Teach a Neural Network to read handwriting

Introduction:

I had implemented the handwritten digit recognititon. Neural networks and deep learning are two success stories in modern artificial intelligence. They’ve led to major advances in image recognition, automatic text generation, and even in self-driving cars. To get involved with this exciting field, you should start with a manageable dataset. Image data is generally harder to work with than “flat” relational data. The MNIST data is beginner-friendly and is small enough to fit on one computer. Handwriting recognition will challenge you, but it doesn’t need high computational power. Build a neural network from scratch that solves the MNIST challenge with high accuracy.

Use RandomForest. Why?

Reason:

The accuracy score is the only true measure of their relative performance, though there may be prior art that indicates which type of classifier from the many available might be better on your type of data.

The accuracy score is approximately 97%.

The choice of the classifier ,algorithms depends on the application. Random Forest works well with a mixture of numerical and categorical features. When features are on the various scales, it is also fine. Roughly speaking, with Random Forest you can use data as they are. SVM maximizes the "margin" and thus relies on the concept of "distance" between different points. It is up to you to decide if "distance" is meaningful. As a consequence, one-hot encoding for categorical features is a must-do. Further, min-max or other scaling is highly recommended at preprocessing step.

Requirements: python-mnist,numpy,scikit-learn,matplotlib.

CodeExplanation:

I have loaded the training dataset and then converted to numpy array. Then I used traintest split and used the randomforest classifier with 100 estimators. Then fit the model. Predict the accuracy score,confusion matrix, to check how the trained model is working. For the validation data plot the original label and print the predicted label. They are all matchinng perfectly.Next do the similar procedure for the test data by uploading from the datasets.Download the four MNIST dataset files from this link: [(<http://yann.lecun.com/exdb/mnist/>)]