Learning based Multimedia Processing

2023/2024

Lab classes (1)

1 Setup

1.1 Install Anaconda, Jupyter notebook, PIP

Install **Anaconda**: https://www.anaconda.com/products/distribution
Anaconda3-2024.02-1-Windows-x86_64.exe

(alternative to use online: Anaconda Nucleus: https://anaconda.cloud/)

Create new **environment**: **LBMP** (with Python 3.11)

Install **Jupyter Notebook** directly from Anaconda. (ver 7.0.8)

Install **PowerShell Prompt** (from Anaconda)

Change code directory:
1. Open powershell and run `jupyter notebook --generate-config`, to write a file C:\Users\username\.jupyter*jupyter_notebook_config.py*.
2. Edit that file and change the line: `#c.ServerApp.notebook_dir = ''`
to `c. ServerApp.notebook_dir = "C:/yourPath"`.
3. Start Jupyter Notebook.

To start Jupyter Notebook on a different directory (run on powershell):

```
jupyter notebook --notebook-dir "C:/yourPath".
```

Anaconda update (powershell - run as administrator):

```
conda update --all
```

Install **`pip`** (https://pypi.org/project/pip/): (pip-24.0)

```
python -m pip install --upgrade pip
```

1.2 Install OpenCV and matplotlib

Install **`OpenCV`** (numpy-1.26.4 opencv-python-4.9.0.80):

```
pip install opencv-python
```

Install **`matplotlib`** (matplotlib-3.8.3):

```
pip install matplotlib
```

Install **`pandas, seaborn, scikit-learn, tensorflow`**:

```
conda install pandas
conda install seaborn
pip install scikit-learn
pip install tensorflow
```

2 Introduction to Python and Data Visualization

From Anaconda:

- Select **LBMP environment**
- Run **Jupyter Notebook**

The following are examples of notebooks from Anaconda Nucleus (https://anaconda.cloud/).

2.1 Introduction to Python

Copy the notebooks available in the directory `python_intro` to the LMBP working directory:

```
01-strings.ipynb
02-numbers.ipynb
03-bools.ipynb
04-collections.ipynb
05-imports.ipynb
06-functions.ipynb
07-rules.ipynb
08-repeats.ipynb
09-errors.ipynb
10-classes.ipynb
```

Open each of the files and follow the examples. Try to solve the challenges presented at the end of the files.

2.2 Introduction to Data Visualization with Python

Copy the notebooks available in the directory `python-vis` to the LMBP working directory:

```
README.md
01-read-a-plot.ipynb
02-derive-basic-insight.ipynb
03-understand-data-statistically.ipynb
04-customize-plots.ipynb
05-project.ipynb
```

Open each of the files and follow the examples. Try to solve the challenges presented at the end of the files.