



PECE Programa de
Educação Continuada

Escola Politécnica da USP

Introdução a Redes Neurais

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Aula 2 – Parte 2

Notebooks Python

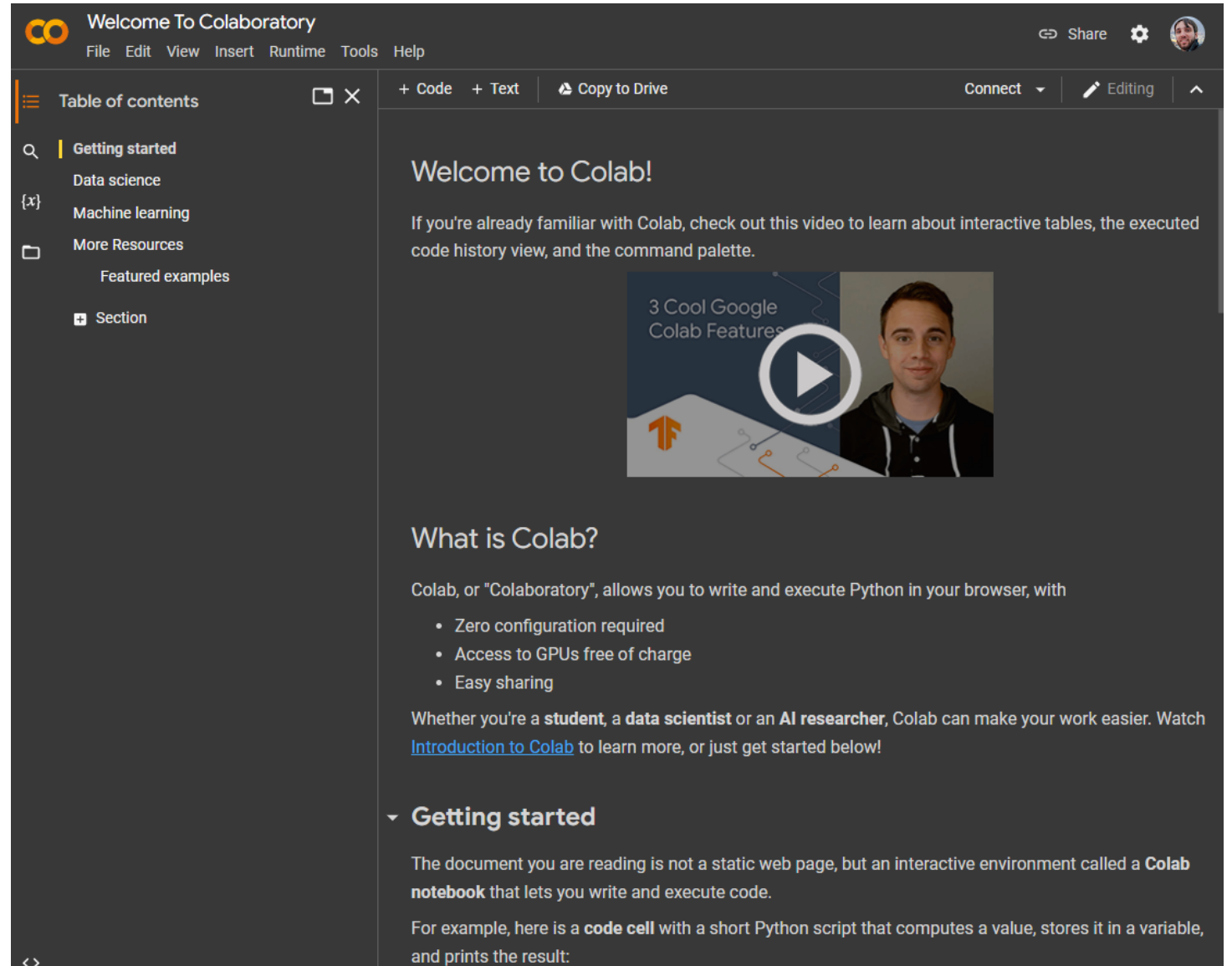
- Google Colab
- Jupyter

Bibliotecas de ML

- Tensorflow
- Pytorch
- Keras

Google Colaboratory

<https://colab.research.google.com/>



The screenshot displays the Google Colaboratory web interface. At the top, a dark header bar contains the Colab logo, the text "Welcome To Colaboratory", and a menu with "File", "Edit", "View", "Insert", "Runtime", "Tools", and "Help". On the right of the header are links for "Share", "Settings", and a user profile icon. Below the header, a left sidebar with a dark background features a "Table of contents" section with icons for "Getting started", "Data science", "Machine learning", "More Resources", "Featured examples", and a "Section" button. The main content area has a dark background and includes a top bar with "+ Code", "+ Text", "Copy to Drive", "Connect", "Editing", and a scroll indicator. The main content starts with a "Welcome to Colab!" heading, followed by a paragraph: "If you're already familiar with Colab, check out this video to learn about interactive tables, the executed code history view, and the command palette." Below this is a video player with a play button and a thumbnail showing a man and the text "3 Cool Google Colab Features". The next section is "What is Colab?", which explains that Colab allows writing and executing Python in the browser with three bullet points: "Zero configuration required", "Access to GPUs free of charge", and "Easy sharing". It then states: "Whether you're a **student**, a **data scientist** or an **AI researcher**, Colab can make your work easier. Watch [Introduction to Colab](#) to learn more, or just get started below!". The final section is "Getting started", which notes that the document is an interactive "Colab notebook" and provides an example of a "code cell" with a short Python script that computes a value, stores it in a variable, and prints the result.

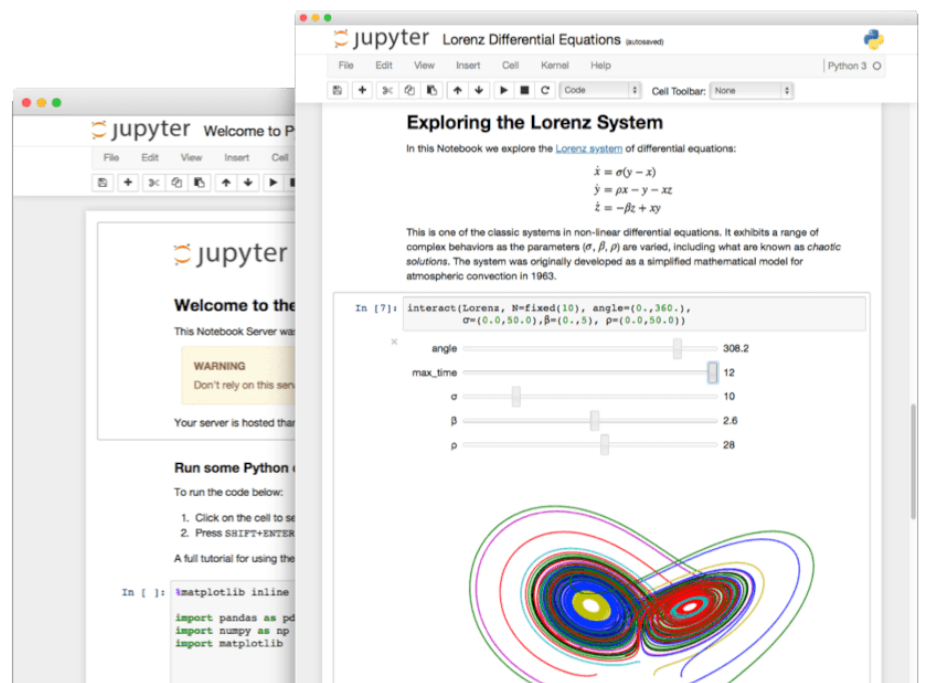


Jupyter

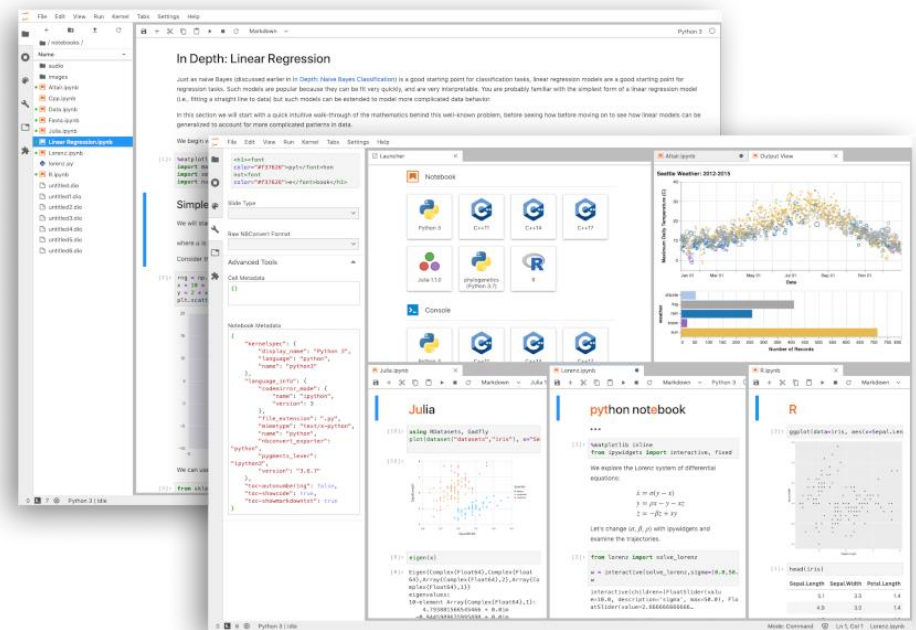
- <https://jupyter.org/>
- Open-source
- Pode ser executado localmente
- Não apenas para Python

Jupyter

Notebook

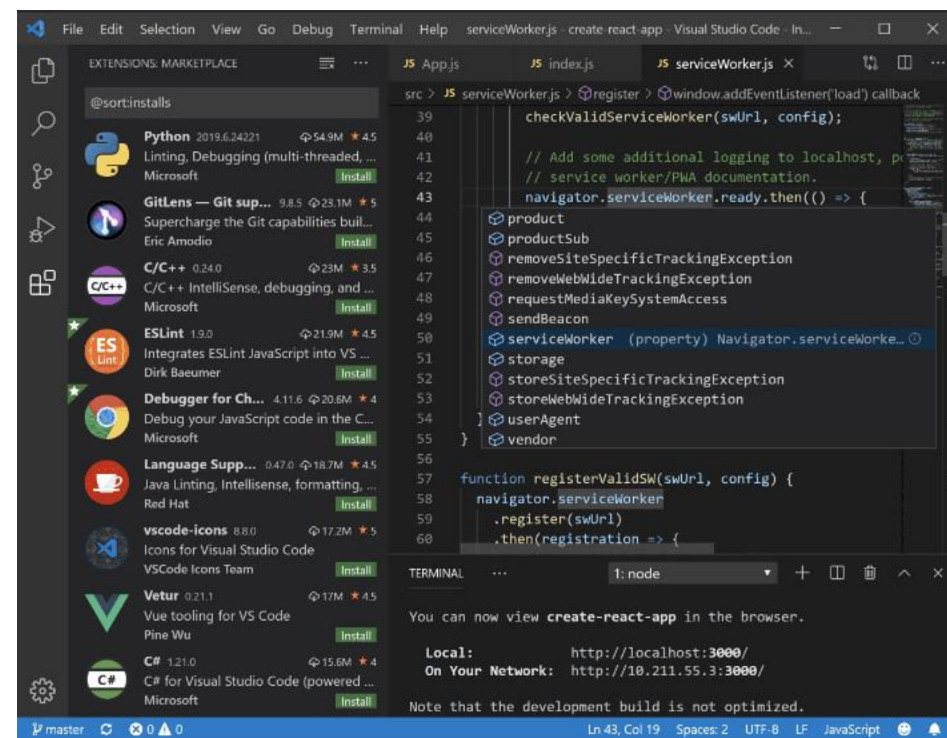


Jupyterlab



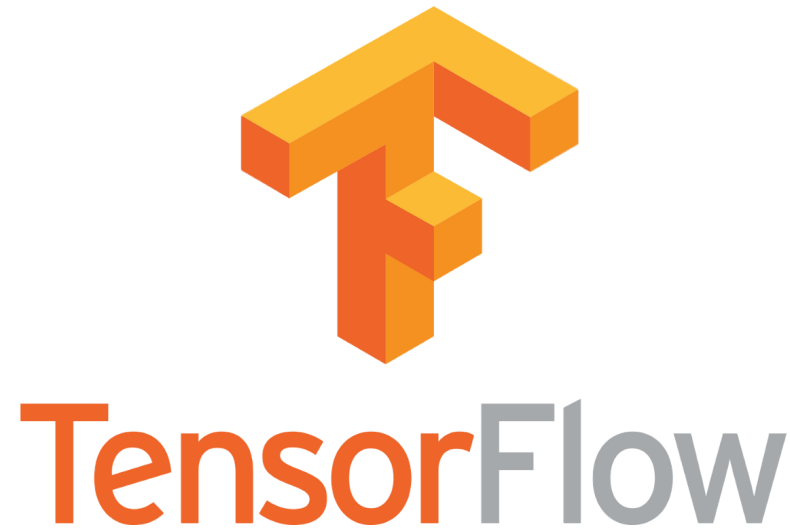
VSCode

- Ambiente de desenvolvimento integrado
- Integra com Jupyter
- Integra com git
- Acesso remoto



Bibliotecas de ML

- O que é uma biblioteca?
- Por que usar?
- As principais bibliotecas de ML
 - TensorFlow
 - PyTorch
 - Keras
 - scikit-learn





TensorFlow

TensorFlow

- Open Source
- Mantido pelo Google Brain
- TF 1.0 e TF 2.0
- Diferenciação automática
- GPU

```
import tensorflow as tf
```




Keras

- Open Source
- Interface para o TensorFlow
- Focado em facilidade de implementação
- GPU
- <https://keras.io/examples/>

```
from tensorflow import keras  
ou  
import keras
```

PyTorch

- Open Source
- Mantido pela Meta AI
- Baseado na biblioteca Torch
- Diferenciação automática
- GPU

```
import torch
```





Scikit learn

- Open Source
- Fácil integração com numpy e scipy

```
from sklearn import ...
```