

Sonia Jenifer Rayen, Sathyabama Krishna

Introduction to Data Science

Author :	Sonia Jenifer Rayen, Sathyabama Krishna
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Product Description

In an era where data is the central driver of innovation, Introduction to Data Science offers a comprehensive and structured guide to navigating this transformative field. Designed for a broad audience including students, researchers, and professionals, this book provides a beginner-friendly approach to mastering fundamental concepts, core statistical methods, and essential predictive analytics.

The text seamlessly integrates theoretical principles with practical, real-world applications, empowering readers to not only grasp key concepts but also effectively apply them in diverse scenarios. The curriculum is meticulously structured, beginning with the foundational role and processes of Data Science and advancing through descriptive and inferential statistics, data quality management, and text data handling. It culminates by exploring the challenges and cutting-edge applications of Big Data.

The book demystifies the complete data science lifecycle—from formulating the right research questions and retrieving data to building predictive models, validating results, and deploying final applications. Beyond technical proficiency, it highlights the essential traits of a successful data scientist, such as curiosity, common sense, and communication, making it an invaluable resource for anyone seeking a robust, end-to-end understanding of data-driven decision-making in vital sectors like healthcare, finance, logistics, and AI.

Salient Features:

• Foundational Concepts: Provides a structured, beginner-friendly introduction to the field, covering the need for data science, its core components, and processes.

• Statistical Core: Delves into essential descriptive and inferential statistics, including data distribution analysis, correlation, regression, and crucial hypothesis testing techniques.

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• Data Quality Focus: Dedicated unit on enhancing data quality, covering practical methods like data imputation, standardization, binning, and handling noise and outliers effectively.

• Text Data Analytics: Explores specialized techniques for handling unstructured text data, such as Bag-of-Words, tokenization, regular expressions, and real-world sentiment analysis.

• Predictive Modeling: Introduces the critical modeling phase, emphasizing algorithm selection, execution, and essential diagnostics for building and training performant models.

• Big Data Context: Addresses the challenges and use cases of Big Data, focusing on the three critical V's: Volume, Velocity, and Variety perspective.

• Data Scientist Traits: Highlights the crucial non-technical skills for success in the field, including the importance of curiosity, common sense, and effective communication.

• Real-World Applications: Features practical use cases and business examples across diverse industries like autonomous vehicles, e-commerce, and airline logistics.

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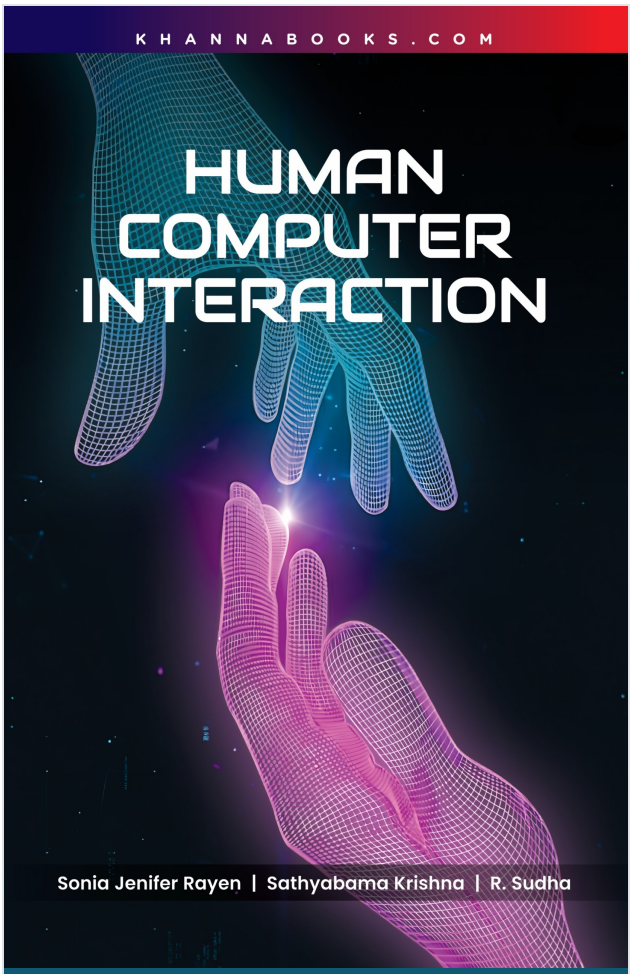

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Human Computer Interaction

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Product Description

Human-Computer Interaction (HCI) is a comprehensive and structured resource designed to explore the principles, methodologies, and evolving landscape of interaction between humans and computing systems. Recognizing the critical role of HCI in shaping modern digital experiences, this book focuses on creating technology that is accessible, efficient, intuitive, and user-centered. It examines not only the technical dimensions of interface design but also the cognitive, psychological, and social factors that influence how people interact with digital systems across diverse platforms and devices.

The book provides a balanced blend of theoretical foundations and practical applications, enabling readers to develop a deep understanding of user-centered design principles. Beginning with the fundamentals of HCI, it explores human sensory systems, memory, perception, cognition, and information processing before progressing to advanced topics in interaction design and usability engineering. Through systematic coverage of design methodologies and evaluation techniques, readers learn how to create interfaces that improve user satisfaction, efficiency, and accessibility.

A significant emphasis is placed on contemporary application domains, including mobile interfaces, web applications, and interactive systems. The text introduces established cognitive models such as GOMS (Goals, Operators, Methods, and Selection Rules), linguistic models, and cognitive architectures that assist in predicting user behavior and optimizing interface performance. It also examines socio-organizational considerations, stakeholder requirements, and collaborative design approaches essential for successful system development.

Designed for students, researchers, academics, and industry professionals, this book serves as a valuable guide for mastering interface design, usability evaluation, and user experience development. By integrating human factors, cognitive science, and practical

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design methodologies, it equips readers with the knowledge and tools required to build effective, engaging, and user-friendly computing systems.

Salient Features:

- Foundational Principles: Introduces the core objectives of Human-Computer Interaction, including usability, human factors, user-centered design, and the interdisciplinary contributions of computer science and cognitive psychology.
- Human System Analysis: Explores human sensory and perceptual systems, including vision, hearing, touch, memory, cognition, and information-processing mechanisms that influence user interaction.
- Interaction Design: Covers the essential principles of creating intuitive and effective user interfaces, including navigation structures, screen layouts, interaction scenarios, and the role of HCI within the software development lifecycle.
- Cognitive Models: Provides detailed coverage of major theoretical frameworks such as GOMS (Goals, Operators, Methods, and Selection Rules), linguistic models, and cognitive architectures for analyzing and predicting user performance.
- Socio-Technical View: Examines socio-organizational aspects of system design, including stakeholder analysis, communication models, collaboration frameworks, and non-technical factors affecting technology adoption.
- Mobile HCI Deep Dive: Discusses the mobile ecosystem, mobile application frameworks, mobile web technologies, information architecture, and design challenges associated with modern mobile computing environments.
- Web Interface Mastery: Guides readers through user interface design best practices for web applications, including interface components, navigation structures, interaction techniques, and workflow optimization.
- Practical Prototyping: Covers iterative design and prototyping methodologies, including formative and summative evaluation techniques, storyboarding, animation-based prototypes, and limited-functionality simulations for interface

testing and refinement.

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