Deep Learning & Applications

Chapter 1: Foundations of Deep Learning

- 1.1 Introduction to Deep Learning
- 1.2 Neural Networks and Fundamentals
- 1.3 Training Deep Networks
- 1.4 Convolutional Neural Networks (CNNs)
- 1.5 Generative Adversarial Networks (GANs)

Chapter 2: Deep Learning Applications in Image

- 2.1 Medical Imaging with Deep Learning
- 2.2 Deep Learning for Computer Vision
- 2.3 Image Segmentation
- 2.4 Advanced Techniques in Image Super-Resolution and Image Generation

Chapter 3: Deep Learning in Natural Language Processing

- 3.1 Natural Language Processing (NLP)
- 3.2 Transformers and BERT
- 3.3 Deep Learning for Text Classification and Sentiment Analysis
- 3.4 Speech Recognition and Machine Translation using Deep Learning

Chapter 4: Deep Learning in Finance and Business

- 4.1 Financial Forecasting and Stock Market Prediction with Deep Learning
- 4.2 Fraud Detection and Risk Management Using Deep Learning Algorithms

Chapter 5: Advanced Topics in Deep Learning

- 5.1 Explainable AI (XAI): Making Deep Learning Transparent
- 5.2 Transfer Learning and Model Fine-Tuning in Deep Learning
- 5.3 Deep Reinforcement Learning: From Games to Robotics
- 5.4 Ethics, Bias, and Responsible AI in Deep Learning Applications

Chapter 6: The Future of Deep Learning

- 6.1 Emerging Trends: Quantum Computing and Deep Learning
- 6.2 Deep Learning at the Edge: Optimizing AI for Low-Resource Devices
- 6.3 Challenges and Future Directions for Deep Learning Research