Pythons Pandas Library:

Leveraging Open-Source Tools for Data Analysis

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Programming

Laboratory Information Management System (LIMS)

Programming Pipelines for Analysis (UTAP and more)





Deep Sequencing Data Analysis (NGS)

Weizmann LSCF

Bioinformatics unit

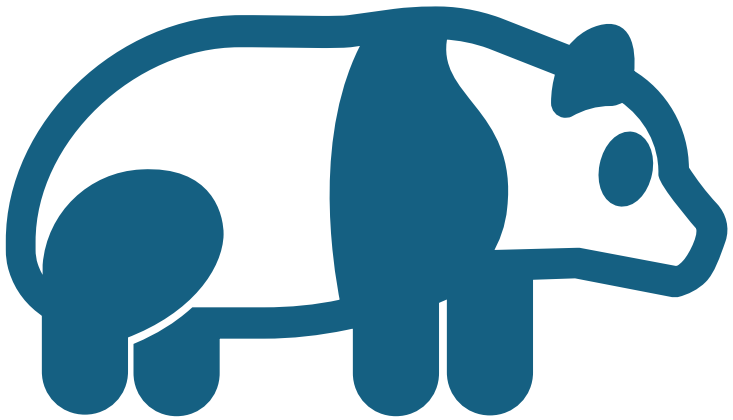

Sequence Analysis and CRISPR Design

Statistics, Machine Learning & Artificial Intelligence



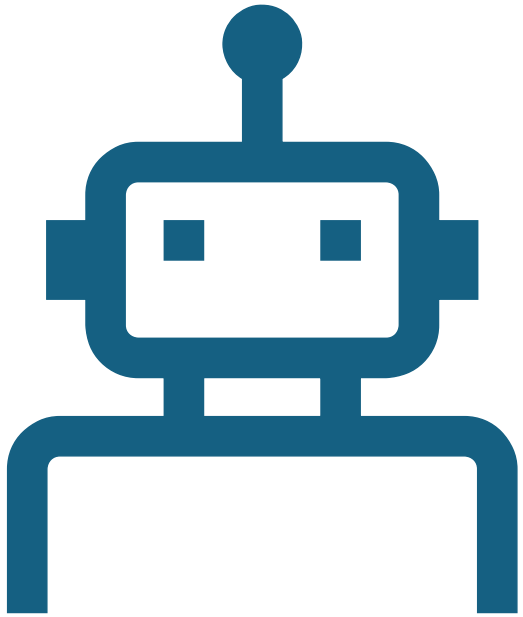
What will I learn?

- The what?
- The how?



What

- What is Pandas and where does it fall in relation to Python as a language.
- Useful tools which help make the most out of Pandas.
- Capabilities and functionalities.



How

- How to work with Pandas through a hands-on approach.
- Familiarizing and experimenting with its capabilities.
- How to dream

Outline

- Pandas Ecosystem.
- Birds-eye-view of Pandas and the workbook
- Getting our hands dirty and writing some code.

Other tools

- A few other tools to help us along the way

Anaconda

- Anaconda streamlines the setup of Python environments.
- Anaconda is the backbone for setting up the Python environment needed to run our Pandas workshop.
- Supports many languages.

Jupyter

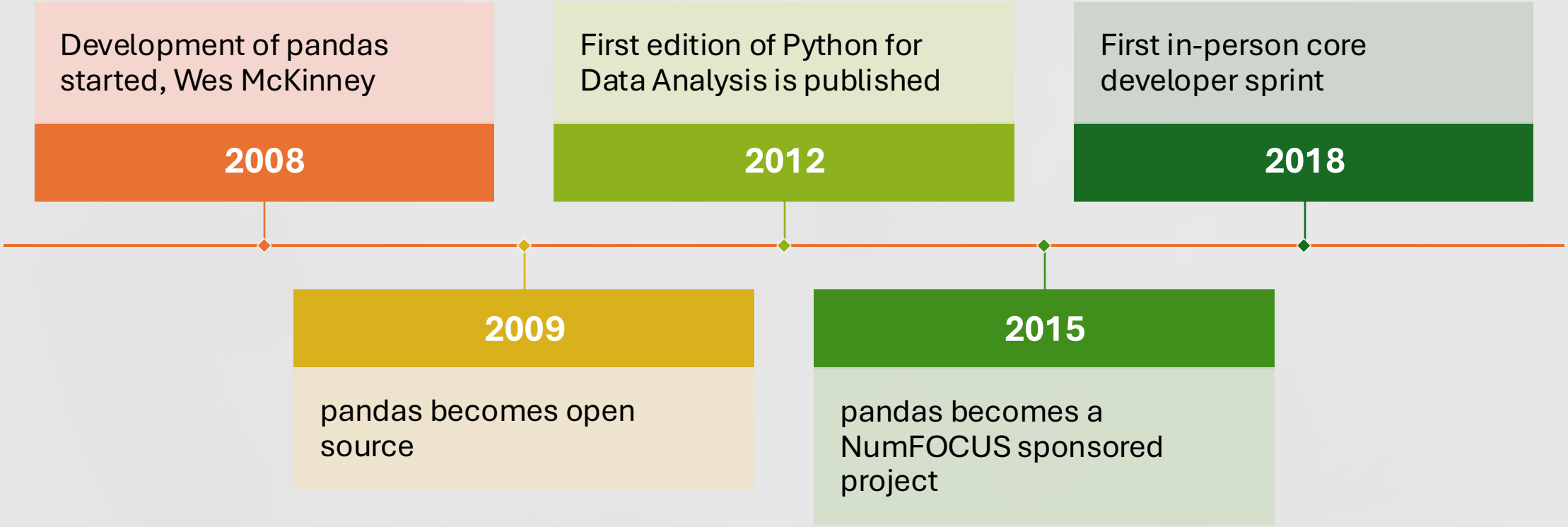
- Jupyter provides an interactive computing environment where you can write, run, and visualize code.
- Widely adopted in academia and industry.
- This is where we will be doing all our hands-on work.

Pandas namesake?

Panel Data + Python Data Analysis = Pandas

What is Pandas?

Short History



Series

One-dimensional labeled array capable of holding any data type.

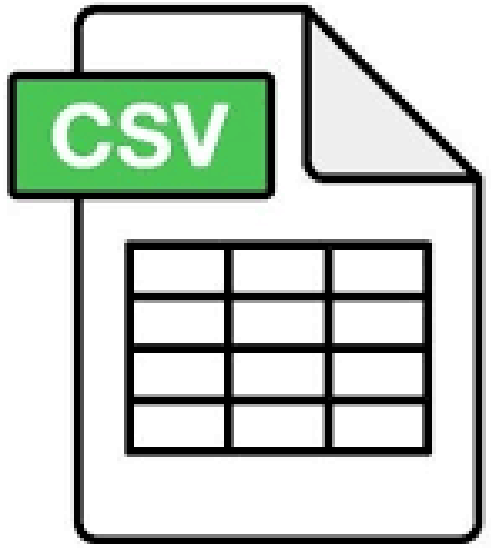
DataFrames:

A DataFrame in Pandas is a two-dimensional labeled data structure capable of holding data of various types in a tabular format

DataFrames can be thought of as a collection of Pandas Series where each Series represents a column.

With many built-in methods!!

Loading in data.



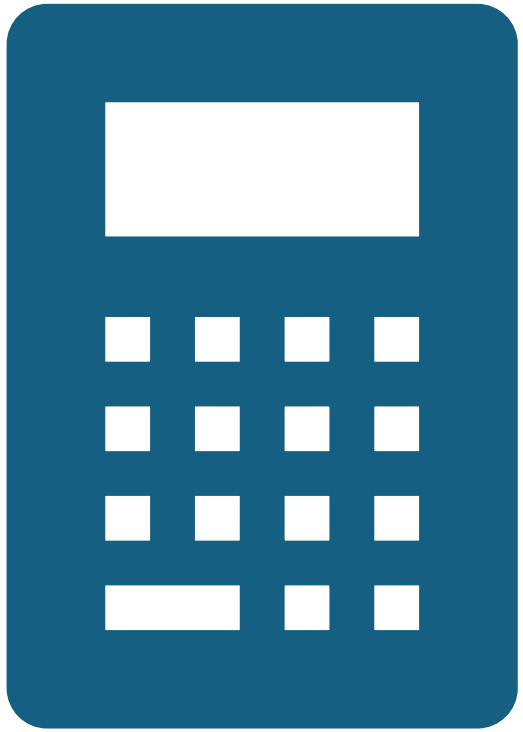
Subsets of the data

COLUMN

INDEX

LOC & ILOC

SLICING

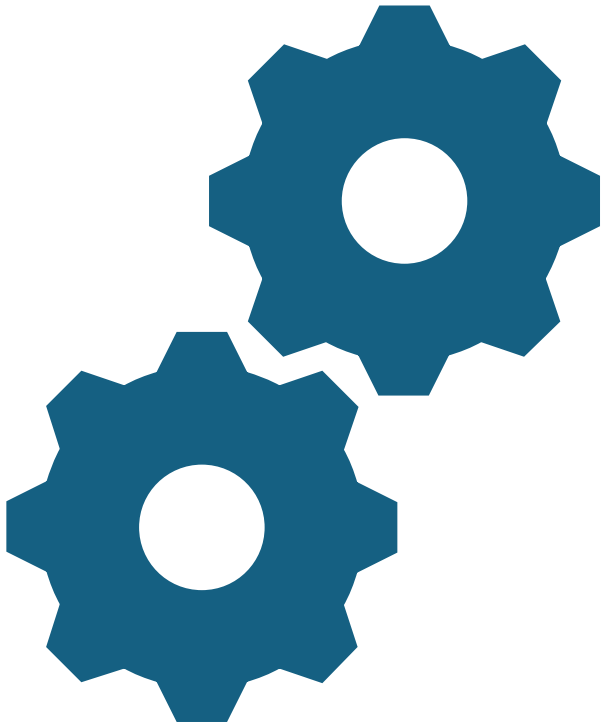


Mathematical Operations

Masks

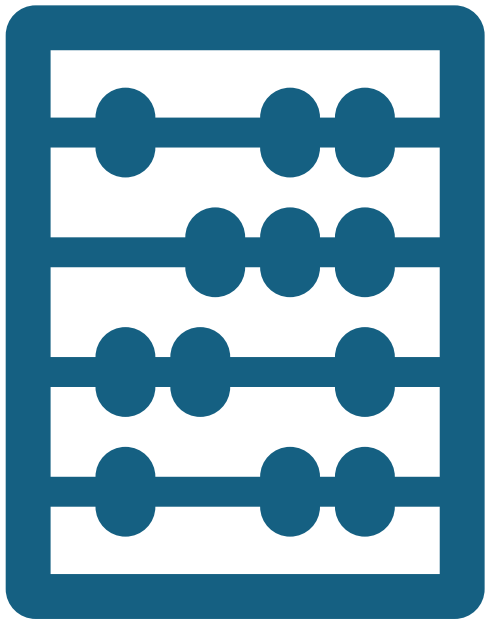
Time

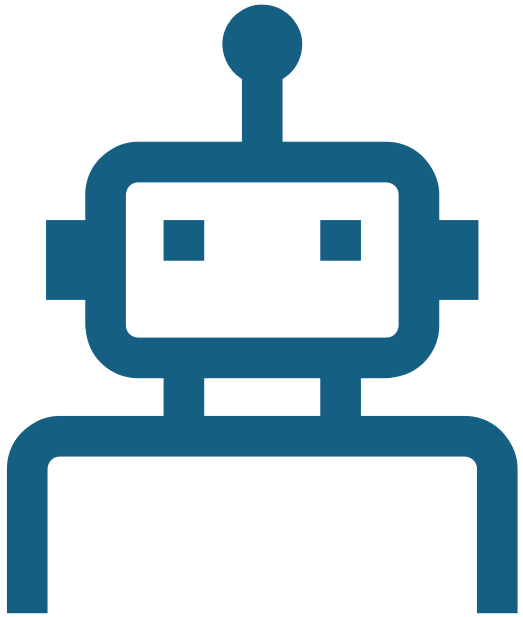
Groupby



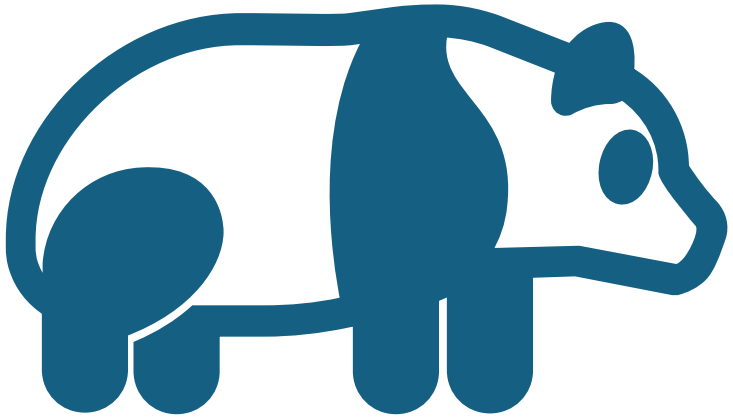
Feature Engineering

One-Hot Encoding





Machine Learning Algorithms



Let's Go!