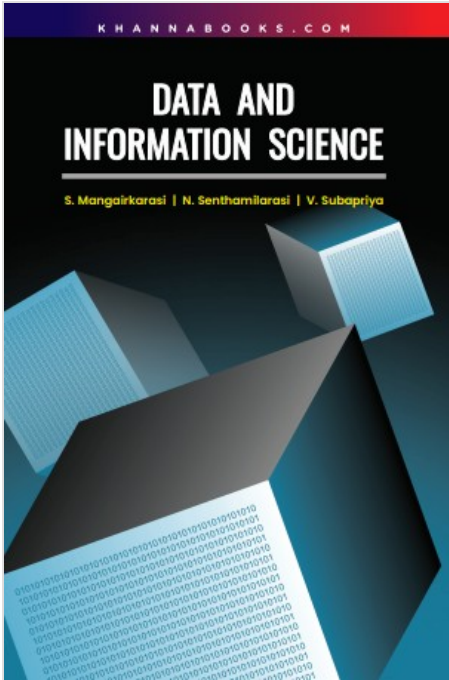




Data and Information Science

by S. Mangairkarasi, N. Senthamilarasi, V. Subapriya

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Description

Data and Information Science This book provides a comprehensive and practical guide to the multidisciplinary fields of data science and information science. In an increasingly data-driven world, the text addresses the critical need to understand, manage, and extract actionable value from massive data sets in sectors ranging from business to government. It is an essential resource for students, professionals, and hobbyists seeking to master the techniques of this transformative domain. The book systematically explores the entire data lifecycle, from initial data acquisition, preprocessing, and cleaning to advanced subjects like Artificial Intelligence, Big Data Analytics, and Data Ethics. It successfully bridges the gap between theoretical concepts and practical application by detailing key methodologies, essential tools of Business Intelligence (BI), and providing real-world insights. Readers will gain an in-depth understanding of how to combine computer science, statistics, and machine learning principles to detect patterns, predict outcomes, and drive superior decision-making. Ultimately, this material is designed to equip you with the critical skills needed to utilize data effectively, spur creativity, and confidently participate in the ongoing data-driven revolution.

Salient Features:

- **Full Data Lifecycle:** Presents a complete framework covering all steps of the data lifecycle, from acquisition sources (Web APIs, Relational Databases) to data processing and final analysis.
- **Practical Tool Focus:** Integrates practical tools and libraries like Pandas, NumPy, and Matplotlib for real-world data preparation and implementation in Machine Learning models.
- **Data Quality Mastery:** Offers detailed strategies for improving data quality, including Data Wrangling, handling missing values, and utilizing Binning, Regression, and Clustering for noisy data.

- **Big Data Principles:** Introduces the fundamental concepts and challenges of Big Data (Volume, Variety, Velocity) and discusses effective strategies for processing and utilizing massive datasets.
- **Text Analysis Techniques:** Dedicated coverage of text-based data handling, exploring methods such as Bag of Words, Regular Expressions, and the practical application of Sentiment Analysis.
- **Visualization and BI:** Provides essential skills in data visualization basics, including creating compelling charts and dashboards using the leading Business Intelligence tool, Tableau.
- **Data Transformation Depth:** Explores the nuances of data transformation, detailing structural changes, normalization, discretization, and the difference between ETL and ELT processes.
- **Open Data Resources:** Highlights key sources for obtaining data, including internal/external systems, Cloud Data Warehouses, and open-source repositories like Kaggle and the UCI Machine Learning Repository.

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