Guide to install Caffe on the idiap cluster without root permissions:

Please, don't copy and paste the commands (in *italic letters*) because it may be an error (a space, or a long dash, etc.) it is just better to type them manually and CHECK that makes sense to your environment.

0) Set environmental variables:

export PATH=/idiap/home/$(whoami)/usr/bin/:$PATH
export LD_LIBRARY_PATH=/idiap/home/$(whoami)/usr/lib/:$LD_LIBRARY_PATH

1) Install a virtual environment for Python

virtualenv --system-site-packages -p /usr/bin/python2.7 caffe-py27

Note: Install everything while in the virtual environment:
source caffe-py27/bin/activate

Upgrade pup
pip install --upgrade pip

- Install some python libraries (I used this, but just install the required for you)

pip install pandas
pip install scipy
pip install -U scikit-learn
pip install Augmentor

2) Create a "usr" directory: *mkdir /idiap/home/$(whoami)/usr*
3) Install pre-requisites (download the packages in one folder and install in "usr" folder):

- Boost

curl -L -O http://sourceforge.net/projects/boost/files/boost/1.65.1/boost_1_65_1.tar.gz
tar zxvf boost_1_65_1.tar.gz
cd boost_1_65_1/
./bootstrap.sh --libdir=/idiap/home/$(whoami)/usr/lib --
includedir=/idiap/home/$(whoami)/usr/include
vi project-config.jam # check that the python paths correspond to your virtual environment
./b2
./b2 install

- Opencv (Note: if it is already installed, just skip this part)

https://github.com/Itseez/opencv.git
mkdir build
cd build
cmake -D CMAKE_BUILD_TYPE=RELEASE -D
CMAKE_INSTALL_PREFIX=/idiap/home/$(whoami)/usr ..

make
make install
cp /idiap/home/$(whoami)/usr/opencv-3.3.1/build/lib/cv2.so /idiap/home/$(whoami)/caffe-py27/lib/python2.7/site-packages/cv2.so

- Protobuf

git clone https://github.com/google/protobuf.git
cd protobuf/
./autogen.sh
./configure --prefix=/idiap/home/$(whoami)/usr
make
make install

- glog

git clone https://github.com/google/glog.git
cd glog
./autogen.sh
./configure --prefix=/idiap/home/$(whoami)/usr
make
make install

- gflags

git clone https://github.com/gflags/gflags.git
cd gflags
mkdir build
cd build
ccmake .. # edit the prefix to /idiap/home/$(whoami)/usr and type “c” and “g” to generate
vi CMakeCache.txt # edit CMAKE_CXX_FLAGS:STRING=-fPIC
make
make install

- hdf5

HDF5 was already installed in the IDIAP cluster (commands to check installation *dpkg –s libhdf5-dev* and *dpkg –l | grep hdf5*)

- leveldb

git clone https://github.com/google/leveldb.git
cd leveldb/
make
cd out-share
cp --preserve=links libleveldb. /idiap/home/$(whoami)/usr/lib*
cd ..
cp -r include/leveldb /idiap/home/$(whoami)/usr/include/

- snappy

git clone https://github.com/google/snappy.git
cd snappy/
cmake –D CMAKE_INSTALL_PREFIX=/idiap/home/$(whoami)/usr
make
make install

- lmdb

git clone https://github.com/LMDB/lmdb
cd lmdb/libraries/liblmdb
vi Makefile # change prefix to /idiap/home/$(whoami)/usr
make
make install

4) build caffe (this can be done in another directory: e.g. /idiap/home/$(whoami))

git clone https://github.com/BVLC/caffe
cd caffe
cp Makefile.config.example Makefile.config

#Modify the Makefile.config according to the following:

Modify the following lines (note that "caffe-py27" was the name of the virtual environment that I created before, just change if you used another name):

```
CUDA_DIR:=/idiap/group/socialcomputing/gcan/cuda

PYTHON_INCLUDE := /idiap/home/$(whoami)/caffe-py27/include/python2.7 \
                  /idiap/home/$(whoami)/caffe-py27/lib/python2.7/dist-
packages/numpy/core/include

PYTHON_LIB := /idiap/home/$(whoami)/caffe-py27/lib
```

Uncomment this line: `WITH_PYTHON_LAYER := 1`

```
# Whatever else you find you need goes here.
```

Add this line: `QC_CUSTOM_INCLUDE := /idiap/home/$whoami/usr/include`
Add this line: `QC_CUSTOM_LIB := /idiap/home/$whoami/usr/lib`

```
INCLUDE_DIRS := $(PYTHON_INCLUDE) $(QC_CUSTOM_INCLUDE)
/usr/local/include /usr/include/hdf5/serial
LIBRARY_DIRS := $(PYTHON_LIB) $(QC_CUSTOM_LIB) /usr/local/lib /usr/lib
/usr/lib/x86_64-linux-gnu/hdf5/serial
```

Now it is time to build caffe (inside the caffe directory) by typing the following commands:

make clean
make all
make test
make runtest # This may fail because of the gpu's (one is supposed to put this command as a job in the grid, I did not tried it, I just skipped this command). However, it is just a test and then we can continue installing only if the "make all" command was successful.

cd python
for req in $(cat requirements.txt); do pip install $req; done

make pycaffe

export PYTHONPATH=/idiap/home/$(whoami)/caffe/python/:$PYTHOPATH

Now try: *python –c "import caffe"* if there was no error, then everything is okay and you installed caffe.

FINAL NOTES:
Every time you want to use caffe, it is necessary to export the following variables (or you can add them to your ~/.bashrc or ~/.bash_profile) or simply add them to the job that is going to be submitted in the grid:

export PATH=/idiap/home/$(whoami)/usr/bin/:$PATH
export LD_LIBRARY_PATH=/idiap/home/$(whoami)/usr/lib/:$LD_LIBRARY_PATH
export PYTHONPATH=/idiap/home/$(whoami)/caffe/python/:$PYTHONPATH

It is also necessary to load the virtual environment
source /idiap/home/$(whoami)/caffe-py27/bin/activate

REFERENCE:

- http://autchen.github.io/guides/2015/04/03/caffe-install.html