EE-559: Practical Session 13

this doc : https://goo.gl/rmfoka

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Introduction

The objective of this session is to make you familiar with the Colab environment, to repeat the concepts of the guest lecture "From PyTorch to TensorFlow", and to apply these concepts on a TensorFlow program that classifies the familiar MNIST images.

The exercises of this practical session are contained in a single Colab: https://goo.gl/c9F4oB - Please click on that link now and then "**Save a Copy in Drive...**" (in the "File" menu).

1. Colab Mechanics

This section walks you through some of the features in Colab and should get you up to speed for the other exercises. Skip the "optional" part in the first pass and come back to it later if you have enough time for the other parts.

2. TensorFlow Basics

This section repeats the important concepts from the lecture (graph, session, shapes, variables) and walks through a couple of examples. You'll need to add/complete some code to some cells to make everything run without errors. The last "shape" exercise is quite difficult, you might want to discuss with your neighbor, or come back to it later (section 3 below is more important).

3. MNIST CodeJam

Refer back to the lecture accompanying Colab (https://goo.gl/EKVKWz) for a simple working example. It's fine to copy the code from "putting it all together", but you should play around with it to make sure you understand everything completely.

Recommended next steps:

- Add some plotting of loss/accuracy (train/test) over time.
- Implement a model using convolutions using the following helpers : tf.layers.conv2d(), tf.layers.max_pooling2d(), tf.layers.dense().
  You can get inspiration from https://www.tensorflow.org/tutorials/layers
- Compare the difference in runtime when using a GPU.
- Implement the same model using Keras.
- Implement the same model using Eager.