Solving Waldo's Puzzle - Progress 2

Overview

The project's aim is to solve the Waldo's puzzle, i.e. to find the position of Waldo in an image filled with lots of different characters.

What is TensorFlow?

TensorFlow is an open source software library for numerical computation using data flow graphs. Nodes in the graph represent mathematical operations, while the graph edges represent the multidimensional data arrays (tensors) communicated between them. The flexible architecture allows you to deploy computation to one or more CPUs or GPUs in a desktop, server, or mobile device with a single API. TensorFlow was originally developed by researchers and engineers working on the Google Brain Team within Google's Machine Intelligence research organization for the purposes of conducting machine learning and deep neural networks research, but the system is general enough to be applicable in a wide variety of other domains as well.

Installing TensorFlow on Ubuntu

Take the following steps to install TensorFlow with Virtualenv:

1. Install pip and Virtualenv by issuing one of the following commands:

    $ **sudo apt-get install python-pip python-dev python-virtualenv** # for Python 2.7
    $ **sudo apt-get install python3-pip python3-dev python-virtualenv** # for Python 3.n

2. Create a Virtualenv environment by issuing one of the following commands:

    $ **virtualenv --system-site-packages** *targetDirectory* # for Python 2.7
    $ **virtualenv --system-site-packages -p python3** *targetDirectory* # for Python 3.n

where *targetDirectory* specifies the top of the Virtualenv tree.

3. Activate the Virtualenv environment by issuing one of the following commands:

   $ **source ~/tensorflow/bin/activate** # bash, sh, ksh, or zsh
   $ **source ~/tensorflow/bin/activate.csh** # csh or tcsh

   The preceding source command should change your prompt to the following:

   (tensorflow)$

4. Ensure pip ≥8.1 is installed:

   (tensorflow)$ **easy_install -U pip**

5. Issue one of the following commands to install TensorFlow in the active Virtualenv environment:

   (tensorflow)$ **pip install --upgrade tensorflow**   # for Python 2.7
   (tensorflow)$ **pip3 install --upgrade tensorflow**   # for Python 3.n
   (tensorflow)$ **pip install --upgrade tensorflow-gpu** # for Python 2.7 and GPU
   (tensorflow)$ **pip3 install --upgrade tensorflow-gpu** # for Python 3.n and GPU

Validate your installation

You must activate the Virtualenv environment each time you use TensorFlow. If the Virtualenv environment is not currently active, invoke one of the following commands:

$ **source ~/tensorflow/bin/activate**   # bash, sh, ksh, or zsh
$ **source ~/tensorflow/bin/activate.csh** # csh or tcsh

When the Virtualenv environment is active, you may run TensorFlow programs from this shell. Your prompt will become the following to indicate that your tensorflow environment is active:

(tensorflow)$

When you are done using TensorFlow, you may deactivate the environment by invoking the deactivate function as follows:

(tensorflow)$ **deactivate**

Run a short TensorFlow program

Invoke python from your shell as follows:

$ **python**

Enter the following short program inside the python interactive shell:

Python

```
import tensorflow as tf

hello = tf.constant('Hello, TensorFlow!')

sess = tf.Session()

print(sess.run(hello))
```

If the system outputs the following, then you are ready to begin writing TensorFlow programs:

Hello, TensorFlow!

References

1. https://www.tensorflow.org/install/install_linux