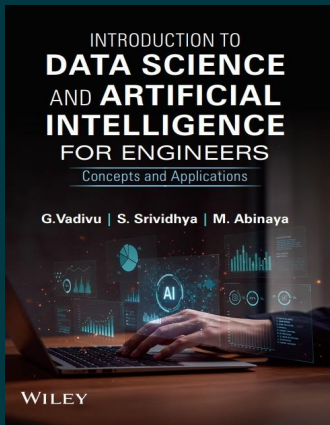




Introduction to Data Science and Artificial Intelligence for Engineers: Concepts and Applications

By G Vadivu, S. Srividhya, M. Abinaya

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Description

Introduction to Data Science and Artificial Intelligence for Engineers: Concepts and Applications gives first-year engineering students a structured, application-oriented introduction to data, artificial intelligence, and responsible engineering practice. It's written for a single foundation course and follows one clear arc, from what data is through to what a responsible engineer does with it.

The early chapters cover data, its sources, the data science lifecycle, cleaning, privacy, and ethical visualization. From there the book moves through the core technologies: machine learning, deep learning, natural language processing, and computer vision. Later chapters open up generative AI, agentic AI systems, and the tools students will meet in industry.

A distinguishing feature is its emphasis on engineering judgment. AI systems are powerful, but they aren't infallible. Chapters on hallucinations and deepfakes make the case for verification, and the discussion of agentic AI shows how systems increasingly act on their own. The book culminates in a framework for AI safety built on six principles: safety, fairness, transparency, privacy protection, accountability, and accessibility.

Designed for outcome-based education, the text integrates learning objectives, mini-projects, and application-based exercises that support active learning. Real-world examples across mechanical, civil, electrical, electronics, chemical, biomedical, automobile, and computer science engineering make sure every student sees their own discipline in the material. The result equips students to use AI tools well and to make informed, responsible decisions in their engineering careers.

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Table of Contents

Preface v

About the Authors vii

Chapter 1 Introduction to Data Science 1

1.1 Why Data Science? 2

1.2 What Is Data Science? 3

1.3 What Is Data? 4

1.4 Sources of Data 5

1.4.1 Human-Generated Data 5

1.4.2 Machine-Generated Data 6

1.4.3 Organizational Data 7

1.5 Who Creates Data? 7

1.6 Example Datasets 7

1.6.1 Datasets in Computer Science Engineering 8

1.6.2 Datasets in Electronics Engineering 8

1.6.3 Datasets in Biotechnology Engineering 8

1.6.4 Datasets in Civil Engineering 9

1.6.5 Datasets in Mechanical Engineering 9

1.6.6 Datasets in Chemical Engineering 10

1.7 What Is Big Data? 11

1.8 The Five V's of Big Data 11

1.8.1 Volume 11

1.8.2 Velocity 13

1.8.3 Variety 14

1.8.4 Veracity 15

1.8.5 Value 16

1.9 The Data Science Lifecycle 17

1.9.1 Data Collection 18

1.9.2 Data Cleaning 19

1.9.3 Data Analysis 19

1.9.4 Model Building 20

1.9.5 Visualization and Interpretation 20

Summary 21

Key Terms 21

Multiple Choice Questions (MCQ) 22

Review Questions 23

Application-Based Problems 24

Mini-Project 24

Answer Key 25

Chapter 2 Introduction to Artificial Intelligence 27

2.1 What Is Artificial Intelligence? 30

2.2 Everyday Examples of AI 31

2.3 The Need for Intelligent Systems 32

2.4 The Evolution of AI 34

2.4.1 The Dream of Thinking Machines (1940s–50s) 34

2.4.2 Early AI Programs (1960s–70s) 35

2.4.3 The First AI Winter (1970s–80s) 35

2.4.4 Expert Systems (1980s) 35

2.4.5 The Statistical Turn (1990s–2000s) 36

2.4.6 The Deep-Learning Revolution (2010s) 36

2.4.7 The Era of Generative AI (2020s) 36

2.5 Data Science and Artificial Intelligence 37

Summary 39

Key Terms 40

Multiple Choice Questions (MCQ) 40

Review Questions 41

Application-Based Problems 42

Mini-Project 43

Answer Key 43

Chapter 3 Data Collection 45

3.1 Historical and Real-Time Datasets 46

3.1.1 Historical Datasets 46

3.1.2 Real-Time Datasets 46

3.1.3 Comparing Historical and Real-Time Data 48

3.1.4 Sources of Data Across the Engineering Disciplines 48

3.2 Open-Source and Repository Data 49

3.2.1 Kaggle: The Social Network for Data 50

3.2.2 UCI Machine Learning Repository 50

3.2.3 GitHub: The Developer's Warehouse 50

3.3 Ethical Data Practices 51

3.3.1 Respect the License 51

3.3.2 Proper Attribution and Citation 52

3.3.3 Privacy and Consent 52

3.4 Synthetic Data (Artificial Data) 53

3.4.1 Why Synthetic Data Are Used 54

3.4.2 Limitations to Bear in Mind 54

3.4.3 Engineering Examples 54

Summary 55

Key Terms 56

Multiple Choice Questions (MCQ) 56

Review Questions 57

Application-Based Problems 58

Mini-Project 59

Answer Key 59

Chapter 4 Data Cleaning 61

4.1 What Is Data Cleaning? 62

4.1.1 Handling Missing Values 63

4.1.2 Removing Duplicates 64

4.1.3 Fixing Structural Errors 65

4.1.4 Handling Outliers 66

4.2 Data Validation 67

Summary 69

Key Terms 69

Multiple Choice Questions (MCQ) 70

Review Questions 71

Application-Based Problems 72

Mini-Project 72

Answer Key 73

Chapter 5 Data Privacy and Safe Digital Practices 75

5.1 The Digital World and Personal Data 76

5.2 What Is Data Privacy? 76

5.3 Digital Privacy Risks 77

5.3.1 Phishing 78

5.3.2 Malware 79

5.3.3 Identity Theft 80

5.4 Safe Digital Practices 81

5.4.1 Safe Social-Media Use 82

5.5 Digital Ethics and Responsibility 83

5.6 Why Follow Safe Digital Practices? 85

Summary 86

Key Terms 86

Multiple Choice Questions (MCQ) 87

Review Questions 88

Application-Based Problems 88

Mini-Project 89

Answer Key 90

Chapter 6 Data Visualization with Ethical Design 91

6.1 What Is Data Visualization? 92

6.2 Why Data Visualization Is Important 93

6.3 What Is Ethical Design in Data Visualization? 94

6.3.1 Common Ethical Issues 94

6.3.2 Principles of Ethical Data Visualization 98

6.3.3 An Ethical Visualization Workflow 98

6.3.4 Bad Visualization versus Good Visualization 99

6.4 Worked Examples 99

6.4.1 Civil Engineering 99

6.4.2 Mechanical Engineering 100

6.4.3 Electronics Engineering 100

6.4.4 Computer Science 100

6.4.5 Biomedical Engineering 101

6.4.6 Automobile Engineering 101

Summary 101

Key Terms 102

Multiple Choice Questions (MCQ) 103

Review Questions 104

Application-Based Problems 104

Mini-Project 105

Answer Key 106

Chapter 7 Introduction to Machine Learning 107

7.1 What Is Machine Learning? 108

7.2 Types of Machine Learning 109

7.2.1 Supervised Learning 109

7.2.2 Unsupervised Learning 113

7.2.3 Reinforcement Learning 115

7.2.4 Semi-Supervised Learning 116

7.3 The Machine Learning Workflow 117

7.4 Engineering Applications of Machine Learning 118

Summary 119

Key Terms 119

Multiple Choice Questions (MCQ) 120

Review Questions 121

Application-Based Problems 121

Mini-Project 122

Answer Key 123

Chapter 8 Deep Learning 125

8.1 What Is Deep Learning? 126

8.1.1 How a Deep Network Works 128

8.2 Why Deep Learning Is Important 128

8.3 Relationship Between AI, Machine Learning, and Deep Learning 129

8.4 Real-Time Applications of Deep Learning 132

8.4.1 Object Detection and Image Recognition 132

8.4.2 Speech Recognition 133

8.4.3 Autonomous Vehicles 134

8.4.4 Healthcare and Medical Diagnosis 134

8.4.5 Applications Across Engineering Disciplines 135

8.5 Challenges of Deep Learning 137

8.6 The Future of Deep Learning 139

Summary 140

Key Terms 140

Multiple Choice Questions (MCQ) 141

Review Questions 142

Application-Based Problems 143

Mini-Project 143

Answer Key 145

Chapter 9 Introduction to Natural Language Processing 147

9.1 Everyday NLP 148

9.1.1 Voice Assistants 148

9.1.2 Chatbots and Virtual Support 149

9.1.3 E-mail Filtering 150

9.1.4 Language Translation 151

9.1.5 Sentiment Analysis 151

9.1.6 Text Summarization 152

9.1.7 Clinical Text Analysis 153

9.2 NLP Risks and Responsibilities 154

9.3 Major Risks in NLP 154

9.3.1 Bias and Unfairness 154

9.3.2 Misinterpretation of Language 155

9.3.3 Privacy Concerns 155

9.3.4 Misinformation and Fake Content 155

9.3.5 Over-Reliance on Automation 156

9.3.6 Language and Cultural Limitations	156
9.4 Responsibilities in NLP	157
Summary	158
Key Terms	159
Multiple Choice Questions (MCQ)	159
Review Questions	161
Application-Based Problems	161
Mini-Project	162
Answer Key	163
Chapter 10 Computer Vision	165
10.1 Basic Working Flow	166
10.2 Core Tasks in Computer Vision	167
10.2.1 Image Classification	168
10.2.2 Object Detection	169
10.2.3 Image Segmentation	169
10.2.4 Face Recognition	169
10.2.5 Civil Engineering: Structural Inspection	170
10.2.6 Mechanical Engineering: Quality Control on the Assembly Line	171
10.2.7 Electrical Engineering: Power-Line and Equipment Monitoring	171
10.2.8 Computer Science Engineering: Authentication and Access Control	172
10.2.9 Automobile Engineering: Perception in Self-Driving Cars	172
10.2.10 Biomedical Engineering: Analysis of Medical Images	174
10.2.11 Electronics and Communication Engineering: Satellite-Image Analysis	174
10.3 Major Risks in Computer Vision	176
10.4 Ethical Concerns in Computer Vision	179
Summary	181
Key Terms	182
Multiple Choice Questions (MCQ)	182
Review Questions	183
Application-Based Problems	184
Mini-Project	185
Answer Key	186
Chapter 11 Introduction to Generative AI	187
11.1 What Is Generative AI?	188
11.2 How Generative AI Works	189
11.3 Generative AI Models	190
11.4 Applications of Generative AI	191
11.4.1 Text Generation	191

11.4.2 Image Generation	192
11.4.3 Code Generation	192
11.4.4 Video and Media Generation	193
11.5 Engineering Applications of Generative AI	194
11.6 Challenges of Generative AI	195
11.7 The Future of Generative AI	197
Summary	198
Key Terms	198
Multiple Choice Questions (MCQ)	199
Review Questions	200
Application-Based Problems	200
Mini-Project	200
Answer Key	202
Chapter 12 Introduction to Agentic AI	203
12.1 What Is Agentic AI?	204
12.2 How Agentic AI Works	206
12.2.1 Perception	207
12.2.2 Reasoning	207
12.2.3 Planning	207
12.2.4 Action	207
12.2.5 Learning	207
12.3 Real-World Applications of Agentic AI	208
12.4 Intelligent Virtual Assistants	209
12.5 Engineering Applications of Agentic AI	211
12.6 Benefits of Agentic AI	213
12.7 Challenges of Agentic AI	214
12.8 Pathways to Safe and Responsible Agentic AI	215
12.8.1 Value Alignment	215
12.8.2 Mechanistic Interpretability	216
12.8.3 Robustness and Verification	216
12.8.4 Safeguarding and Mitigation	216
12.8.5 Ethics and Governance Frameworks	216
Summary	217
Key Terms	218
Multiple Choice Questions (MCQ)	218
Review Questions	219
Application-Based Problems	220
Mini-Project	221

Answer Key 222

Chapter 13 AI Tools 223

13.1 Grok 224

13.2 Getmulti 225

13.3 Wispr Flow 225

13.4 NotebookLM 226

13.5 Gemini 227

13.6 Kimi 228

13.7 Julius.ai 228

13.8 ChatGPT 229

13.9 Comet 230

13.10 n8n 230

13.11 Claude 231

13.12 Putting the Eleven Tools Together 232

Summary 233

Key Terms 233

Multiple Choice Questions (MCQ) 235

Review Questions 237

Application-Based Problems 237

Mini-Project 238

Answer Key 239

Chapter 14 AI Risks: Hallucinations and Deepfakes 241

14.1 AI Hallucinations 242

14.1.1 What an AI Hallucination Is 242

14.1.2 Why Hallucinations Happen 243

14.1.3 Two Kinds of Hallucination 244

14.1.4 Real Cases of AI Hallucination 244

14.2 Deepfakes 246

14.2.1 What a Deepfake Is 246

14.2.2 Useful Applications 246

14.3 Risks of Deepfakes 247

14.4 Reducing the Risks 247

14.5 A Message to the Engineering Student: Ethical Use and Legal Exposure 248

Summary 252

Key Terms 253

Multiple Choice Questions (MCQ) 255

Review Questions 256

Application-Based Problems 257

Mini-Project	258
Answer Key	259
Chapter 15 AI Safety for All	261
15.1 Safety	263
15.2 Fairness	264
15.3 Transparency	265
15.4 Privacy Protection	266
15.5 Accountability	267
15.6 Accessibility	268
15.7 Why AI Safety Is Important	269
15.7.1 It Prevents Direct Harm	269
15.7.2 It Sustains the Conditions for AI to Be Useful	270
15.7.3 It Defines What Kind of Profession Engineering Wants to Be	270
15.7.4 The Role of the Student	270
Summary	271
Key Terms	272
Multiple Choice Questions (MCQ)	274
Review Questions	275
Application-Based Problems	276
Mini-Project (Capstone Project)	276
Answer Key	278

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