ASSIGNMENT 4- REPORT

ON

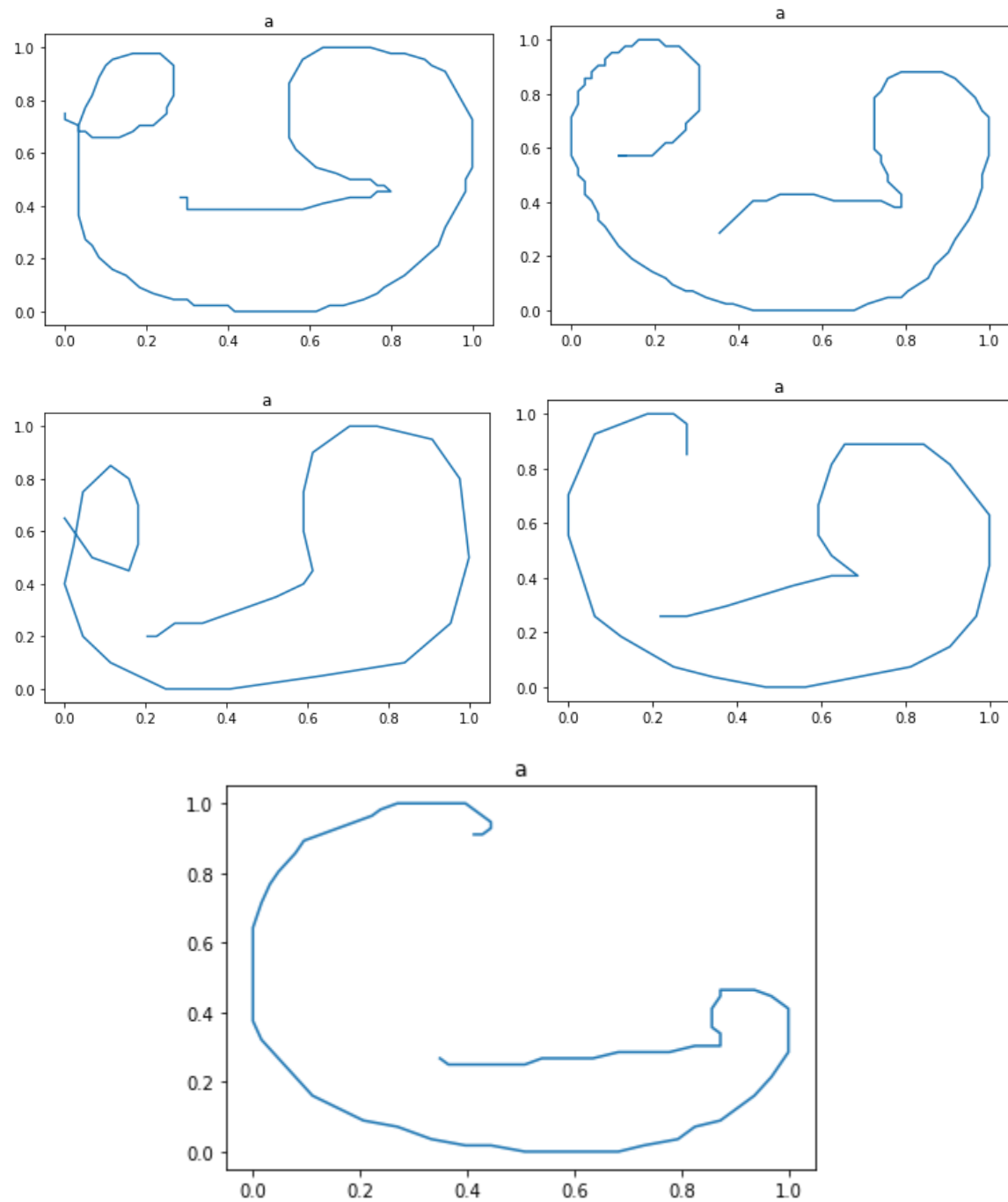### RNN & LSTM

By
Anmol Agrawal- T21045
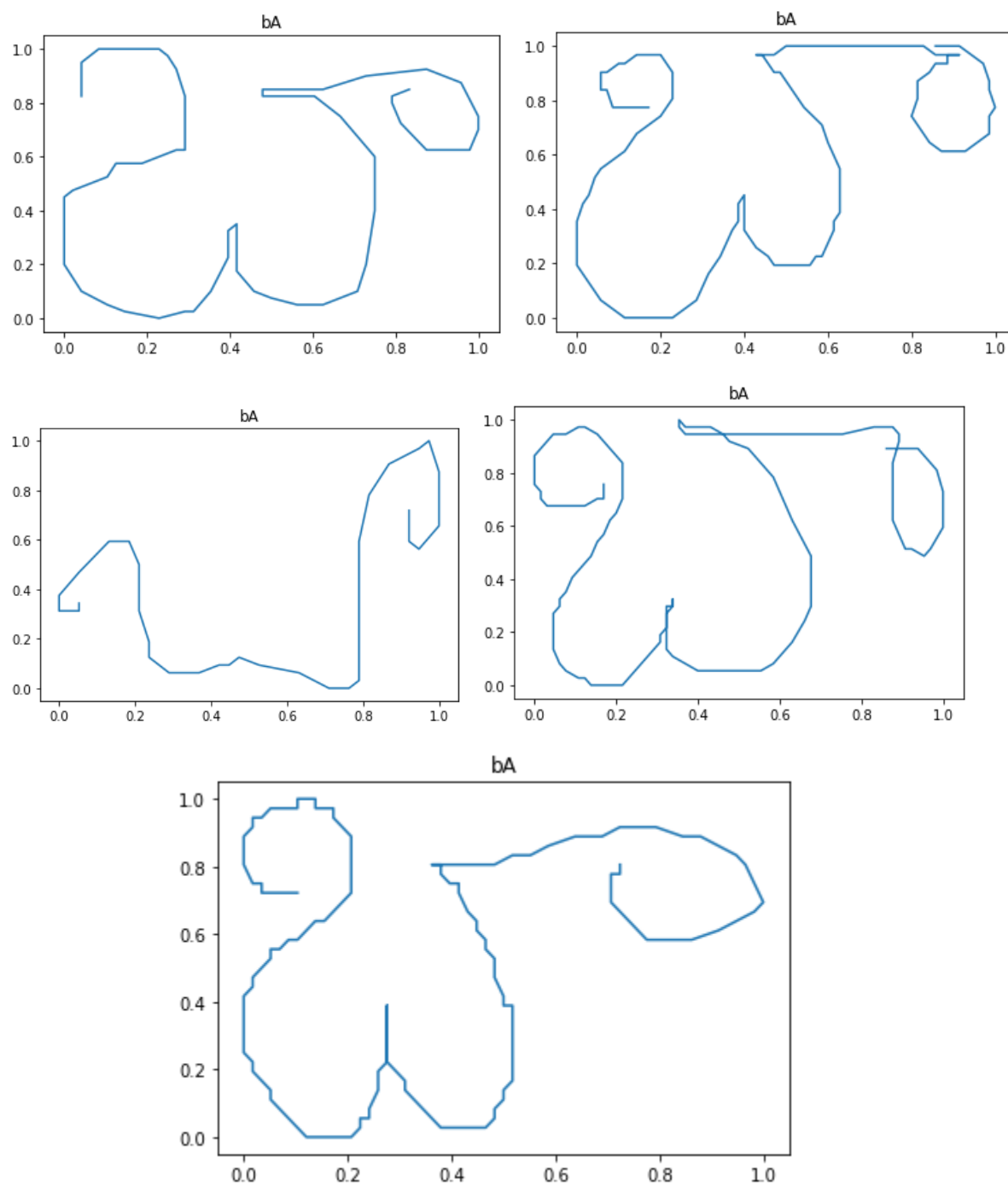Lakshay Bansal - T21011
Rajan Shukla - T21016

Instructor: Prof. Dileep A D
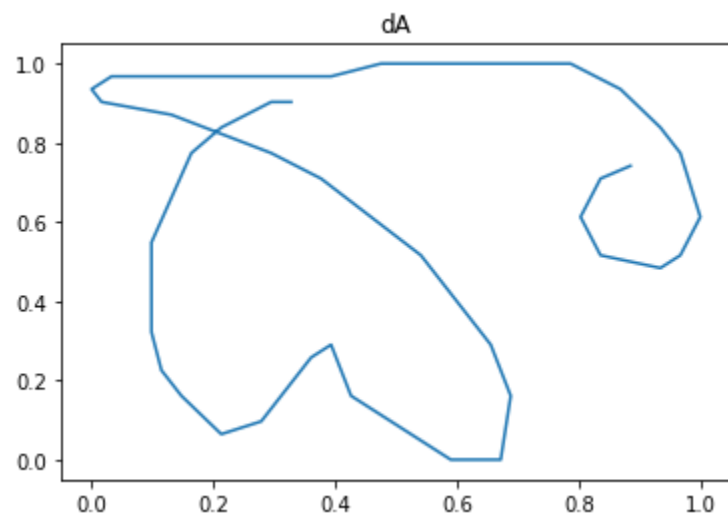
Hand Written DataSet:

For 'a'

For 'bA'

For 'dA'
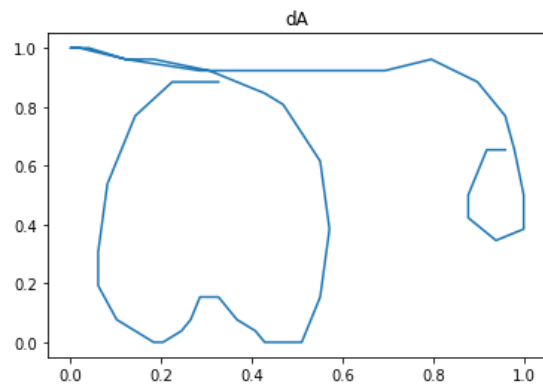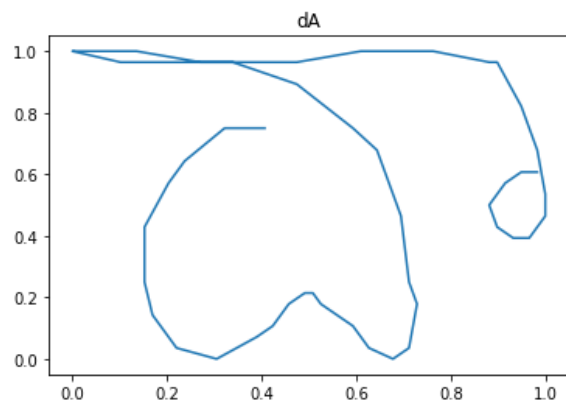
For 'IA'
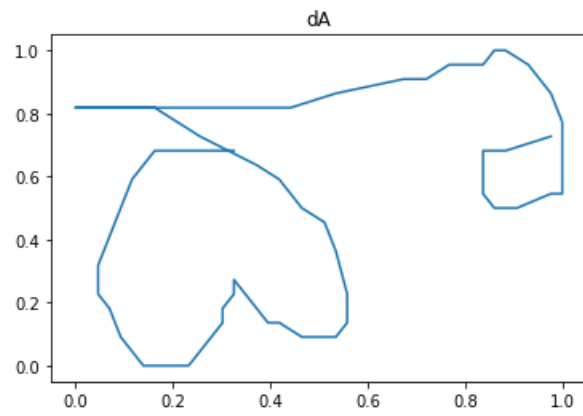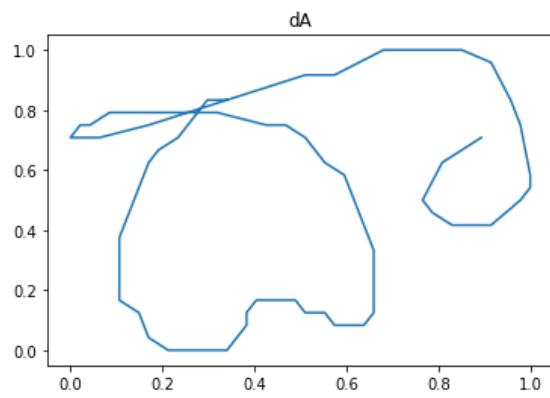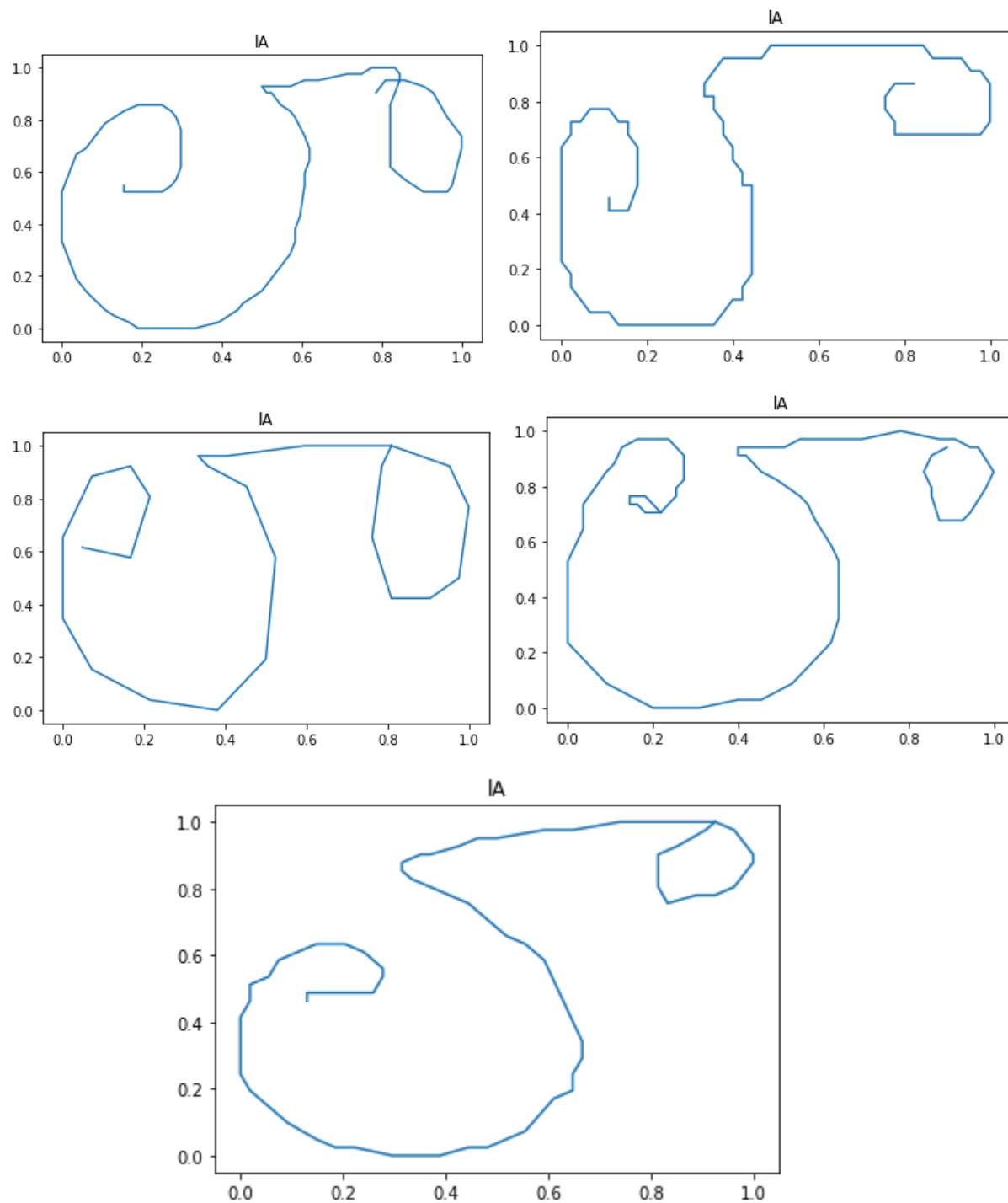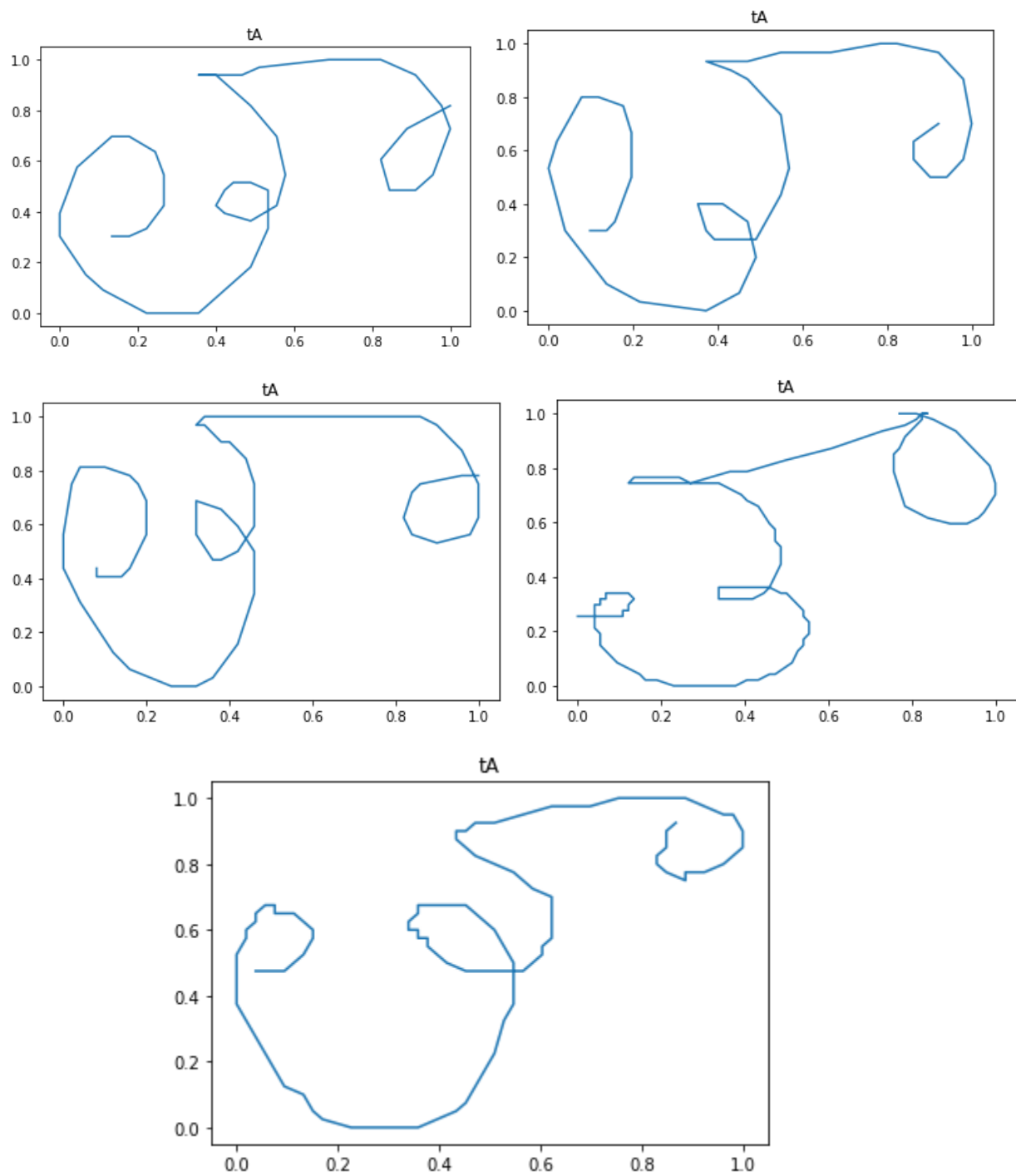
For 'tA'

RNN For the Hand Wirtten Dataset

For Training the Data we have used the Pytorch Framework. The RNN model has shown the below characteristics while Training

Error vs Epoch RNN

Hyper Parameter :
Layers: 1
Learning Rate: 0.01
No Hidden Neurons: 12
Accuracy: 56.23

CONFUSION MATRIX

	'a'	'bA'	'dA'	'lA'	'tA'
'a'	12	0	5	3	0
'bA'	0	20	0	0	0
'dA'	1	7	10	0	2
'lA'	8	1	2	9	0
'tA'	0	0	2	5	13

LSTM For the Hand Wirtten Dataset

For Training the Data we have used the Pytorch Framework. The LSTM model has shown the below characteristics while Training

Error vs Epoch LSTM

Hyper Parameter :
Layers:3
Learning Rate:0.01
No Hidden Neurons:120
Accuracy:

CONFUSION MATRIX

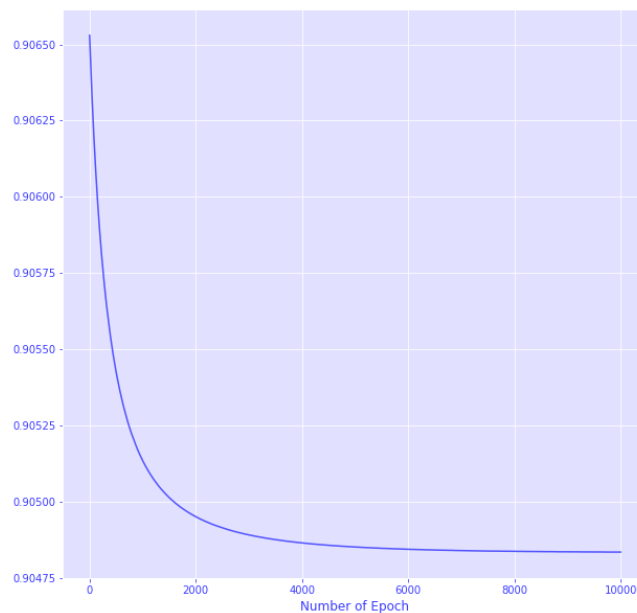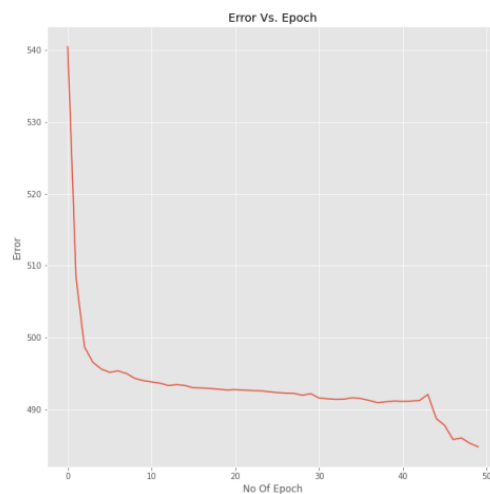|	'a'	'bA'	'dA'	'lA'	'tA'
'a'	17	0	0	3	0
'bA'	1	16	3	0	1
'dA'	0	9	6	3	2
'lA'	0	6	0	14	0
'tA'	2	2	2	12	2

RNN For the CV Dataset

For Training the Data we have used the Pytorch Framework. The RNN model has shown the below characteristics while Training

Error vs Epoch RNN

Error vs Epoch having Learning Rate = 0.001

Hyper Parameter :
Layers: 3
Learning Rate: 0.001
No Hidden Neurons: 120
Accuracy: 36.23

Test Data CONFUSION MATRIX

	'a'	'bA'	'dA'	'lA'	'tA'
'a'	12	0	5	3	0
'bA'	0	20	0	0	0
'dA'	1	7	10	0	2
'lA'	8	1	2	9	0
'tA'	0	0	2	5	13

LSTM For the CV Dataset (Using Keras)

For Training the Data we have used the Keras Framework. The LSTM model has shown the below characteristics while Training

Error vs Epoch LSTM

Hyper Parameter :
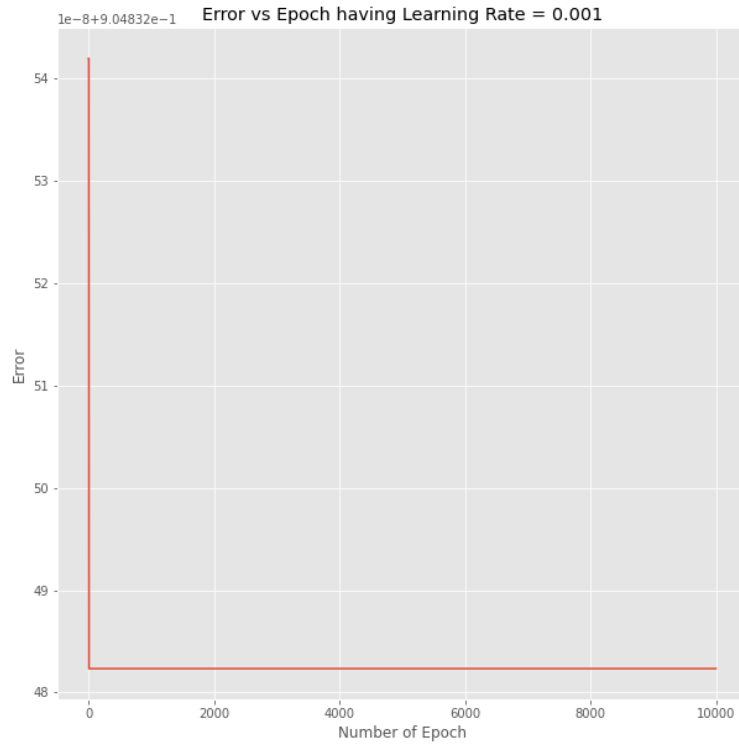Layers:1
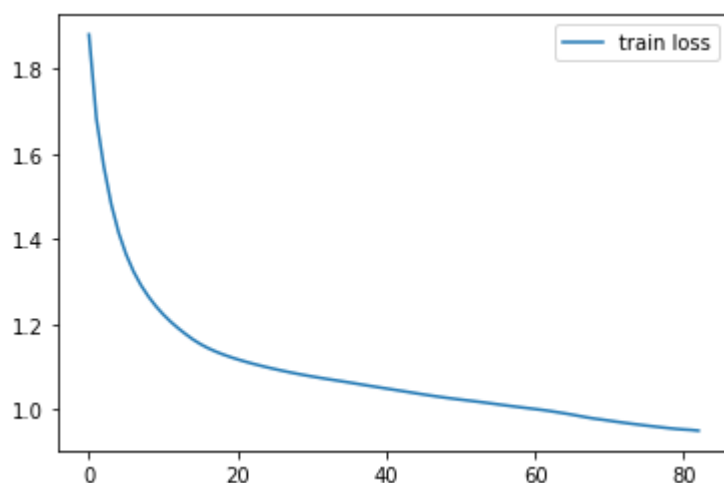Learning Rate: 0.001
No Hidden Neurons:16
Accuracy:80.3
Training Data CONFUSION MATRIX

	'a'	'bA'	'dA'	'lA'	'tA'
'a'	289	0	0	1	0
'bA'	0	197	0	0	0
'dA'	1	0	480	28	1
'lA'	0	0	0	408	0
'tA'	0	0	0	0	186