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Introduction to Data Science

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1. Data Science is an interdisciplinary field combining
   statistics, computer science, and domain knowledge.
2. Key Steps in Data Science Workflow:
   - Data Collection
   - Data Cleaning & Preprocessing
   - Exploratory Data Analysis (EDA)
   - Modeling & Machine Learning
   - Evaluation & Deployment
3. Applications of Data Science:
   - Healthcare, Finance, E-commerce, Agriculture, AI assistants.

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Core Concepts in Data Science

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1. Data Types: Structured, Semi-Structured, Unstructured.

2. Statistics Basics: Mean, Median, Mode, Variance, Std. Dev.

3. Machine Learning Types:

   - Supervised Learning (Regression, Classification)

   - Unsupervised Learning (Clustering, Dimensionality Reduction)

   - Reinforcement Learning.

4. Popular Tools & Libraries:

   - Python, R, SQL

   - NumPy, Pandas, Matplotlib, Scikit-learn, TensorFlow, PyTorch.

5. Challenges in Data Science:

   - Data Quality, Bias, Scalability, Privacy & Ethics.