Intro to Tensor Flow

Intro.1 Installing *TensorFlow*

For installing *TensorFlow*, follow the following steps:

Note: Please consider using Python 3.5 version and Linux operating system.

Go to https://www.tensorflow.org/install/ and follow the instructions for installing *TensorFlow* depending on your operating system. We will be working with the current **stable release of TensorFlow (r1.13).** Please install this version of TensorFlow.
Please consider the following instructions as a general guide for the installation process:

- If you are using a Linux machine (e.g. Ubuntu 18.04),
  - Install python3 running in a terminal:
    sudo apt-get install python3-pip python3-dev python-virtualenv
  - Install *TensorFlow*
    pip3 install --upgrade tensorflow==1.13.1
  - Install additional packages:
    pip3 install --upgrade numpy matplotlib jupyter

- If you are using Windows machine,
  - Download and install Anaconda following the instructions in https://www.anaconda.com/distribution/. Install the Python 3.7 version.
  - Open an Anaconda Prompt (located in start menu)
  - Create an environment for *TensorFlow*:
    conda create –n tensorflow pip python=3.5
  - Activate *TensorFlow* by running
    activate tensorflow
  - Install *TensorFlow*
    pip install --ignore-installed --upgrade tensorflow==1.13.1
  - Install additional packages
    pip install --upgrade numpy matplotlib jupyter

Report: None.

CMSC 636: Neural Nets and Deep Learning
No grade exercise

Intro.2 Intro to *TensorFlow*

TensorFlow is a library for numerical computations. In order to work with TensorFlow, you will need to become familiar with Python and Numpy. The following webpages provide quickstart guides for Python and Numpy:

a) For Python:
   https://www.stavros.io/tutorials/python/
b) For Numpy:
   https://docs.scipy.org/doc/numpy/user/quickstart.html,
   https://docs.scipy.org/doc/numpy/user/numpy-for-matlab-users.html

Please use Jupyter notebooks (https://jupyter.readthedocs.io/en/latest/content-quickstart.html) as development environment. Note: once you install Anaconda, it will automatically install Jupyter for you.

TensorFlow enables training of network models and calculation of gradients via intuitive API. Moreover, the library can take advantage of multiple processors and heterogeneous resources (like GPUs). The high-level steps to supervised learning in TensorFlow are:
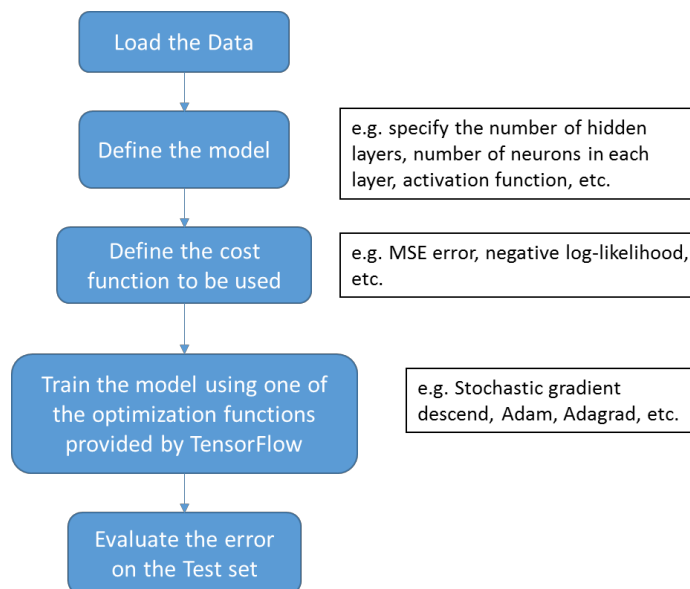
To get started with TensorFlow, please familiarize yourself with the TensorFlow Guides https://www.tensorflow.org/tutorials, https://www.tensorflow.org/guide.
We will be using the low-level API on the assignments. Please familiarize yourself with the API using the following resources:
- https://www.tensorflow.org/guide/low_level_intro
- https://www.tensorflow.org/guide/tensors

Deliverables/Report:
- No report needed