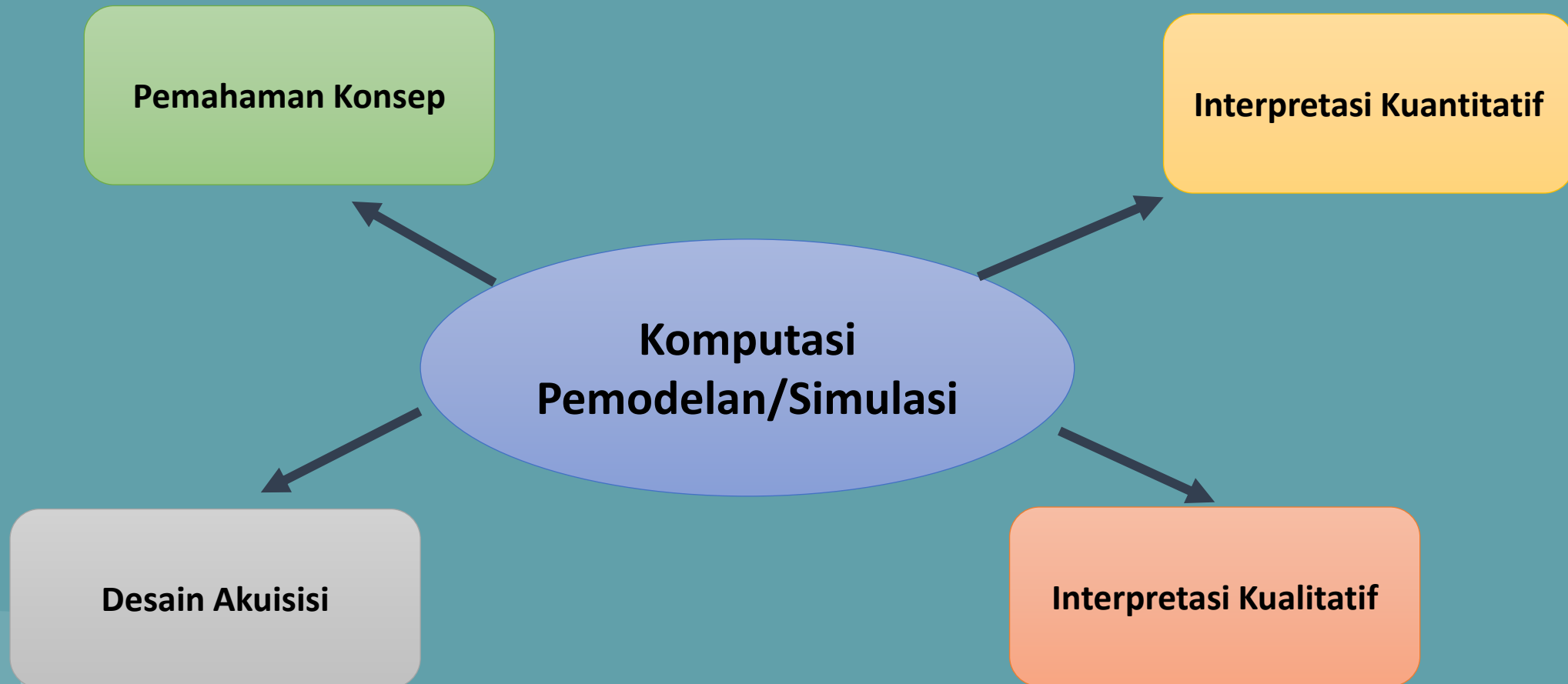


# Dasar Bahasa Pemrograman Python untuk Ilmu Geofisika

Ida Bagus Suananda Yogi, S.T., M.T.

# Komputasi dan Pemodelan di dalam Ilmu Geofisika



# Bahasa Pemrograman Numerik

Fortran

C

C++

Matlab

Python

# Kelebihan Python

Bahasa tingkat tinggi

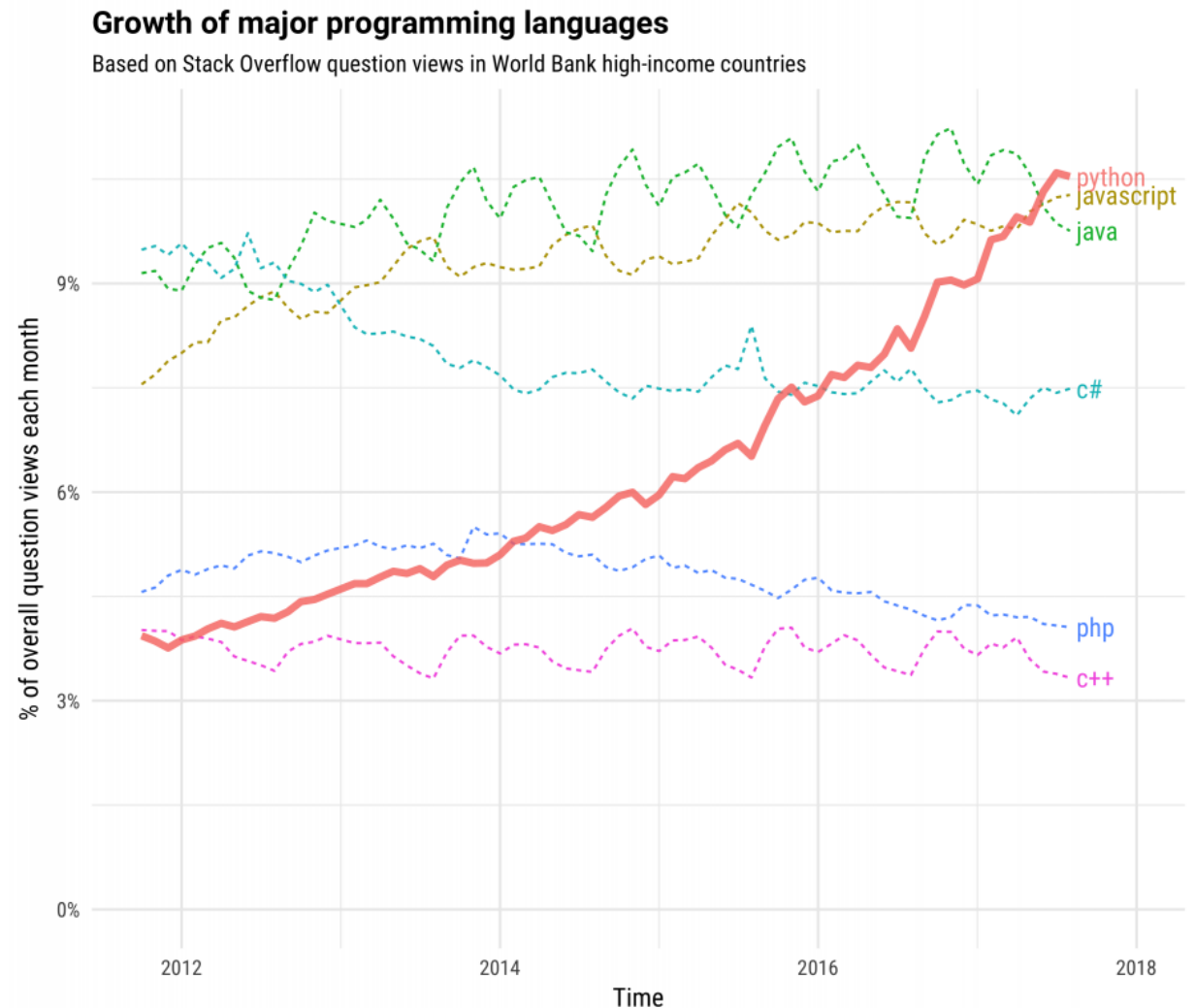
Gratis

Memiliki banyak pengguna

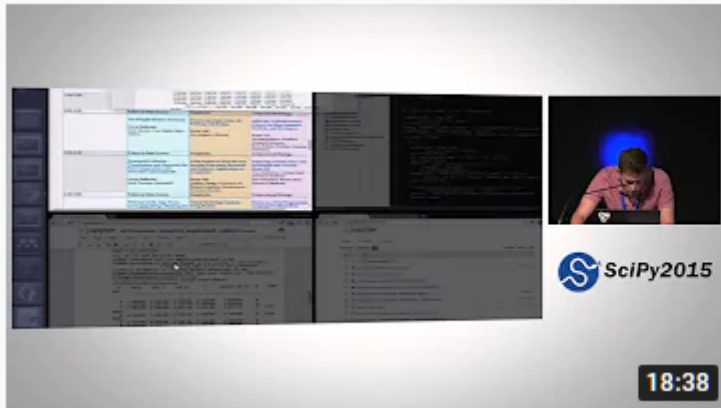
Program Geofisika

# Kolaborasi Global dan Perkembangan Python

## Machine Learning

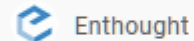


# Kolaborasi Global dan Perkembangan Python



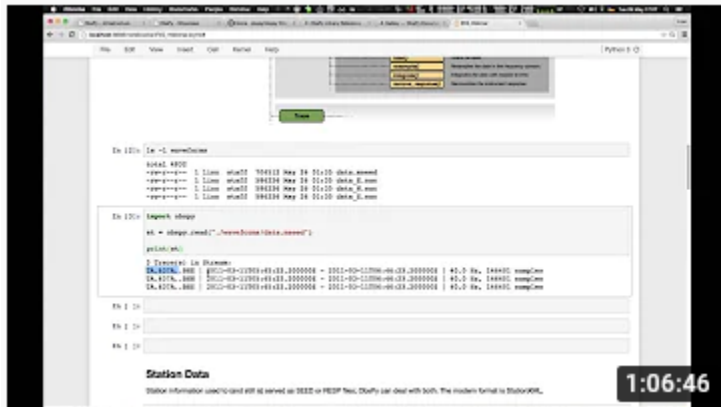
## Practical Integration of Processing, Inversion and Visualization of Magnetotelluric Geophysical Data

2.1K views • 5 years ago



Enthought

0:19 [simpeg Practical Integration of Processing, Inversion and Visualization of Magnetotelluric Geophysical Data ...](#)



## ObsPy: A Python Toolbox for Seismology

21K views • 6 years ago



IRIS Earthquake Science

19:09 [Welcome to the ObsPy Documentation! \(0.10.1\) A Python Toolbox for seismology/seismological observatories.](#)

Subtitles

# Kolaborasi Global dan Perkembangan Python



## Machine learning Applications in Geoscience: Sonic Log Prediction in the Volve dataset

764 views • 8 months ago

 NEUSTRA Geoscience

Machine learning Applications in Geoscience: Sonic Log Prediction in the Volve dataset session, organized by NEUSTRA and ...

# Kolaborasi Global dan Perkembangan Python

<https://jesperdramsch.github.io/phd-thesis/>

## Machine Learning in 4D Seismic Inversion

[PDF](#) [Download](#) [repo size 1.01 MB](#) [talk presentation](#) [license Apache-2.0](#)

Dramsch, J. S., Corte, G., Amini, H., MacBeth, C., & Lüthje, M.. (2019). Including Physics in Deep Learning–An example from 4D seismic pressure saturation inversion. arXiv preprint arXiv:1904.02254.

Github: <https://github.com/JesperDramsch/4D-seismic-neural-inversion>

[PDF](#) [Download](#) [repo size 1.01 MB](#) [talk presentation](#) [video youtube](#)


Dramsch, J. S., Corte, G., Amini, H., Lüthje, M., & MacBeth, C.. (2019, April). Deep Learning Application for 4D Pressure Saturation Inversion Compared to Bayesian Inversion on North Sea Data. In Second EAGE Workshop Practical Reservoir Monitoring 2019.

Github: <https://github.com/JesperDramsch/4D-seismic-neural-inversion>

JesperDramsch / 4D-seismic-neural-inversion

[Code](#) [Pull requests](#) [Actions](#) [Security](#) [Insights](#)

master 1 branch 1 tag [Go to file](#) [Add file](#) [Code](#)

 JesperDramsch Hamed's Orcid

5244250 on Dec 13, 2019 7 commits

fig	Figures	2 years ago
.gitignore	Initial commit	2 years ago
01 - 4D-Pressure-Saturation-Inversio...	Training Notebook	2 years ago
02 - 4D-Inversion-Field-Data.ipynb	Field Data Prediction	2 years ago
LICENSE	Initial commit	2 years ago
README.md	Hamed's Orcid	2 years ago



# Kolaborasi Global dan Perkembangan Python

---

<https://pylops.readthedocs.io/en/latest/index.html>

## GETTING INVOLVED:

Implementing new operators

Contributing

Changelog


Roadmap


Papers using PyLops

Citing

Credits

## REPOSITORY

 Source Code

 Contributing

Sebagian  
Kecil  
Tools  
Geofisika  
berbasis  
Python

---

PyGMI

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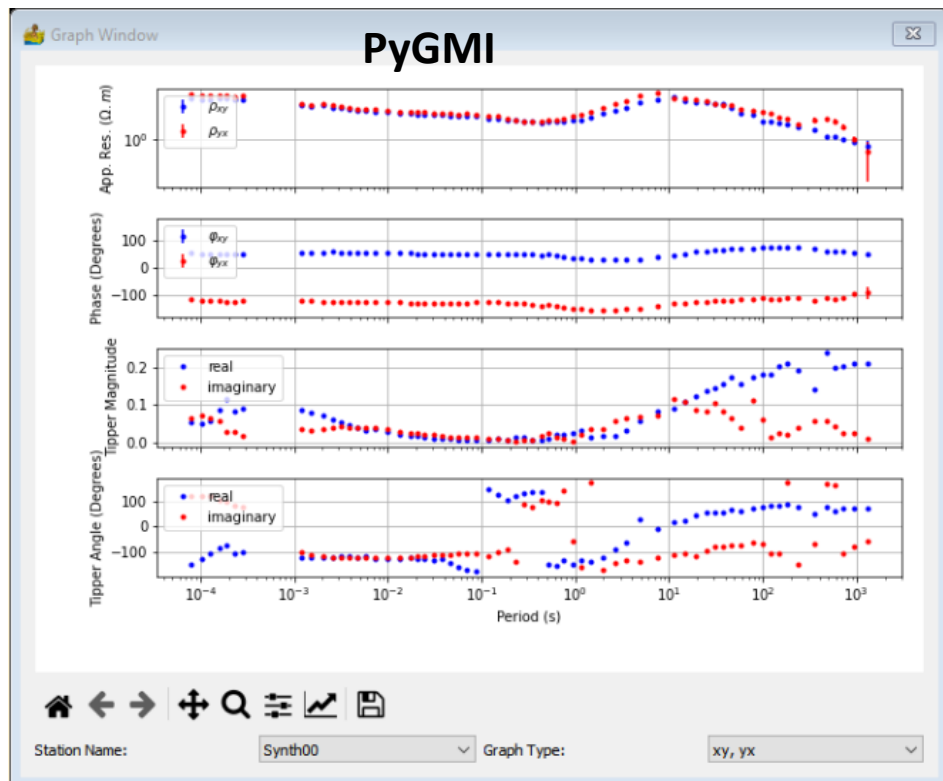
pyGMT

---

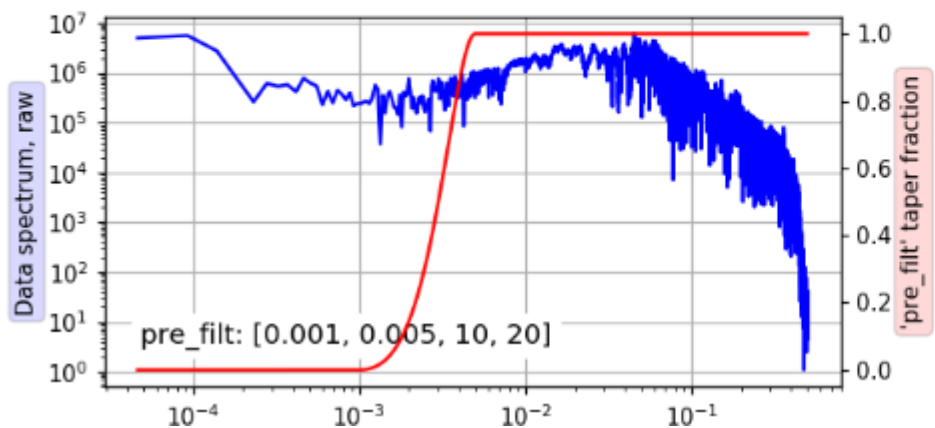
Obspy

---

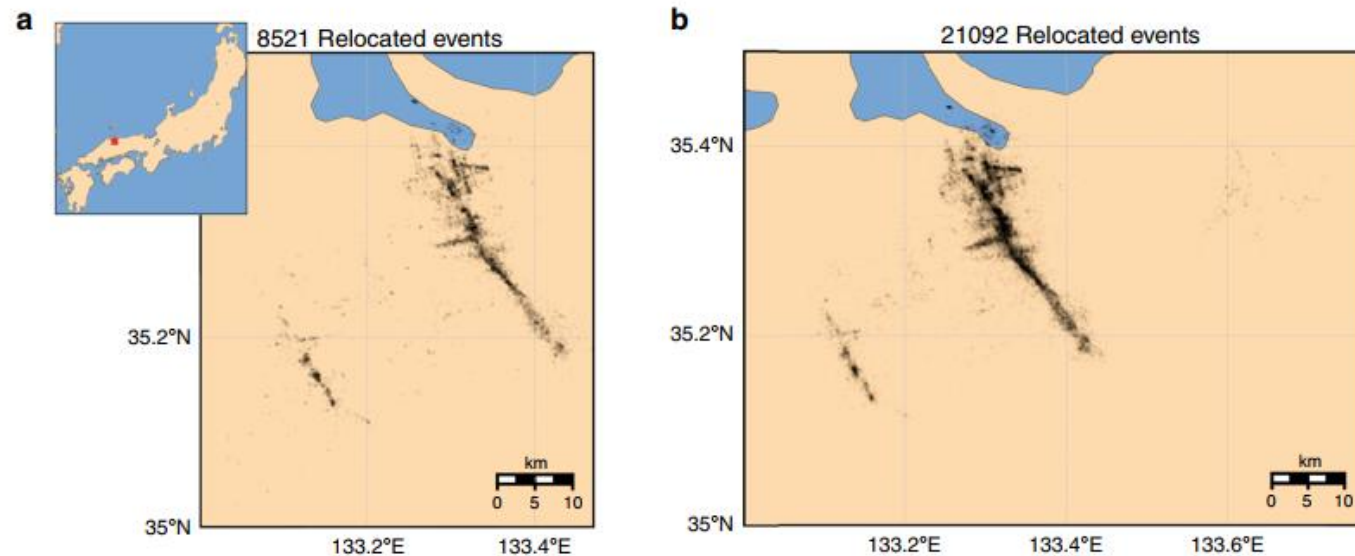
TensorFlow -> Machine  
Learning



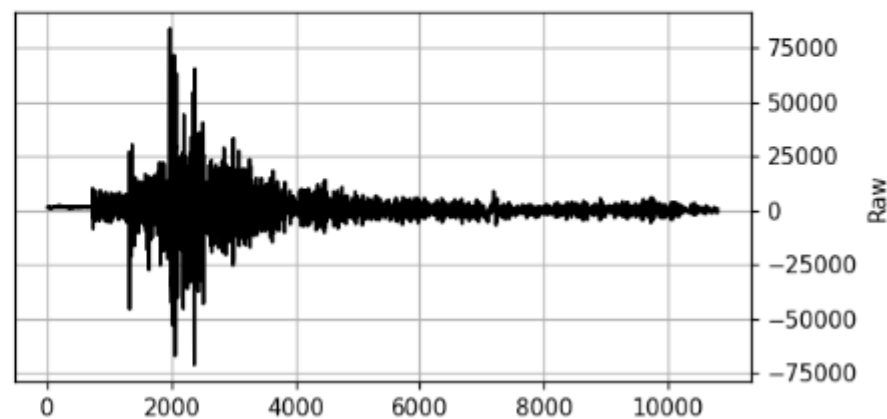
IU.ULN.00.LH1 | 2015-07-18T02:27:33.069538Z - 2015-07-18T05:27:32.069538Z | 1.0 Hz, 10800 samples



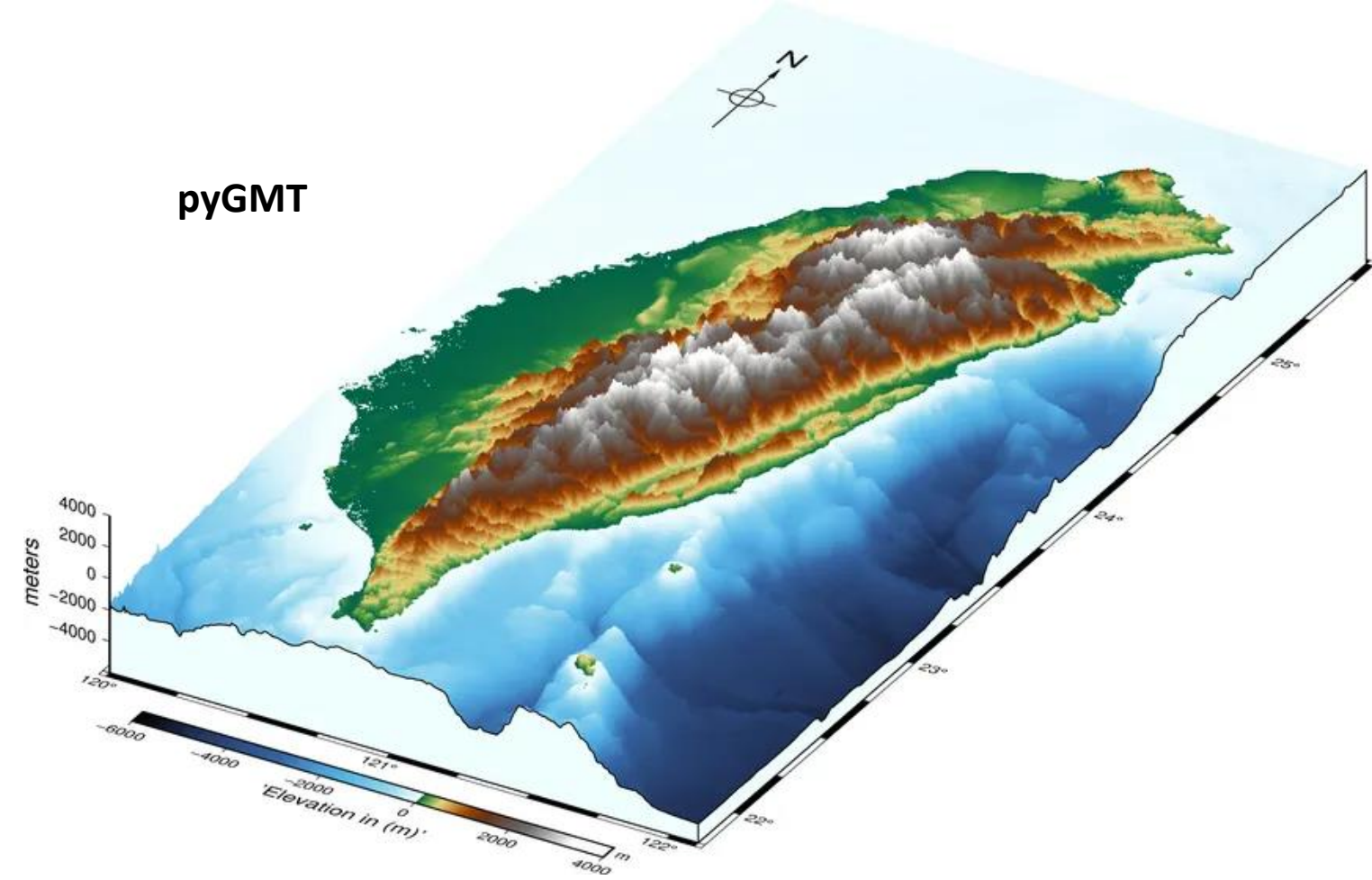
## Machine Learning



## Obspy



pyGMT



<https://www.earthinversion.com/utilities/Three-dimensional-perspective-map-of-Taiwan-using-GMT-and-PyGMT/>

# Perbandingan Sederhana Python dan Matlab

Python bahasa pemrograman umum

Python butuh modul khusus untuk menjalankan operasi tertentu

- Numpy
- Matplotlib
- Scipy
- Basemap
- Obspy

# Bahasa Pemrograman Umum – Program Sederhana

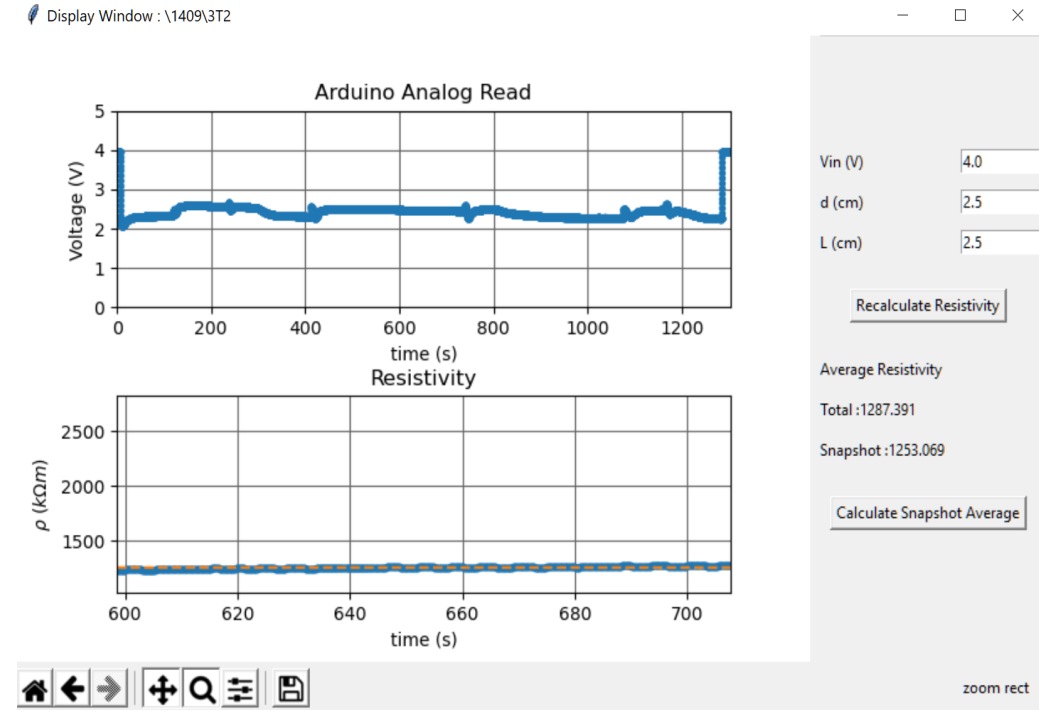
Rock Resistivity Meter : Alpha 01

Choose the Port:

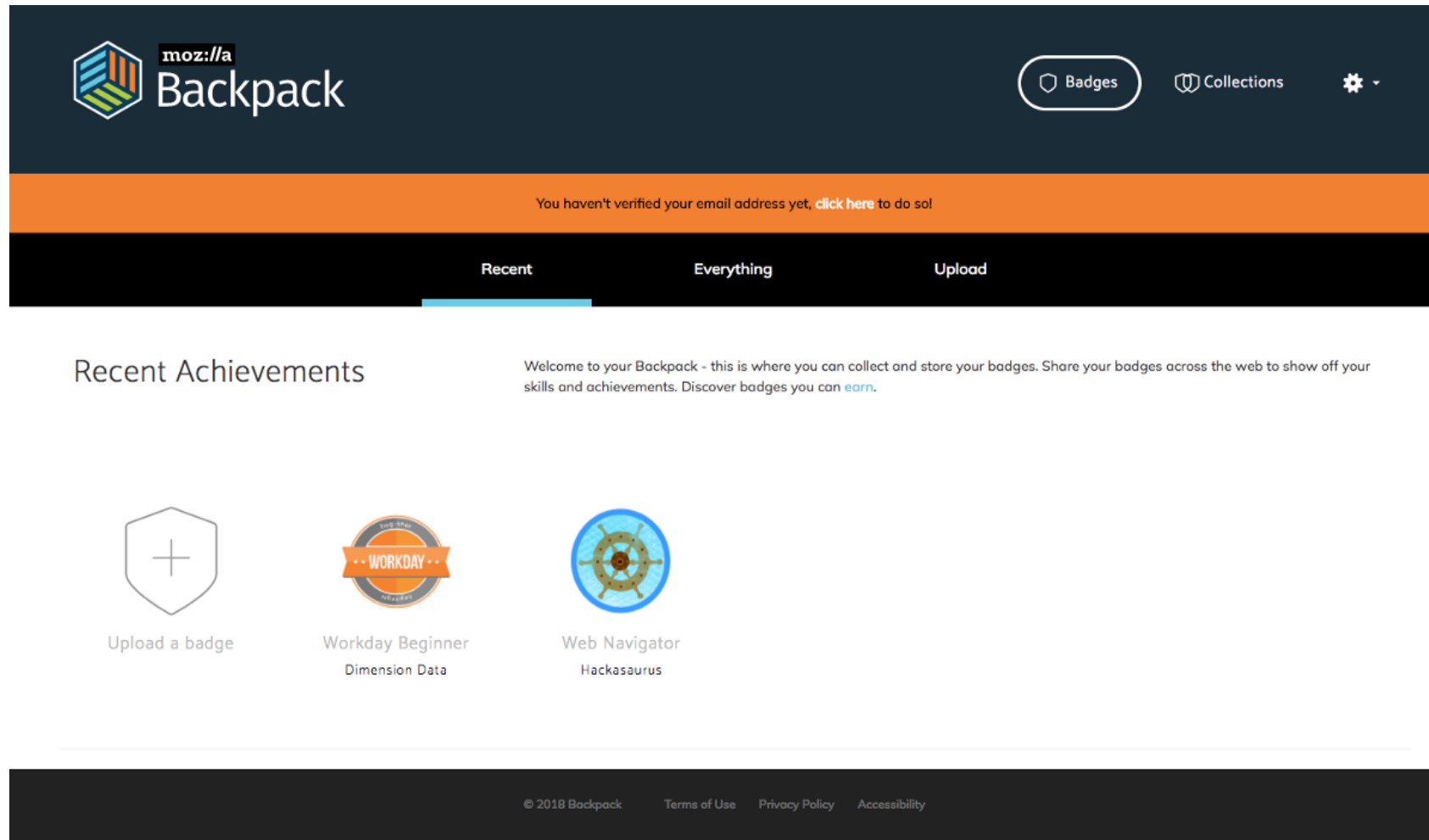
Not Connected

Save File Name:

Load File Name:



# Bahasa Pemrograman Umum – Web Framework



The screenshot shows the Mozilla Backpack website. The header is dark blue with the Mozilla Backpack logo on the left and navigation links for 'Badges', 'Collections', and a settings icon on the right. Below the header is an orange banner with a message about email verification. Underneath is a dark blue navigation bar with 'Recent', 'Everything', and 'Upload' tabs. The main content area is white and features the heading 'Recent Achievements'. To the right of this heading is a welcome message. Below the heading are three items: 'Upload a badge' with a plus icon, 'Workday Beginner' with a 'WORKDAY' badge icon, and 'Web Navigator' with a ship's wheel icon. The footer is dark blue and contains copyright and policy links.

moz://a Backpack

Badges Collections

You haven't verified your email address yet, [click here](#) to do so!

Recent Everything Upload

## Recent Achievements

Welcome to your Backpack - this is where you can collect and store your badges. Share your badges across the web to show off your skills and achievements. Discover badges you can [earn](#).

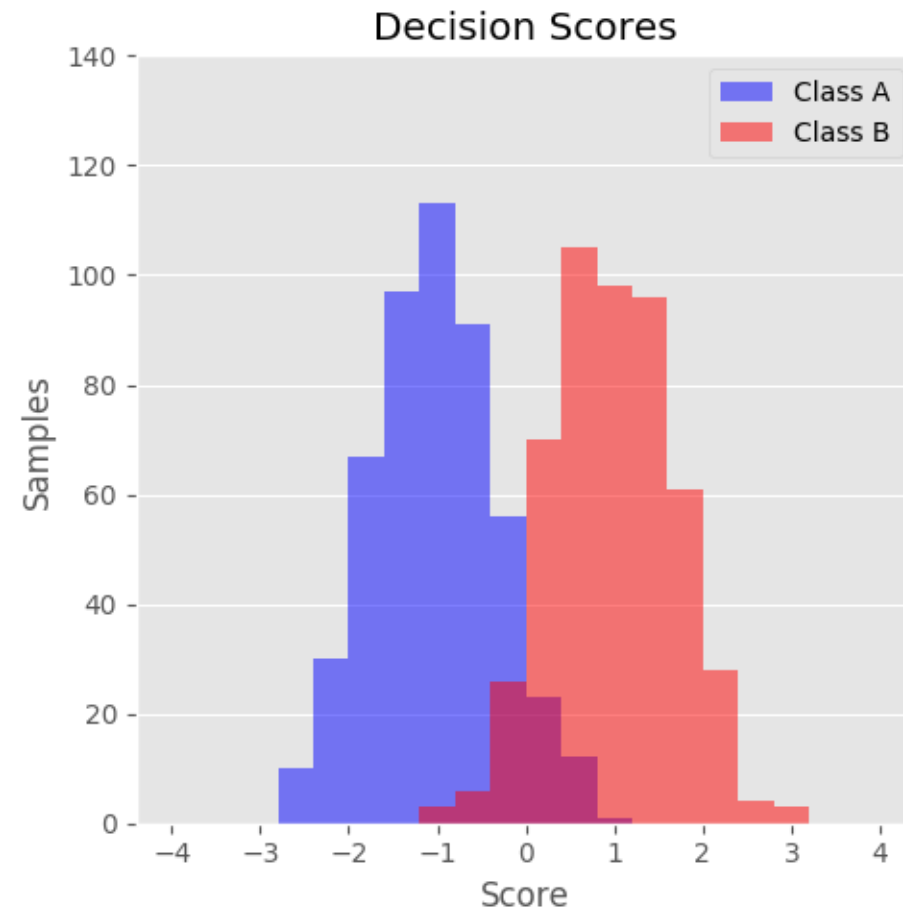
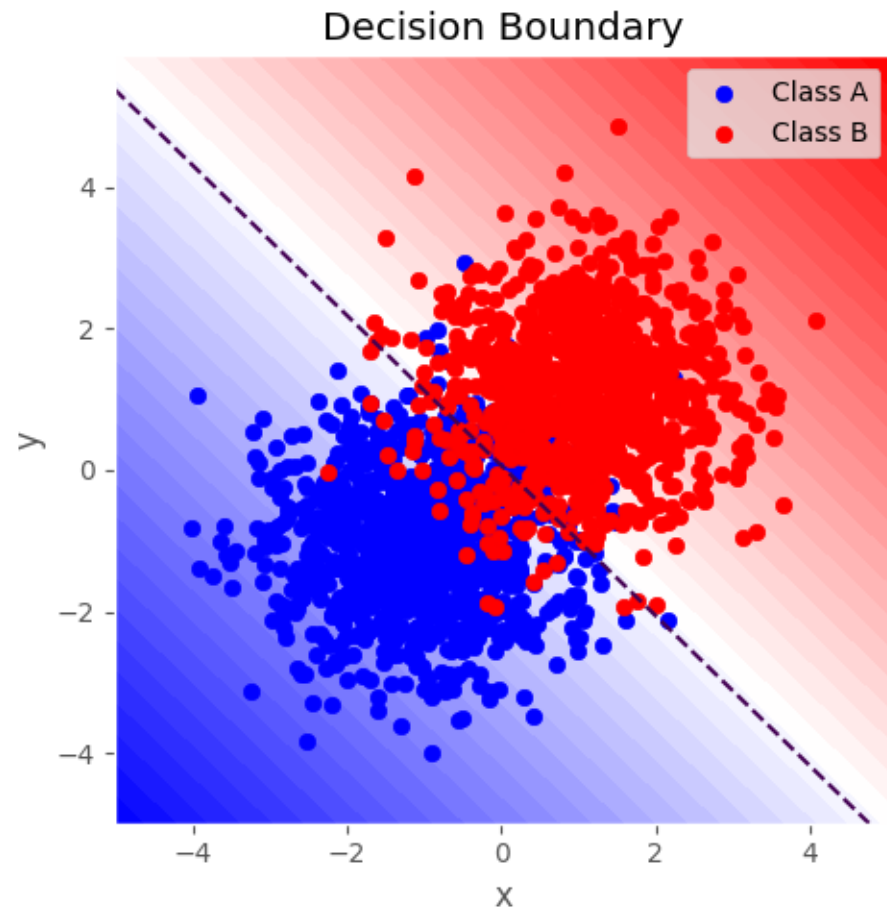
Upload a badge

Workday Beginner  
Dimension Data

Web Navigator  
Hackasaurus

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# Bahasa Pemrograman Umum – Numerik

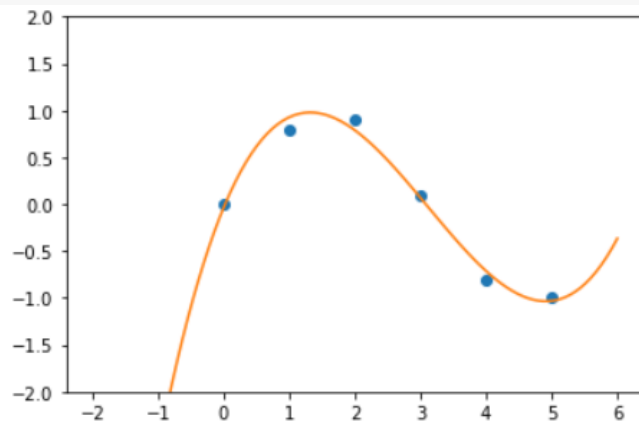




# Bahasa Pemrograman - Modul

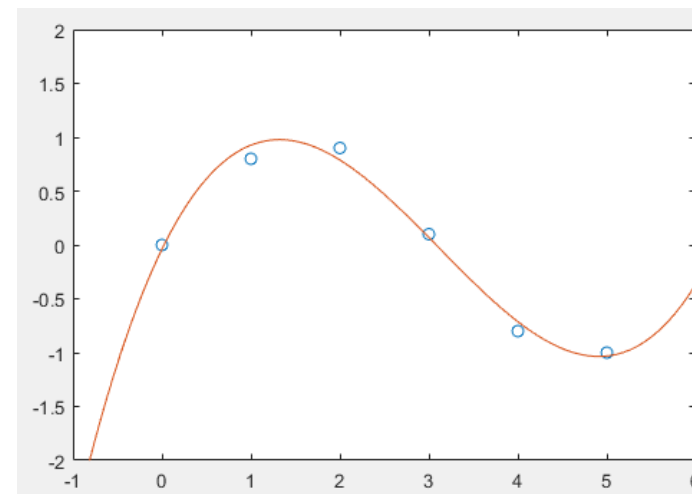
## Python dengan Modul

```
1 import numpy as np
2 import matplotlib.pyplot as plt
3
4 x = np.array([0, 1, 2, 3, 4, 5])
5 y = np.array([0, 0.8, 0.9, 0.1, -0.8, -1])
6 xp = np.linspace(-2, 6, 100)
7
8 p3 = np.polyfit(x, y, 3)
9
10 plt.plot(x, y, 'o', xp, np.polyval(p3, xp), '-')
11 plt.ylim(-2, 2)
12 plt.show()
```



## Matlab

```
1 - x = [0, 1, 2, 3, 4, 5];
2 - y = [0, 0.8, 0.9, 0.1, -0.8, -1];
3 - xp = linspace(-2, 6, 100);
4
5 - p3 = polyfit(x, y, 3);
6
7 - plot(x, y, 'o', xp, polyval(p3, xp), '-');
8 - ylim([-2, 2]);
```



# Materi

Dasar Penggunaan Jupyter Notebook

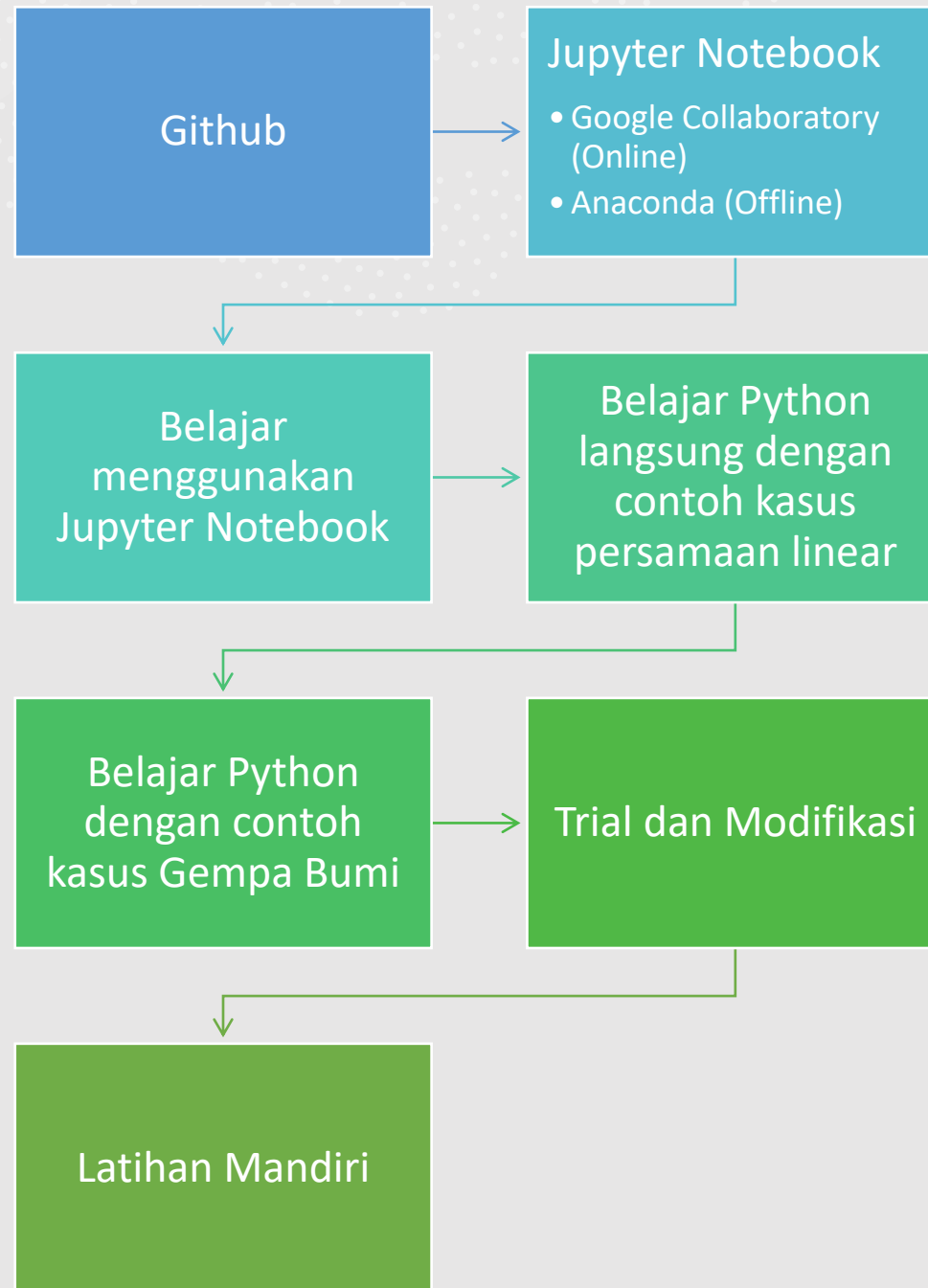
Numpy untuk pemrograman Numerik

Matplotlib untuk menampilkan kurva

Mengetahui Konsep :

- Plot
- Fungsi
- Iterasi (for)
- Kondisi (if)
- Operasi Matriks

# Runutan Pelatihan





# Referensi Online

<https://realpython.com/matlab-vs-python/>

<https://cs231n.github.io/python-numpy-tutorial/>

<https://www.earthinversion.com/>

<https://pythonnumericalmethods.berkeley.edu/not-ebooks/Index.html>

# Github dan Google Colaboratory



[https://github.com/SuanandaYogi/Python Tutorial](https://github.com/SuanandaYogi/Python_Tutorial)