FASHION mnist

SEMESTER PROJECT

TEAM MEMBERS

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DATASET

- 60,000 Training and 10,000 Test Images in Vector format stored in CSVs.
- 10 equally distributed CLASSES.
- Grey Scale Images
- DATASET normalized before using them in Classification

LIBRARIES USED

- KERAS for Single Layer NN, CNN and Multilayer Perceptron
- SKLEARN for kNN (k = 3,5,7 values used)
- Pandas to load the data from *.csv files

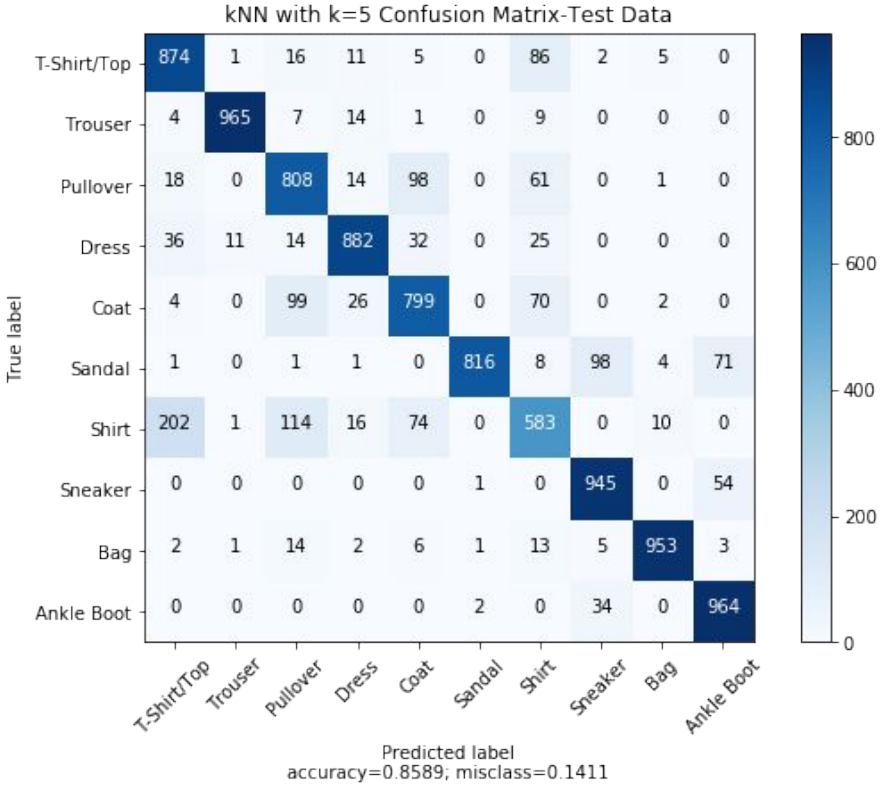
K NEAREST NEIGHBOUR RESULTS

kNN (k=5)

1.3.3 Precision, Recall and F1-score at k = 5 and test data

Test Data Classification Report with k = 5

	precision	recall	f1-score	support
T-Shirt/Top	0.77	0.87	0.82	1000
Trouser	0.99	0.98	0.98	1000
Pullover	0.75	0.81	0.78	1000
Dress	0.91	0.88	0.90	1000
Coat	0.79	0.80	0.79	1000
Sandal	1.00	0.82	0.90	1000
Shirt	0.68	0.58	0.63	1000
Sneaker	0.87	0.94	0.91	1000
Bag	0.98	0.95	0.97	1000
Ankle Boot	0.88	0.98	0.92	1000
avg / total	0.88	0.88	0.88	10000

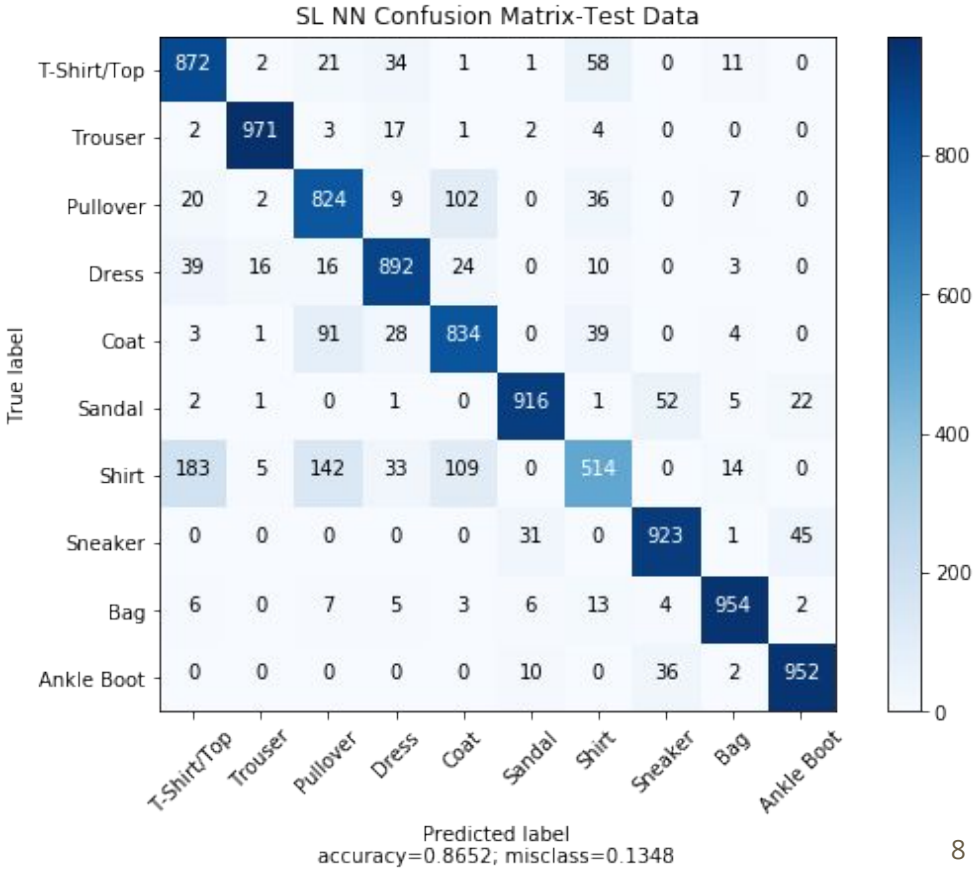


SINGLE LAYER NN RESULTS

Single Layer NN

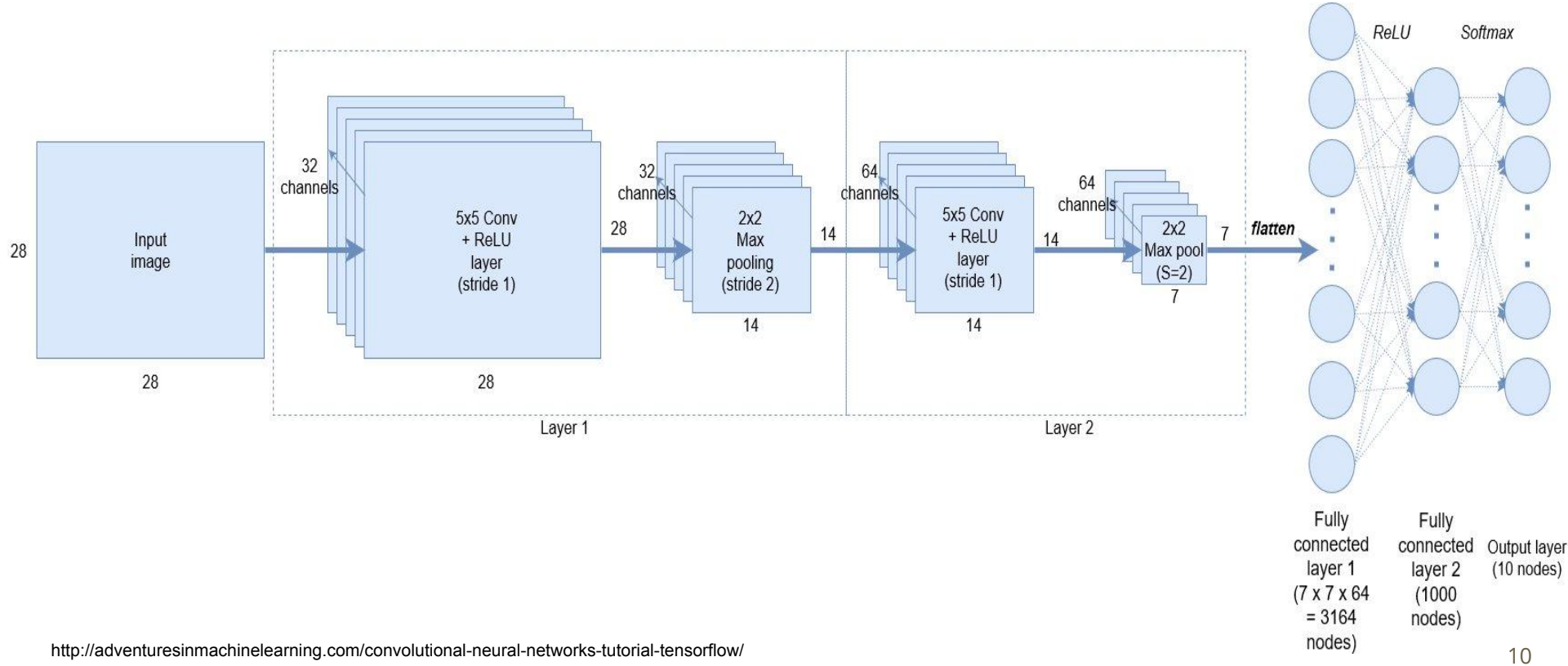
Test Data Classification Report

	precision	recall	f1-score	support
T-Shirt/Top	0.77	0.87	0.82	1000
Trouser	0.97	0.97	0.97	1000
Pullover	0.75	0.82	0.78	1000
Dress	0.88	0.89	0.88	1000
Coat	0.78	0.83	0.80	1000
Sandal	0.95	0.92	0.93	1000
Shirt	0.76	0.51	0.61	1000
Sneaker	0.91	0.92	0.92	1000
Bag	0.95	0.95	0.95	1000
Ankle Boot	0.93	0.95	0.94	1000
avg / total	0.86	0.87	0.86	10000



CNN RESULTS

CNN ARCHITECTURE

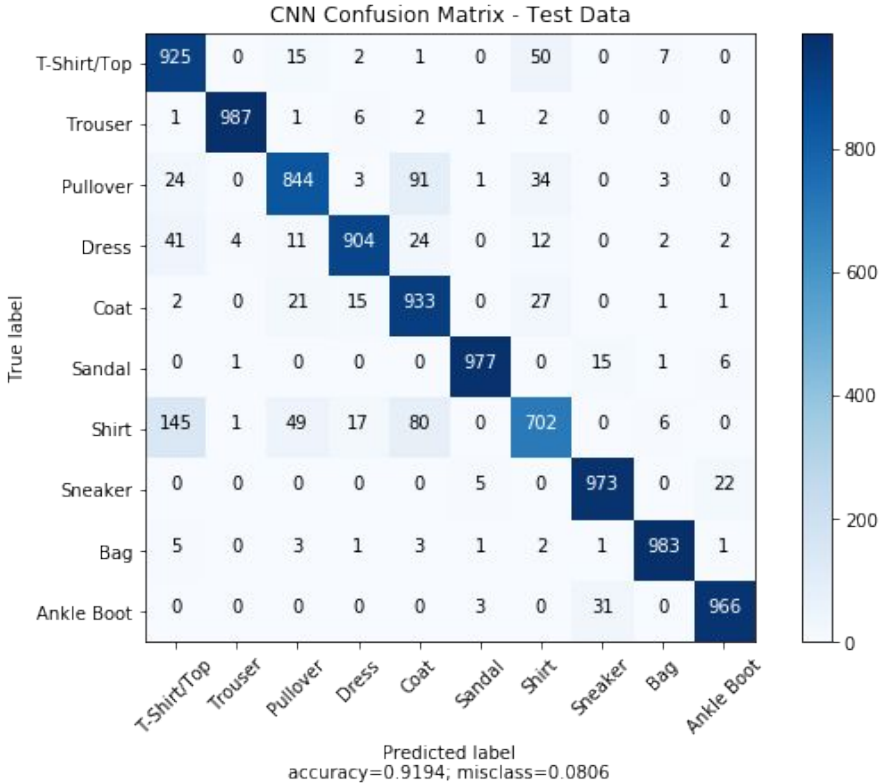


http://adventuresinmachinelearning.com/convolutional-neural-networks-tutorial-tensorflow/

CONVOLUTIONAL NEURAL NETWORK

4.2.3 Test Data Classification Report

	precision	recall	f1-score	support
T-Shirt/Top	0.81	0.93	0.86	1000
Trouser	0.99	0.99	0.99	1000
Pullover	0.89	0.84	0.87	1000
Dress	0.95	0.90	0.93	1000
Coat	0.82	0.93	0.87	1000
Sandal	0.99	0.98	0.98	1000
Shirt	0.85	0.70	0.77	1000
Sneaker	0.95	0.97	0.96	1000
Bag	0.98	0.98	0.98	1000
Ankle Boot	0.97	0.97	0.97	1000
avg / total	0.92	0.92	0.92	10000



COMPARISON

Comparison of Classifiers for the Fashion-MNIST Dataset						
	kNN(k=3)	kNN(k=5)	kNN(k=7)	SLNN	MLP	Conv
Accuracy/ Precision/ Recall/ F1-Score (Training Data)	92.14%	90.40%	89.12%	87.78%	94.45%	97.4%
Accuracy/ Precision/ Recall/ F1-Score (Test Data)	85.84%	85.89%	85.58%	86.52%	87.60%	91.94%