UDACITY

PROJECT

Build a Digit Recognition Program

A part of the Machine Learning Engineer Nanodegree Program

PROJECT REVIEW

CODE REVIEW

NOTES

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Meets Specifications

Excellent work on this a very challenging project!

Design and Test a Model Architecture

Students need to describe their thought process for choosing a proper network architecture.

Students should provide sufficient details of the characteristics and qualities of the architecture, such as the type of model used (e.g., deep net, conv net, recurrent net), the number of layers, the size of each layer.

Student describes how the model was trained and what the characteristics of the synthetic dataset are. Information such as how the dataset was generated, and examples of images from the dataset should be included.

Train a Model on a Realistic Dataset

Students need to provide details for how the training and testing data from the realistic dataset (SVHN) were derived. In particular, it is important that the student identify how the dataset was split into the two sets (and why that split was chosen), and any other defining characteristics necessary to duplicate the sets used.In addition, the initial results from the classification of images found in the testing set (as well as the validation set, if used) should be thoroughly documented and explained.

Excellent discussion. I too am surprised especially considering the different shape of your inputs. Must speak to the robustness of your model. Great job!

Students will be expected to make some type of programmatic refinement to their model for this section to meet specifications. Typically, this will involve tuning hyperparameters for their model, but it could also include more elaborate adjustments such as reconfiguring the architecture as a whole (more hidden nodes, more layers, etc.).

Excellent modifications and discussion. Considering that you saw overfitting did you think of including regularization in your model?

```
from keras.regularizers import l2, activity_l2
model.add(Dense(64, input_dim=64, W_regularizer=l2(0.01), activity_regularizer=activity_l2(0.01)))
```

Student includes both the initial (unrefined) and final (refined) results from their model when tested on a realistic dataset. Student further justifies whether the model is sufficiently classifying numbers correctly.

I'm glad that you noticed that a sequence is difficult to classify completely, researched the problem, and correctly identified how difficult it is. Considering this, you really did an amazing job?

Testing a Model on Newly-Captured Images

Students are asked to provide five candidate images with numbers in them in their report. It is suggested that students capture these images with a device such as their smartphone, but that is not a requirement (they could simply take images from the internet if they are open source).

Student documents the performance of the model when tested on the captured images and compares it to the results of testing on the realistic dataset.

Explore an Improvement for a Model

Students are asked to implement localization for the number images by using a regression loss on the bounding boxes provided in the SVHN dataset.

Students are asked to perform localization on their images, and report the results.

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Student FAQ