

Deep Reinforcement Learning Tutorial Installation Guide

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1 Introduction

Deep Reinforcement Learning (also called RL) is a huge step towards the creation of an universal artificial intelligence.

This guide will lead the reader through the setup process for the beginner tutorial "Deep Reinforcement Learning".

Prerequisites It is recommended that a reader already acquired some basic knowledge about programming with Python and is familiar with basic deep learning concepts like Un-/Supervised Learning. It is also useful to be able to perform some basic linux commands, as we will use them later to install some additional packages.

Outlook The user will get to know basic concepts of RL with the help of:

Python3 One of the most popular programming languages for deep learning. The following tutorials will be based on Python. See <https://www.python.org/> for more information.

Pip A package installer for Python, which will download and install packages for us from a repository.

Jupyter Lab Enables execution of Python code inside a document, used to teach theory and implementation.

Google Cloud Cloud based processing power for training of different implementations of RL. Delivers a linux environment with preinstalled utilities for deep learning including different libraries for Python, Python itself and Jupyter Lab.

2 Installation

2.1 Google Cloud

As "Reinforcement Learning" is pretty resource-intensive, Google Cloud will deliver the required performance in the cloud. Python itself, all libraries required and Jupyter Lab need to be available. Luckily, Google already provides a template for a Linux Virtual Machine, which we can use as base for this tutorial. You will have to create a Google account to use the cloud.

It is also possible to use this tutorial locally. You will have to prepare a Jupyter Lab environment with the help of PIP or Anaconda. Both are package installers for Python. See this tutorial https://jupyterlab.readthedocs.io/en/stable/getting_started/installation.html for more information.

2.1.1 Deep Learning VM

To get started in the most simple way, we will use the Google "Deep Learning VM" template to create our environment. It can be found at <https://cloud.google.com/deep-learning-vm> or alternatively you can search for "Deep Learning VM" in the Google Cloud marketplace, as shown in picture 1.

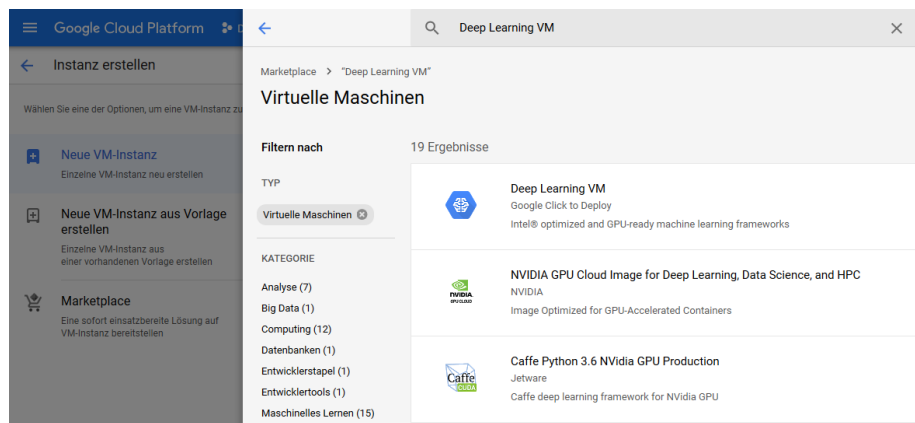


Figure 1: Searching for "Deep Learning VM"

After you choose the virtual machine, you will be provided with some additional information. Choose "start in compute engine" as shown in picture 2.

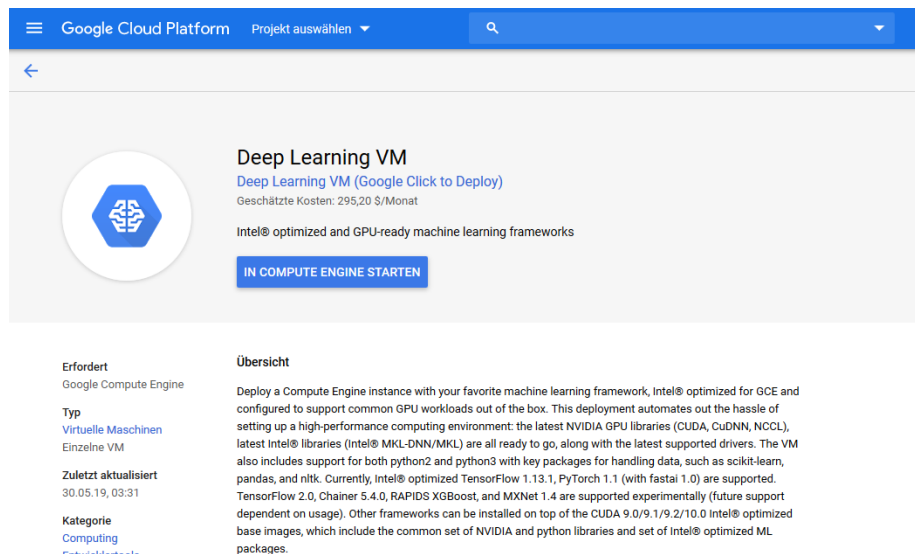


Figure 2: After selecting "Deep Learning VM"

2.1.2 Installing Additional Software

After we successfully created our first virtual machine instance, we need to install some additional software on the virtual machine. This is possible through an administrator console, which can be opened by clicking the "SSH" button in the "virtual machine instances" sub-menu, as shown in picture 3. The open console can be seen in picture 4.

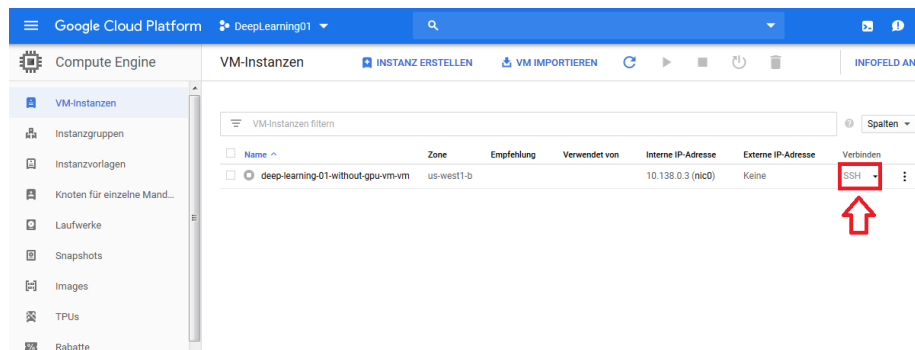


Figure 3: The "SSH" button

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Resources:
* Google Deep Learning Platform StackOverflow: https://stackoverflow.com/questi
ons/tagged/google-dl-platform
* Google Cloud Documentation: https://cloud.google.com/deep-learning-vm
* Google Group: https://groups.google.com/forum/#!forum/google-dl-platform

To reinstall Nvidia driver (if needed) run:
sudo /opt/deeplearning/install-driver.sh
TensorFlow comes pre-installed with this image. To install TensorFlow binaries i
n a virtualenv (or conda env),
please use the binaries that are pre-built for this image. You can find the bina
ries at
/opt/deeplearning/binaries/tensorflow/
If you need to install a different version of Tensorflow manually, use the commo
n Deep Learning image with the
right version of CUDA

Linux deep-learning-01-without-gpu-vm-vm 4.9.0-8-amd64 #1 SMP Debian 4.9.130-2 (
2018-10-27) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
kaneilou@deep-learning-01-without-gpu-vm-vm:~$ █

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Figure 4: The administrator console

2.2