MULTIVARIATE STATISTICAL ANALYSIS

Lecture 1
Introduction to MSA

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1. Introduction to MSA

1.1. Purpose of MSA

- Intended Audience

Researchers in scientific fields regularly process multivariable data (Biology, Physics, Social Sciences, Computer Science, etc.)

- **Present concepts and methods** of MSA based on **Statistics, Probability, Calculus and Linear Algebra**.

- **Scientific inquiry is an iterative learning process**, achieved by receiving and analyzing data.

1. Introduction to MSA

1.1. The goal of MSA

- Data **Reduction** and Structural Simplification.
- **Sorting** and **Grouping**.
- Investigating of **the dependence** among variables.
- **Prediction**
- Hypothesis **Construction** and **Testing**

1. Introduction to MSA

1.2. The Key Issues in MSA

- Multivariate linear regression models
- Principal Components Analysis
- Factor Analysis
- Canonical Correlation Analysis
- Clustering
- Classification