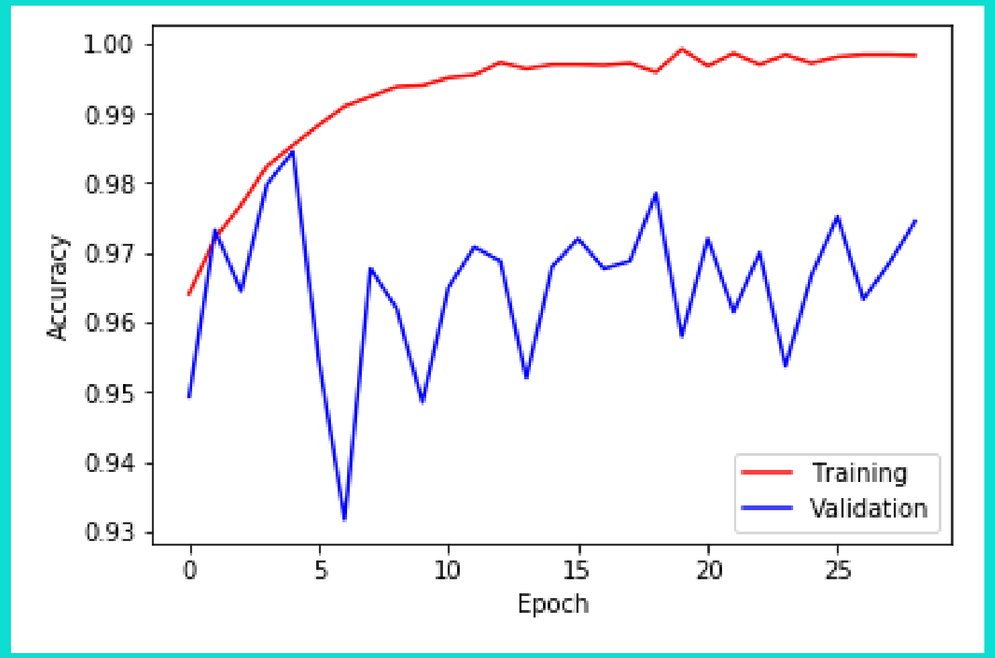


LONG SHORT TERM MEMORY

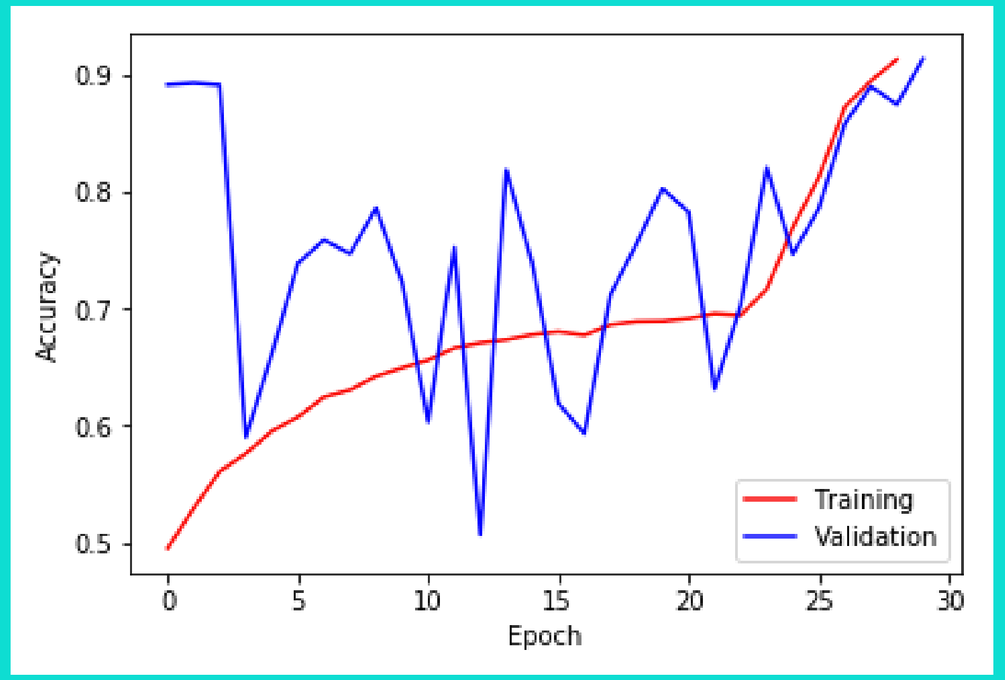
ACCURACY=91.38 %



ACCURACY MEASURE



CNN



LSTM

BASED ON EPOCH NUMBER

The first graph is for our CNN implementation. The second graph is for the LSTM implementation. Both the graphs have been plotted between the training accuracy and testing accuracy.

WORKFLOW

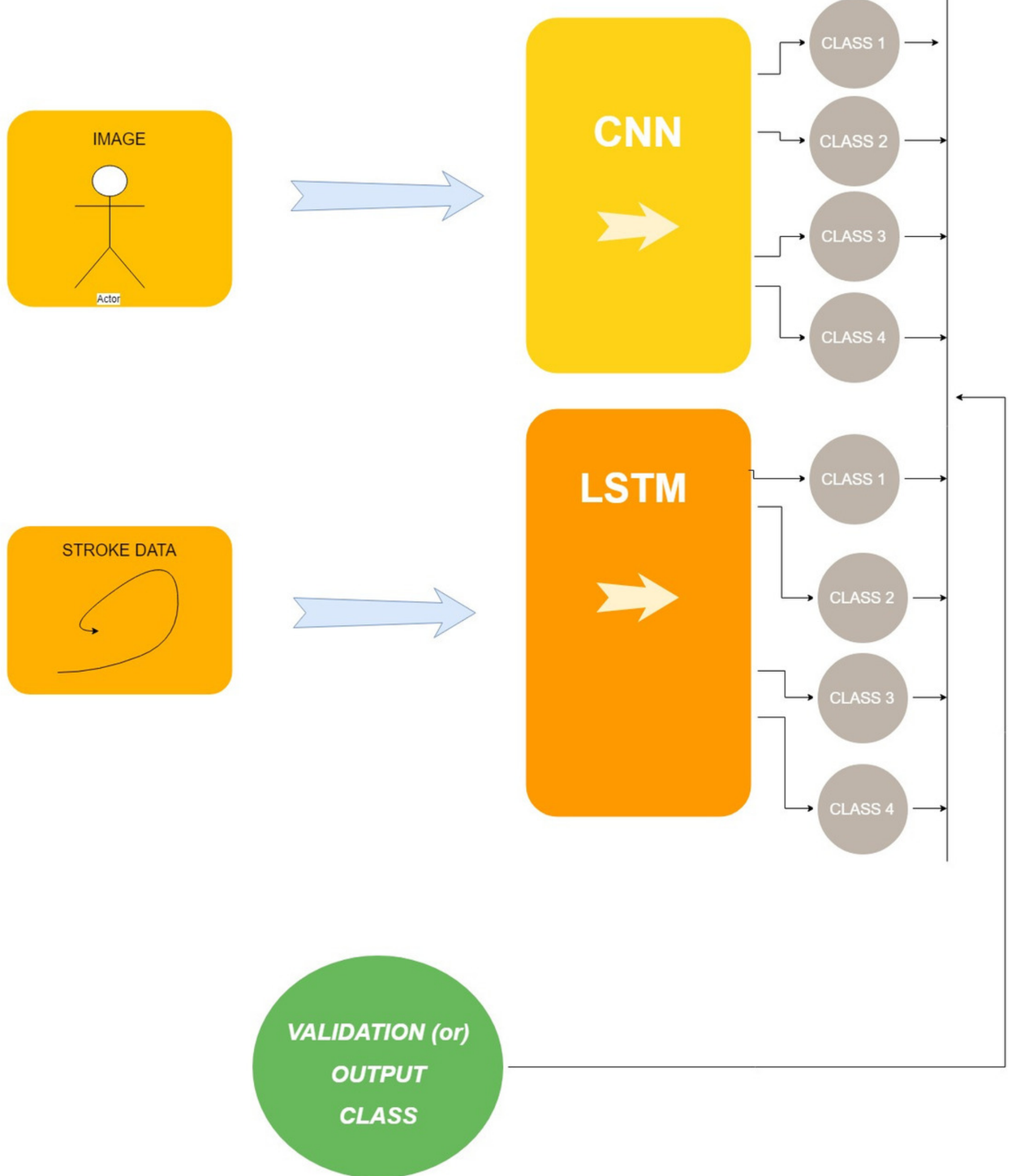


IMAGE
Actor
CNN
CLASS 1
CLASS 2
CLASS 3
CLASS 4
STROKE DATA
LSTM
CLASS 1
CLASS 2
CLASS 3
CLASS 4
VALIDATION (or)
OUTPUT
CLASS

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