📘 1. statistics-probability.pdf

Title: Statistics & Probability Basics

1. Introduction

Statistics is the study of data collection, analysis, interpretation, and presentation. Probability measures the chance of an event occurring.

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2. Types of Statistics

- **Descriptive Statistics** – summarizes data (mean, median, mode)

- **Inferential Statistics** – makes predictions using data samples

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3. Measures of Central Tendency

- **Mean** – average value

- **Median** – middle value

- **Mode** – most frequent value

Example: 2, 4, 6, 8 → Mean = 5

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4. Measures of Dispersion

- **Range** – max − min

- **Variance** – spread of data

- **Standard Deviation** – square root of variance

5. Probability Basics

Probability =

$$\frac{Favourable\ Outcomes}{Total\ Outcomes}$$

Example: Probability of getting Head in coin toss = 1/2

6. Probability Distributions

- **Normal Distribution (Bell Curve)**

- **Binomial Distribution**

- **Poisson Distribution**

7. Importance in Data Analysis

- Helps in decision making

- Used in machine learning

- Helps identify patterns

8. Conclusion

Statistics and probability are the **foundation of AI and data analysis**.