

CAP 5768 – Intro to Data Science

Lecture 1 – Data Science: tools



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Python



- Python is an interpreted, high-level, general-purpose programming language created by Guido van Rossum and first released in 1991.
- Python's design philosophy emphasizes **code readability** with its notable use of significant whitespace.
- Its language constructs and object-oriented approach aim to help programmers **write clear, logical code** for **small and large-scale projects**.
- Python is dynamically typed and garbage-collected. It **supports multiple programming paradigms**, including procedural, object-oriented, and functional programming.
- **Follow Part 4 of the “Guided Tour” to refresh your knowledge of Python (if needed).**

Source: [https://en.wikipedia.org/wiki/Python_\(programming_language\)](https://en.wikipedia.org/wiki/Python_(programming_language))



Google Colaboratory

- Colaboratory is a free Jupyter notebook environment that requires no setup and runs entirely in the cloud.
- With Colab you can write and execute code, save and share your analyses, and access powerful computing resources, all for free from your browser.
- **Follow Part 1 of the “Guided Tour” to get started.**

Source: <https://colab.research.google.com/notebooks/welcome.ipynb>

PyCharm and (Ana)conda



- Anaconda (<https://www.anaconda.com/>) is a Python distribution environment (that uses Conda <https://conda.io/docs/index.html> as a package manager)
- PyCharm is a Python IDE from JetBrains.
 - It is **free** for FAU students.
- Follow Part 3 of the “Guided Tour” to set up Anaconda and (optionally) PyCharm.

IPython and Jupyter Notebooks

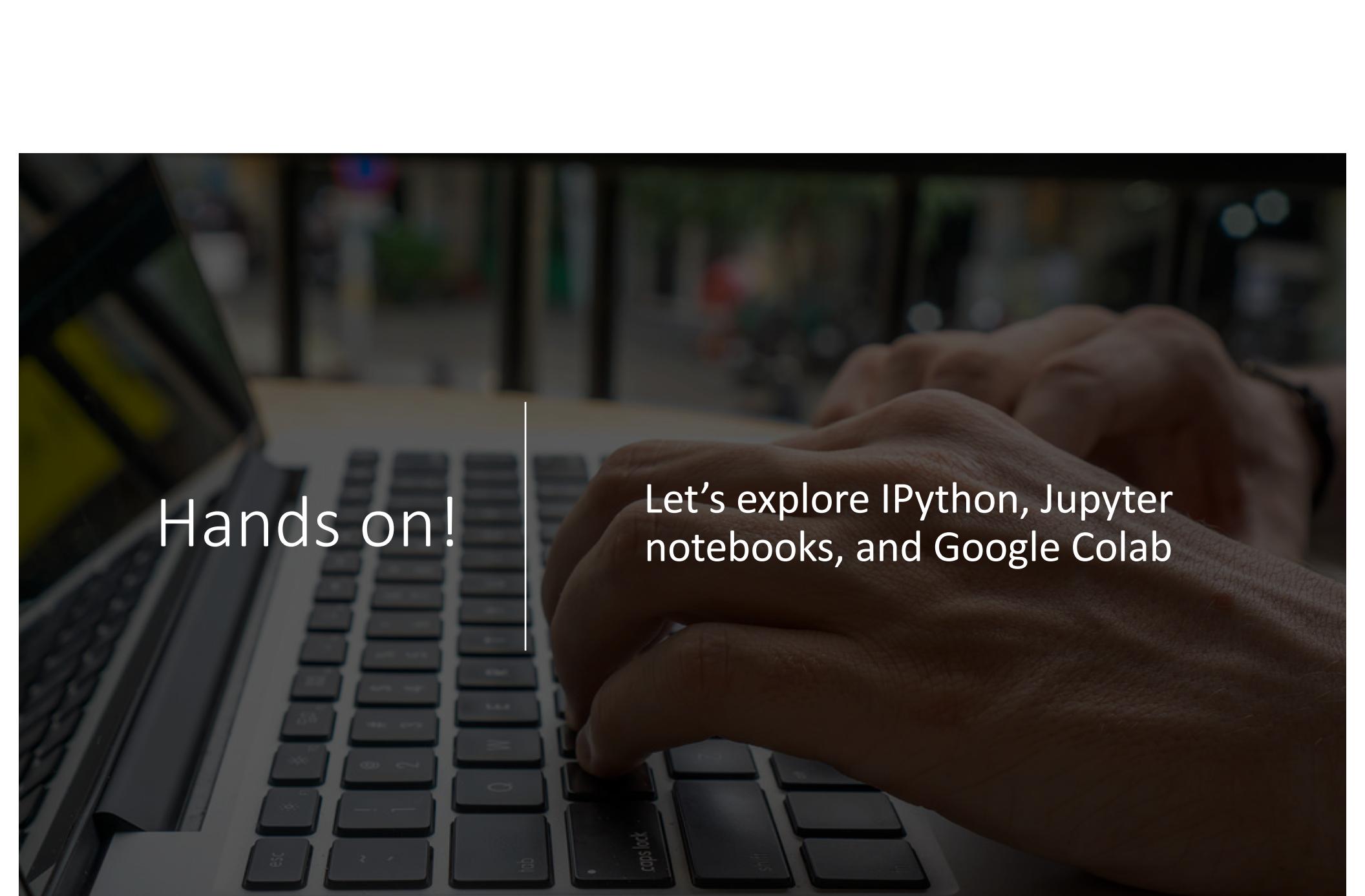
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IPython



- IPython (short for *Interactive Python*) -- started in 2001 by Fernando Perez as an enhanced Python interpreter -- has grown into a project aiming to provide “tools for the entire lifecycle of research computing.”
- If Python is the engine of our data science task, you might think of IPython as the interactive control panel.
- IPython is closely tied with the *Jupyter project*, which provides a browser-based notebook that is useful for development, collaboration, sharing, and even publication of data science results.
 - The IPython notebook is actually a special case of the broader Jupyter notebook structure, which encompasses notebooks for Julia, R, and other programming languages.
- **Follow Part 2 of the “Guided Tour” to learn more.**

Source: <https://colab.research.google.com/github/jakevdp/PythonDataScienceHandbook/blob/master/notebooks/01.00-IPython-Beyond-Normal-Python.ipynb>



Hands on!

Let's explore IPython, Jupyter notebooks, and Google Colab