

# 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 2018

# 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**

