Osnabrück University - Machine Learning (Summer Term 2016) - Prof. Dr.-Ing. G. Heidemann, Ulf Krumnack

Exercise Sheet 01: Concept Learning

IMPORTANT NOTE: The provided PDF only contains information on how to get Jupyter to run. You will need it to open the `*.ipynb` file which contains the rest (also the important part) of the sheet. Assignment 0 will walk you through that process.

Introduction

This is a part of the first exercise sheet, you will find the rest in the `*.ipynb` file. The homework sheets will usually be available on Tuesdays and are supposed to be solved in groups of three. They have to be handed in before Monday morning of the following week. The exercises are then presented to your tutor in a small feedback session. To acquire the admission for the final exam, you will have to pass $N - 2$ of the weekly provided exercise sheets.

Sign up for a group on Stud.IP (See `Participants` -> `Functions/Groups`). The times mentioned there are the times for the feedback session of your group. If none of them fits, send any of the tutors an e-mail so we can try to arrange something.

Your group will have a group folder in Stud.IP under `Documents`. Upload your solutions there to hand them in.

All exercise sheets will use Jupyter Notebooks (http://jupyter-notebook.readthedocs.org/en/latest/notebook.html). To be able to run these on your system, you will need to install Python and a few packages. We suggest you to use the latest version of Python 3. In case you are not familiar with it, follow the directives below (Assignment 0a)) to get it up and running. Assignment 0b) on this sheet will provide details on how to run the notebooks with Jupyter.

We will offer an open help session if you need help with installing and getting things to run: On **Thursday, April 14, 2016 between 12:30 and 16:00** you will find some tutors in **93/E42** who try to help you.

Assignment 0: Setup your homework environment

a) Install Python

To be able to run Jupyter Notebooks you will need Python. Follow this exercise to get everything up and running.

UNIX (e.g. Ubuntu)

The following commands will install Python and the components required to build some of the packages we will use.

```
sudo apt-get install build-essential python3-dev python3
pip3 install --upgrade pip
pip3 install jupyter numpy matplotlib
```

MacOS

We recommend using homebrew to install Python.

```
ruby -e "$(curl -fsSL https://raw.githubusercontent.com/Homebrew/ins
tall/master/install)"
brew install python3
pip3 install --upgrade pip
pip3 install jupyter numpy matplotlib
```

Windows

Go to https://www.python.org/downloads/windows/ (https://www.python.org/downloads/windows/) and download the *Latest Python 3 Release*. Install it and make sure that *Add to PATH* is checked during the installation.

Open your command line (`START` → `cmd.exe`). Type the following commands:

```
pip install --upgrade pip
pip install jupyter numpy matplotlib
```

If some of those installations fail, check if `pip` produces output. Otherwise `'pip' is not recognized as an internal or external command, operable program or batch file.`. If that is the case, rerun the installation and check "Add to PATH" or try restarting your computer. In the other cases it might be you have problems with compiling the packages. Try to find them on http://www.lfd.uci.edu/~gohlke/pythonlibs/ (http://www.lfd.uci.edu/~gohlke/pythonlibs/), download them and install them with:

```
pip install *.whl
```

b) Run Jupyter Notebooks

After you installed Python and Jupyter verify you are able to run the notebook server by opening your command line, navigate to the directory where you downloaded the `Sheet 01 Concept Learning.ipynb` to, e.g. `~/university/ML2016` or `C:\Users\Documents\University\ML2016` and run jupyter in that directory.

```
cd ~/university/ML2016
jupyter notebook
```

Usually a browser window should open up. If not, open your favorite webbrowser and navigate to localhost:8888/tree (localhost:8888/tree). (In some browsers there is a small display bug with $\LaTeX$ output: After each equation there will be a trailing $|$. Affected is e.g. Google Chrome.)

You will be presented with a list of files, choose `Sheet 01 Concept Learning.ipynb`: You are good to go now and can start working on your homework right away!

If you experience any troubles, remember to step by at the help session on Thursday, April 14, use the Stud.IP forum or send us an e-mail - we are always happy to help.