

STUDY REPORT

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1 Introduction to Overleaf



Figure 1: Overleaf

Overleaf is a collaborative cloud-based LaTeX editor used for writing, editing and publishing scientific documents. It partners with a wide range of scientific publishers to provide official journal LaTeX templates, and direct submission links.

2 Introduction to Python



Figure 2: Python

Python is a popular programming language. It was created by Guido van Rossum, and released in 1991. .

2.1 It is used for:

- web development (server-side),
- software development,
- mathematics,
- system scripting.

2.2 What can Python do?

- Python can be used on a server to create web applications.
- Python can be used alongside software to create workflows
- Python can connect to database systems. It can also read and modify files.
- Python can be used to handle big data and perform complex mathematics

2.3 Why Python?

- Python works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc). has a simple syntax similar to the English language.
- Python has syntax that allows developers to write programs with fewer lines than some other programming languages.
- Python runs on an interpreter system, meaning that code can be executed as soon as it is written. This means that prototyping can be very quick.

2.4 Python Syntax compared to other programming languages

- Python was designed for readability, and has some similarities to the English language with influence from mathematics.
- Python uses new lines to complete a command, as opposed to other programming languages which often use semicolons or parentheses.
- Python relies on indentation, using whitespace, to define scope; such as the scope of loops, functions and classes. Other programming languages often use curly-brackets for this purpose.

3 Introduction to Google Colab



Figure 3: Collab

- It is a convenient and easy-to-use way to run Jupyter notebooks on the cloud, and their free version comes with some limited access to GPUs as well.

- If you're familiar with Jupyter notebooks, learning Colab will be a piece of cake, and we can even import Jupyter notebooks to be run on Google Colab.
- But, there are a lot of nifty things that Colab can do as well, which we're going to explore in this article. Let's dive right in!

4 Introduction to Project Jupyter



Figure 4: Jupyter

- JupyterLab is the latest web-based interactive development environment for notebooks, code, and data.
- Its flexible interface allows users to configure and arrange workflows in data science, scientific computing, computational journalism, and machine learning.
- A modular design invites extensions to expand and enrich functionality.