

Fundamentals of Data science and Machine Learning

Concepts, Techniques and Tools to Build Intelligent Systems

Module 2

Beyond Normal Python:

Python For Data Science and Machine Learning

Ali Samanipour

May. 2023

1

Setup Your Development Environment

2

Pandas

3

NUMPY & MATPLOTLIB

4

SEABOARN

5

SCIPY

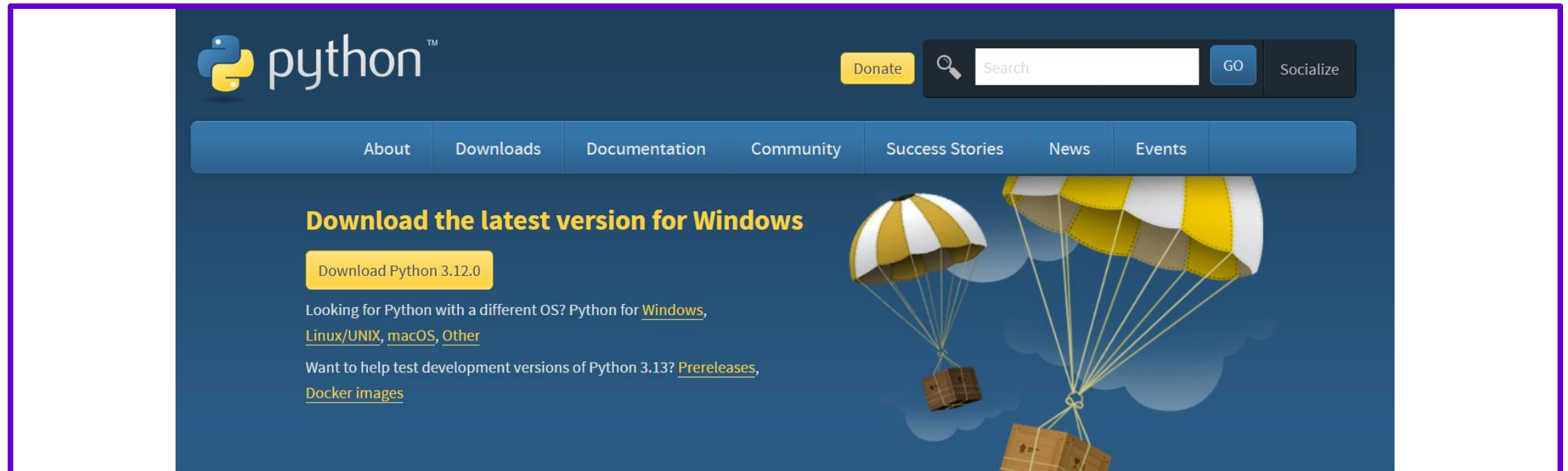
6

SCIKIT-LEARN

Development Environment Setup- Step 1

Download and install Python based on your OS.

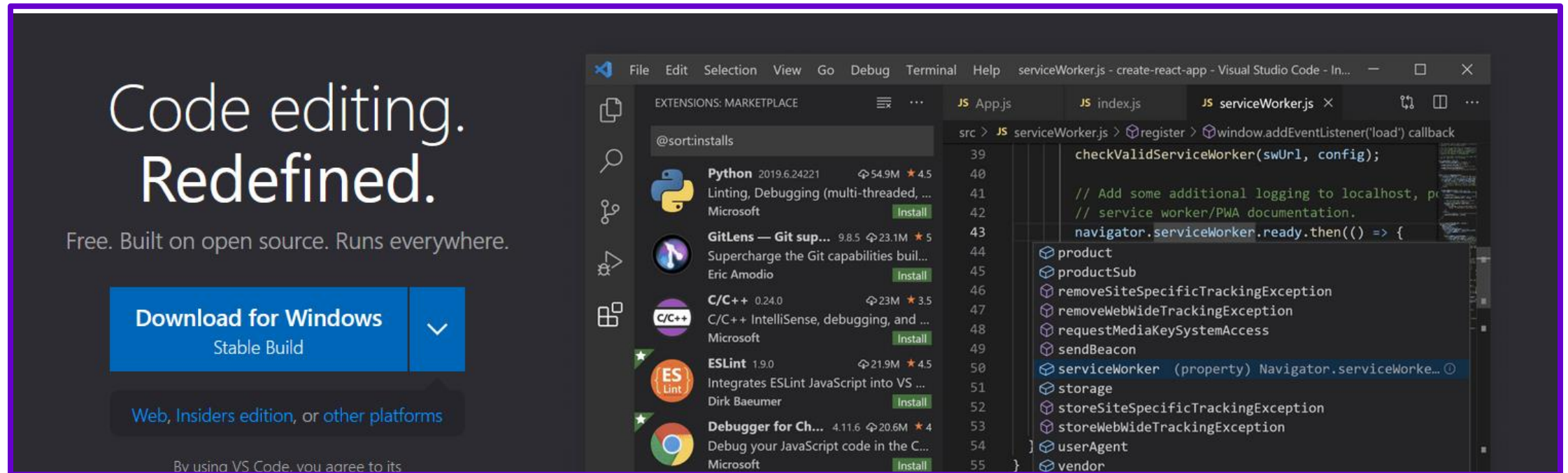
<https://www.python.org/downloads/>



Development Environment Setup- Step 2

Download and install VSCode based on your OS.

<https://code.visualstudio.com/>



The image shows the Visual Studio Code website on the left and the VS Code application interface on the right. The website features the text "Code editing. Redefined." and "Free. Built on open source. Runs everywhere." with a prominent blue "Download for Windows" button labeled "Stable Build". Below this, it says "Web, Insiders edition, or other platforms". The VS Code interface on the right shows the "EXTENSIONS: MARKETPLACE" sidebar with a search for "@sortinstalls". The list of extensions includes Python, GitLens, C/C++, ESLint, and Debugger for Chrome. The main editor area displays a JavaScript file named "serviceWorker.js" with code for registering a service worker and handling events.

Code editing.
Redefined.

Free. Built on open source. Runs everywhere.

Download for Windows
Stable Build

Web, Insiders edition, or other platforms

By using VS Code, you agree to its

EXTENSIONS: MARKETPLACE

@sortinstalls

- Python** 2019.6.24221 54.9M ★ 4.5
Linting, Debugging (multi-threaded, ...
Microsoft **Install**
- GitLens — Git sup...** 9.8.5 23.1M ★ 5
Supercharge the Git capabilities built into VS Code
Eric Amodio **Install**
- C/C++** 0.24.0 23M ★ 3.5
C/C++ IntelliSense, debugging, and ...
Microsoft **Install**
- ESLint** 1.9.0 21.9M ★ 4.5
Integrates ESLint JavaScript into VS Code
Dirk Baeumer **Install**
- Debugger for Chrome** 4.11.6 20.6M ★ 4
Debug your JavaScript code in the Chrome DevTools
Microsoft **Install**

src > JS serviceWorker.js > register > window.addEventListener('load') callback

```
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55
```

checkValidServiceWorker(swUrl, config);

// Add some additional logging to localhost, pointing
// service worker/PWA documentation.

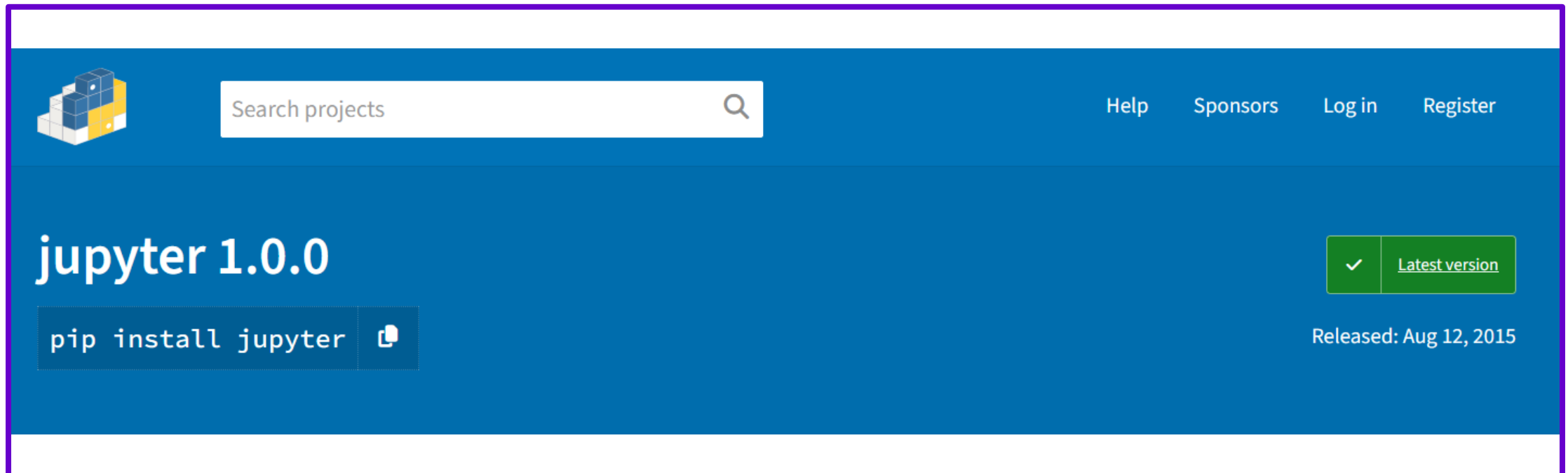
navigator.serviceWorker.ready.then(() => {

- product
- productSub
- removeSiteSpecificTrackingException
- removeWebWideTrackingException
- requestMediaKeySystemAccess
- sendBeacon
- serviceWorker (property) Navigator.serviceWorker...
- storage
- storeSiteSpecificTrackingException
- storeWebWideTrackingException
- userAgent
- vendor

Development Environment Setup- Step 3

Download and install Jupyter package.

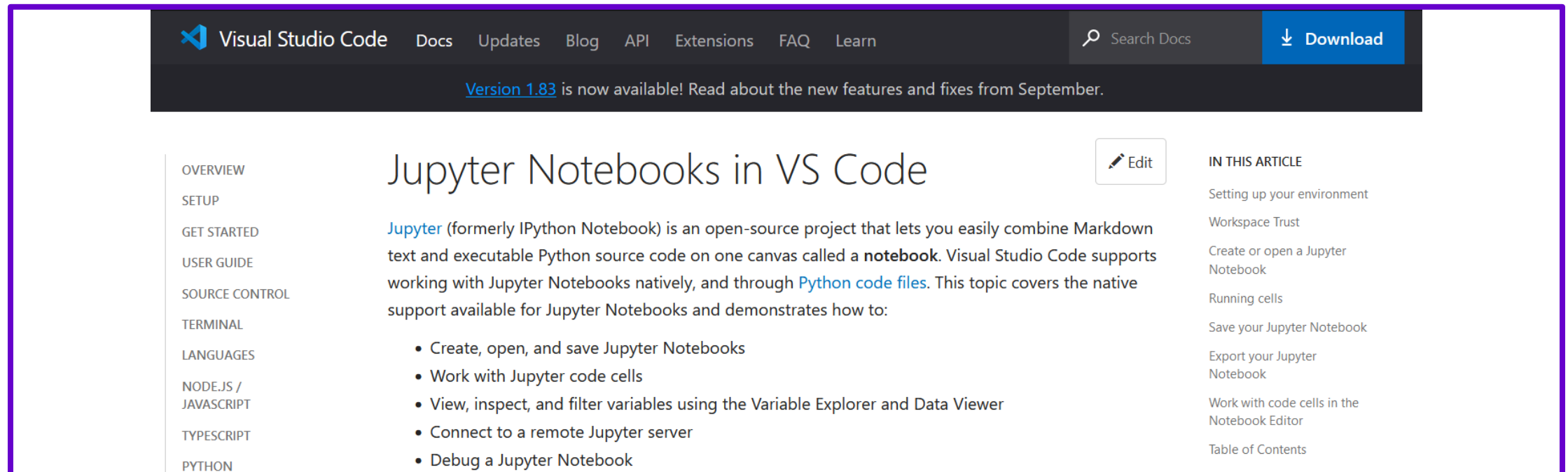
<https://pypi.org/project/jupyter>



Development Environment Setup- Step 4

Download and install Jupyter Extension on VSCode.

<https://code.visualstudio.com/docs/datascience/jupyter-notebooks>



The screenshot shows the Visual Studio Code documentation website. The top navigation bar includes links for Visual Studio Code, Docs, Updates, Blog, API, Extensions, FAQ, and Learn. A search bar and a 'Download' button are also present. A banner below the navigation bar announces 'Version 1.83 is now available! Read about the new features and fixes from September.' The main content area is titled 'Jupyter Notebooks in VS Code' and includes an 'Edit' button. The text describes Jupyter as an open-source project for combining Markdown and Python code. A list of topics covered is provided, including creating, opening, saving, and debugging Jupyter Notebooks. A sidebar on the left lists various documentation sections, and a right sidebar titled 'IN THIS ARTICLE' lists the specific topics covered in this document.

Visual Studio Code Docs Updates Blog API Extensions FAQ Learn

Search Docs Download

Version 1.83 is now available! Read about the new features and fixes from September.

Jupyter Notebooks in VS Code

[Jupyter](#) (formerly IPython Notebook) is an open-source project that lets you easily combine Markdown text and executable Python source code on one canvas called a **notebook**. Visual Studio Code supports working with Jupyter Notebooks natively, and through [Python code files](#). This topic covers the native support available for Jupyter Notebooks and demonstrates how to:

- Create, open, and save Jupyter Notebooks
- Work with Jupyter code cells
- View, inspect, and filter variables using the Variable Explorer and Data Viewer
- Connect to a remote Jupyter server
- Debug a Jupyter Notebook

OVERVIEW
SETUP
GET STARTED
USER GUIDE
SOURCE CONTROL
TERMINAL
LANGUAGES
NODE.JS / JAVASCRIPT
TYPESCRIPT
PYTHON

IN THIS ARTICLE

- Setting up your environment
- Workspace Trust
- Create or open a Jupyter Notebook
- Running cells
- Save your Jupyter Notebook
- Export your Jupyter Notebook
- Work with code cells in the Notebook Editor
- Table of Contents

Alternative Development Environments

You could use anaconda, Jupyter, Google Colab, etc.



1

Setup Your Development Environment

2

Pandas

3

NUMPY & MATPLOTLIB

4

SEABOARN

5

SCIPY

6

SCIKIT-LEARN

1

Setup Your Development Environment

2

Pandas

3

NUMPY & MATPLOTLIB

4

SEABOARN

5

SCIPY

6

SCIKIT-LEARN

1

Setup Your Development Environment

2

Pandas

3

NUMPY & MATPLOTLIB

4

SEABOARN

5

SCIPY

6

SCIKIT-LEARN

1

Setup Your Development Environment

2

Pandas

3

NUMPY & MATPLOTLIB

4

SEABOARN

5

SCIPY

6

SCIKIT-LEARN

1

Setup Your Development Environment

2

Pandas

3

NUMPY & MATPLOTLIB

4

SEABOARN

5

SCIPY

6

SCIKIT-LEARN

Course References

- [1] S. J. Russell and P. Norvig, *Artificial Intelligence: A Modern Approach*. Pearson, 2021.
- [2] T. Ghosh and S. K. B. Math, *Practical Mathematics for AI and Deep Learning: A Concise yet In-Depth Guide on Fundamentals of Computer Vision, NLP, Complex Deep Neural Networks and Machine Learning (English Edition)*. BPB Publications, 2022.
- [3] M. P. Deisenroth, A. A. Faisal, and C. S. Ong, *Mathematics for Machine Learning*. Cambridge University Press, 2020.
- [4] T. V. Geetha and S. Sendhilkumar, *Machine Learning: Concepts, Techniques and Applications*. CRC Press LLC, 2023.
- [5] A. Géron, *Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems*. O'Reilly Media, 2023.
- [6] O. Theobald, *Machine Learning for Absolute Beginners: A Plain English Introduction (Third Edition)*. Scatterplot Press, 2021.

Accessing Course Resource



[linkedin.com/in/Samanipour](https://www.linkedin.com/in/Samanipour)



t.me/SamaniGroup



github.com/Samanipour