ML Study Jams 2024

Python Basics & Numpy

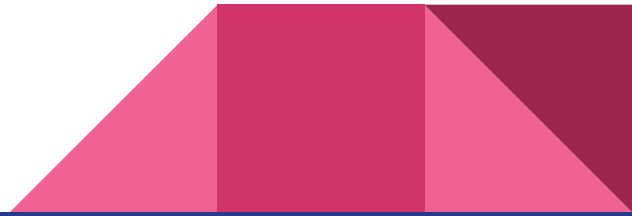
Topics That will be covered Today

Python :

- Variables, data types (integers, floats, strings, booleans, etc.)
- Operators (arithmetic, logical, comparison)
- Control structures (if statements, loops)
- Functions
- Lists, tuples, dictionaries, sets
- File I/O (reading and writing files))

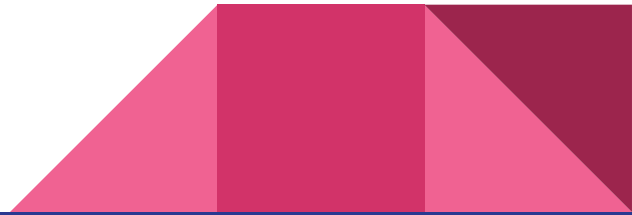
Numpy:

- Arrays (creation, indexing, slicing)
- Array operations (element-wise operations, aggregation functions)
- Linear algebra operations (matrix multiplication, inversion, eigenvalues)
- Random number generation



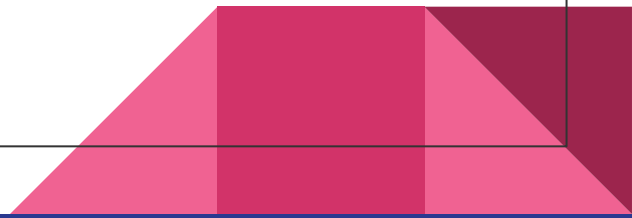
Python

- **Python is Interpreted** − Python is processed at runtime by the interpreter. You do not need to compile your program before executing it. This is similar to PERL and PHP.
- **Python is Interactive** − You can actually sit at a Python prompt and interact with the interpreter directly to write your programs.
- **Python is Object-Oriented** − Python supports Object-Oriented style or technique of programming that encapsulates code within objects.
- **Python is a Beginner's Language** − Python is a great language for the beginner-level programmers and supports the development of a wide range of applications from simple text processing to WWW browsers to games.



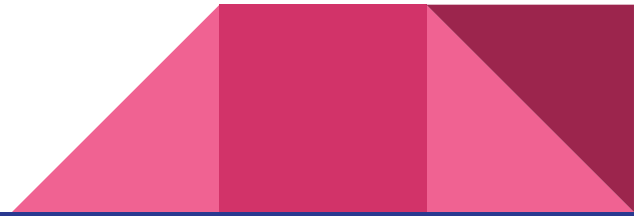
What can you do with Python?

- Data analysis and machine learning
- Web development
- Automation or scripting
- Software testing and prototyping
- Everyday tasks



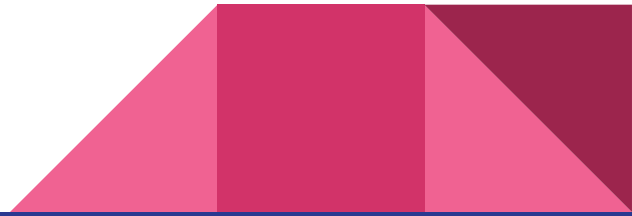
Numpy

- **NumPy, short for Numerical Python, is a powerful library for numerical and mathematical operations in Python.**
- **Developed to provide support for large, multi-dimensional arrays and matrices, along with mathematical functions to operate on these arrays.**
- **Created by Travis Olliphant in 2005 and is a fundamental library in the Python data science ecosystem.**



Array In Numpy

- **In Python we have lists that serve the purpose of arrays, but they are slow to process.**
- **NumPy aims to provide an array object that is up to 50x faster than traditional Python lists.**
- **The array object in NumPy is called ndarray, it provides a lot of supporting functions that make working with ndarray very easy.**
- **Arrays are very frequently used in data science, where speed and resources are very important.**



Why Numpy is Faster?

Lists :

Memory block are not necessarily next to each other

Array:

Mark your Attendance

Give us your feedback