Deep learning and AI frameworks for the Azure Data Science VM

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In this article

Deep learning frameworks on the DSVM are listed below.

Caffe

Category	Value
Version(s) supported	
Supported DSVM editions	Ubuntu 16.04

Category	Value
How is it configured / installed on the DSVM?	Caffe is installed in `/opt/caffe`. Samples are in `/opt/caffe/examples`.

How to run it	use X2Go to sign in to your VM, and then start a new terminal and enter the following:
	`cd /opt/caffe/examples`
	`source activate root`
	`jupyter notebook`
	
	A new browser window opens with sample notebooks. Binaries are installed in /opt/caffe/build/install/bin.
	
	Installed version of Caffe requires Python 2.7 and won't work with Python 3.6, which is activated by default. To switch to Python 2.7, run `source activate root` to switch to Anaconda environment.

Caffe2

Category	Value
Version(s) supported	
Supported DSVM editions	Ubuntu 16.04
How is it configured / installed on the DSVM?	Caffe2 is installed in the [Python 2.7 (root) conda environment.
How to run it	Terminal: Start Python, and import Caffe2. * JupyterHub: Connect to JupyterHub, and then go to the Caffe2 directory to find sample notebooks. Some notebooks require the Caffe2 root to be set in the Python code; enter /opt/caffe2.

Chainer

Category	Value
Version(s) supported	5.2
Supported DSVM editions	Ubuntu 16.04
How is it configured / installed on the DSVM?	Chainer is installed in Python 3.5.
How to run it	Terminal: Activate the Python 3.5 environment, run `python`, and then `import chainer`. * JupyterHub: Connect to JupyterHub, and then go to the Chainer directory to find sample notebooks.

CUDA, cuDNN, NVIDIA Driver

Category	Value
Version(s) supported	10.0.130
Supported DSVM editions	Windows Server 2019 Ubuntu 18.04 Windows 2016 Ubuntu 16.04
How is it configured / installed on the DSVM?	*nvidia-smi* is available on the system path.
How to run it	Open a command prompt (on Windows) or a terminal (on Linux), and then run *nvidia-smi*.

Horovod

Category	Value
Version(s) supported	0.16.1

Category	Value
Supported DSVM editions	Ubuntu 18.04 Ubuntu 16.04
How is it configured / installed on the DSVM?	Horovod is installed in Python 3.5
How to run it	Activate the correct environment at the terminal, and then run Python.

Keras

Category	Value
Version(s) supported	2.2.4
Supported DSVM editions	Windows Server 2019 Ubuntu 18.04 Windows 2016 Ubuntu 16.04
How is it configured / installed on the DSVM?	Keras is installed in Python 3.6 on Windows and in Python 3.5 in Linux
How to run it	Activate the correct environment at the terminal, and then run Python.

Microsoft Cognitive Toolkit (CNTK)

Category	Value
Version(s) supported	2.5.1
Supported DSVM editions	Windows 2016 Ubuntu 16.04
How is it configured / installed on the DSVM?	CNTK is installed in Python 3.6 on Windows 2016 and in Python 3.5 on Linux)

Category	Value
How to run it	Terminal: Activate the correct environment and run Python. Jupyter: Connect to Jupyter or JupyterHub, and then open the CNTK directory for samples.

MXNet

Category	Value
Version(s) supported	1.3.0
Supported DSVM editions	Windows 2016 Ubuntu 16.04
How is it configured / installed on the DSVM?	MXNet is installed in `C:\dsvm\tools\mxnet` on Windows and `/dsvm/tools/mxnet` on Ubuntu. Python bindings are installed in Python 3.6 on Windows 2016 and in Python 3.5 on Linux) R bindings are also included in the Ubuntu DSVM.
How to run it	Terminal: Activate the correct conda environment, then run `import mxnet`. Jupyter: Connect to Jupyter or JupyterHub, and then open the `mxnet` directory for samples.

MXNet Model Server

Category	Value
Version(s) supported	1.0.1
Supported DSVM editions	Windows 2016 Ubuntu 16.04

Category	Value
How is it configured / installed on the DSVM?	MXNet Model Server is installed in Python 3.6 on Windows 2016 and in Python 3.5 on Linux)
How to run it	Terminal: Run `sudo systemctl stop jupyterhub` to stop the JupyterHub service first, because both listen on the same port. Then activate the correct conda environment and run `mxnet-model-server --start --models squeezenet=https://s3.amazonaws.com/model-server/model_archive_1.0/squeezenet_v1.1.mar`

NVidia System Management Interface (nvidia-smi)

Category	Value
Version(s) supported	
Supported DSVM editions	Windows Server 2019 Ubuntu 18.04 Windows 2016 Ubuntu 16.04
What is it for?	NVIDIA tool for querying GPU activity
How is it configured / installed on the DSVM?	`nvidia-smi` is on the system path.
How to run it	On a virtual machine **with GPU's**, open a command prompt (on Windows) or a terminal (on Linux), and then run `nvidia-smi`.

PyTorch

Category	Value

Category	Value
Version(s) supported	1.2.0 (Ubuntu 16.04), 1.7.1 (Ubuntu 18.04, Windows 2019)
Supported DSVM editions	Windows Server 2019 Ubuntu 18.04 Ubuntu 16.04
How is it configured / installed on the DSVM?	Installed in Python 3.7 under the py37_pytorch conda environment. Sample Jupyter notebooks are included, and samples are in /dsvm/samples/pytorch.
How to run it	Terminal: Activate the correct environment, and then run Python. * JupyterHub: Connect, and then open the PyTorch directory for samples.

TensorFlow

Category	Value
Version(s) supported	1.13
Supported DSVM editions	Windows Server 2019 Ubuntu 18.04 Windows 2016 Ubuntu 16.04
How is it configured / installed on the DSVM?	Installed in Python 3.5 on Linux and Python 3.6 on Windows 2016
How to run it	Terminal: Activate the correct environment, and then run Python. * Jupyter: Connect to Jupyter or JupyterHub, and then open the TensorFlow directory for samples.

TensorFlow Serving

Category	Value
Version(s) supported	1.12

Category	Value
Supported DSVM editions	Ubuntu 16.04
How is it configured / installed on the DSVM?	tensorflow_model_server is available at the terminal.
How to run it	Samples are available online .

Theano

Category	Value
Version(s) supported	1.0.3
Supported DSVM editions	Ubuntu 16.04
How is it configured / installed on the DSVM?	Theano is installed in Python 2.7 (*root*), and in Python 3.5 (*py35*) environment.
How to run it	Terminal: Activate the Python version you want (root or py35), run Python, and then import Theano. * Jupyter: Select the Python 2.7 or 3.5 kernel, and then import Theano. To work around a recent math kernel library (MKL) bug, you need to first set the MKL threading layer as follows: `export MKL_THREADING_LAYER=GNU`

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