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Cs303 hw12

Using MLP Neural Networks to predict computer vision fashion items

For this assignment we were tasked with finding a way to predict greyscale pixel bitmap images of fashion items. The dataset for this assignment was significantly different from any dataset that we have used in class in the past due to the non-linear nature of pixel bitmaps. As such, it required the application of a non-linear function approximator like a multi-layer perceptron neural network to tackle the problem. I worked with Keras’s MLP module inside Spyder based off the example given with the mnist dataset. After creating a cross validation loop to test the accuracy of my model on my training data, I noticed the MLP was not achieving as high of an accuracy score as I would have liked. I decided to tweak a few parameters to see if I could increase the prediction accuracy. First, I tried modulating the network topology by adding a few more dense layers and extending the depth of the model. This did not increase the accuracy as I would have thought, so I decided to change the size of the single layer. This helped some, but I really wanted to boost the predictive accuracy of the model so I decided to expose the whole dataset to the model multiple times by increasing the Epoch count. I used an Epoch count of 9 because this was a good balance between results and processing time. Each iteration took around 40 seconds to train the model, so with an Epoch of 9 I was able to gain a 10% increase of accuracy from the unconfigured example model without having to leave my computer processing for too long. By increasing the Epoch to an even larger number I am convinced I could reach close to 100% predictive accuracy, but it would take quite some time to process. 