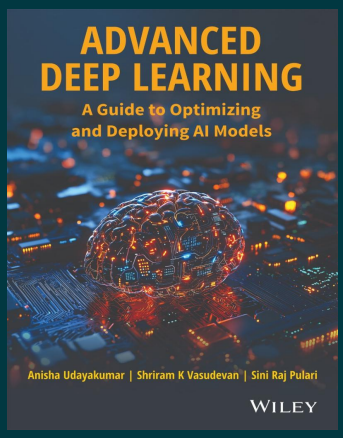
WILEY



Advanced Deep Learning: A Guide to Optimizing and Deploying AI Models

By Anisha Udayakumar, Shriram K Vasudevan, Sini Raj Pulari

Paperback 9789370606975 ₹999.00

Pages: 296

Description

Advanced Deep Learning is a comprehensive guide for students, researchers, and professionals seeking to master the optimization and deployment of AI models. The book covers foundational concepts, advanced architectures (CNNs, RNNs, LSTMs, Transformers), practical applications (vision, NLP, GenAI), and real-world deployment challenges. It provides hands-on tutorials for model optimization (compression, quantization, pruning, knowledge distillation), hardware-aware deployment (CPUs, GPUs, NPUs, AI PCs), and industry best practices using frameworks like TensorFlow, PyTorch, and Intel OpenVINO™.

Salient Features:

1. End-to-End Learning: From AI fundamentals to advanced deployment and optimization.
2. Hands-On Tutorials: Practical code examples, Jupyter notebooks, and video links.
3. Industry Case Studies: Real-world use cases in healthcare, finance, automotive, and more.
4. Hardware-Aware Deployment: Strategies for CPUs, GPUs, NPUs, and AI PCs.
5. OpenVINO™ Focus: Step-by-step guides for model conversion, optimization, and deployment.
6. Generative AI & LLMs: Coverage of the latest trends and techniques.
7. Pedagogical Tools: Chapter summaries, practice questions, MCQs, glossaries, and further reading.

About the Author

Anisha Udayakumar, Shriram K Vasudevan, Sini Raj Pulari

Anisha Udayakumar is a seasoned AI advocate, software engineer, and innovation consultant with over 11 years of experience in driving AI adoption. She serves as AI Software Evangelist at Intel Corporation, playing a pivotal role in promoting Intel's AI toolkit, OpenVINO™, across the Asia-Pacific and Japan region. Her expertise spans generative AI (GenAI), large language models (LLMs), and multimodal AI, with a strong focus on building industry-specific AI solutions. She has been recognized with multiple awards for her contributions to AI and innovation and has earned the prestigious LinkedIn Top Voice recognition.

Dr. Shriram K Vasudevan is a distinguished technology leader at Intel with over 18 years of experience spanning both industry and academia. He serves as Lead—Technical (GenAI and AI), APJ Software Ecosystem Enablement, Office of the CTO (OCTO) at Intel Corporation. Holding a doctorate in embedded systems, he has authored 52 books published by esteemed publishers including Taylor & Francis, Wiley, and Oxford University Press. Dr. Shriram is a Fellow of IEI and IETE and a Senior Member of IEEE. With 14 patents and over 150 research articles, he has received global recognition including prestigious awards from Harvard, Google, and various governments worldwide. His contributions have earned him an entry in the Limca Book of Records.

Prof. Sini Raj Pulari is an accomplished academic and industry professional with over 17 years of experience. She currently serves as Program Manager, BICT–Database, EDICT at Government Bahrain Technical University, The Kingdom of Bahrain. Her research expertise spans natural language processing (NLP), recommender systems,

information retrieval, deep learning, and machine learning.

She has authored over 30 publications, including books "Deep Learning: A Comprehensive Guide" and "Machine Learning Using Intel oneAPI" (CRC Press). Prof. Sini has mentored more than 50 UG and PG students and holds multiple prestigious certifications including Apple Certified Trainer, SCJP, Oracle Certified Associate, and Intel® Certified Instructor.

Table of Contents

Chapter 1 The Introduction

1. Overview of AI, ML, and Deep Learning
2. Global AI Market and Impact
3. Transformative Power of AI Across Industries
4. Foundational Concepts of AI and DL
5. Key Applications of AI Enabled by Deep Learning

Chapter 2 Core Architectures in Deep Learning

1. The Biological Neuron
2. Convolutional Neural Networks (CNNs)
3. Recurrent Neural Networks (RNNs)
4. Long Short-Term Memory (LSTM)
5. Transfer Learning
6. PyTorch and TensorFlow Frameworks

Chapter 3 Practical Applications of Deep Learning

1. Computer Vision Applications
2. Natural Language Processing
3. Generative AI Applications

Chapter 4 Challenges in Deploying Deep Learning Models

1. AI Deployment Lifecycle
2. Performance Bottlenecks
3. Resource Constraints and Scalability
4. Ethical Considerations and Explainable AI

Chapter 5 Introduction to Deep Learning Optimization

1. Model Compression Strategies
2. Quantization Methods
3. Weight Compression for Large Language Models

Chapter 6 Tools and Techniques for Deep Learning Optimization

1. Using TensorFlow and PyTorch for Optimization
2. Practical Guide to Model Optimization
3. Fine-Tuning Models for Performance

Chapter 7 Getting Started with OpenVINO™

1. Introduction to OpenVINO™
2. Installation and Setup
3. Model Conversion and Optimization Tools

Chapter 8 Optimizing Deep Learning Models with OpenVINO™

1. Compression and Quantization Techniques
2. Performance Improvement Strategies
3. Hands-On Optimization Tutorials

Chapter 9 Deploying AI Across Devices

1. Hardware-Aware Deployment (CPUs, GPUs, NPUs)
2. AI PC: Concepts and Implementation
3. Cross-Platform Deployment Strategies

Chapter 10 Real-World Deep Learning Use Cases

1. Industry Best Practices
2. Integration with AI Tools and Libraries
3. Developer Resources and Community Support

List of Abbreviations and AI Standards included

To purchase this product, please visit:
https://www.wileyindia.com/advanced-deep-learning-a-guide-to-optimizing.html

Scan to buy