

Ανάλυση Κοινωνικών Δικτύων (Social Network Analysis)

Εισαγωγή στην Ανάλυση Κοινωνικών Δικτύων με Python

Σ. Παπαβασιλείου, Β. Καρυώτης, Γ. Μήτσης,
Μ. Βιτοροπούλου, Κ. Τσιτσεκλής, Κ. Σακκά

Οκτώβριος 2019

Why Python?

Powerful libraries

- ▶ **NetworkX**: *"a package for the creation, manipulation and study of the structure, dynamics, and functions of complex networks"*. [More on NetworkX](#)
- ▶ **NumPy, SciPy** : packages for scientific computing (linear algebra capabilities, solve differential equations, optimization). [More on SciPy](#)
- ▶ **Pandas** : library for data analysis and modelling. [More on Pandas](#)
- ▶ **Matplotlib**: library for data visualization (graphs, plots). [More on Matplotlib](#)

Environment: Jupyter Notebook

An open-source web application for

- ▶ code development
- ▶ code documentation
- ▶ code execution
- ▶ data visualization



<http://jupyter.org>

Jupyter notebook installation

2 ways

► Using Anaconda

<https://www.anaconda.com/download>

► With pip

As an existing or experienced Python user, you may wish to install Jupyter using Python's package manager, pip, instead of Anaconda.

If you have Python 3 installed (which is recommended):

```
python3 -m pip install --upgrade pip
python3 -m pip install jupyter
```

If you have Python 2 installed:

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

Congratulations, you have installed Jupyter Notebook! To run the notebook, run the following command at the Terminal (Mac/Linux) or Command Prompt (Windows):

```
jupyter notebook
```

Jupyter notebook basics

► Dashboard

When you initiate the notebook server, your browser will open to the notebook dashboard where the notebooks and files of the current directory are displayed.

► Notebook UI is divided in the menu, toolbar and cells.

<https://jupyter-notebook.readthedocs.io/en/stable/examples/Notebook/Notebook%20Basics.html>

Jupyter notebook basics: Modes

- ▶ **Edit mode:** you can type like in a normal text editor.
Enter edit mode by pressing Enter.
- ▶ **Command mode:** you can edit the notebook as a whole, but not individual cells. Keyboard shortcuts let you perform notebook and cell actions efficiently.
Enter command mode by pressing Esc

Find out more about keyboard shortcuts in the “Help: Keyboard Shortcuts” menu item.

Jupyter notebook structure

2 types of cells

- ▶ Code cells

enter and run your code

<https://jupyter-notebook.readthedocs.io/en/stable/examples/Notebook/Running%20Code.html>

- ▶ Markdown cells

text can be added using Markdown and LaTeX

<https://jupyter-notebook.readthedocs.io/en/stable/examples/Notebook/Working%20With%20Markdown%20Cells.html>

A demo notebook

Download from mycourses the file **demo.ipynb**

