Revision on Vectors, Matrices, Numpy, Pandas

26/03/2025
Minor in AI

1 Topics

1.1 Object-Oriented Programming (OOP)

- Basic concepts and revision of OOP principles

1.2 Vectors and Matrices

- Vector operations (addition, scaling, dot product)
- Matrix operations (multiplication, transposition, etc.)

1.3 NumPy Library

- Array creation and manipulation
- Reshaping arrays and flattening matrices
- Element-wise operations
- Calculating statistics (mean, standard deviation)
- Generating random arrays and matrices
- Cumulative sum operations
- Creating identity matrices
- Finding maximum and minimum values within arrays

1.4 Pandas Library and DataFrame Operations

- Creating and managing DataFrames
- Data types handling (categorical, numerical)
- Basic statistics (mean, median, mode, standard deviation)

- Data filtering, sorting, and grouping
- Handling missing values
- Reading from and writing to CSV files
- Introduction to panel data concepts

2 Reference Links

2.1 Vector and Matrices (Operations)

https://students.masaischool.com/lectures/98627?tab=notes

2.2 Numpy

https://students.masaischool.com/lectures/99856?tab=notes

2.3 Pandas

https://students.masaischool.com/lectures/101140?tab=notes
https://students.masaischool.com/lectures/101141?tab=notes

Colab Notebook

https://colab.research.google.com/drive/19mLcIUsKwFRugEEl0Fh9iV-RbQv_2b7U#scrollTo=xJ4iwwNaCcyO