

Table of Contents

Part I: Brains & Inspiration

Chapter 1: Introduction to Neuroscience ↔ AI	###
Chapter 2: Neuroscience Foundations	###
Chapter 3: Spatial Navigation	###
Chapter 4: Perception Pipeline	###

Part II: Brains Meet Math & Data

Chapter 5: Brain Networks	###
Chapter 6: Neurostimulation	###
Chapter 7: Information Theory	###
Chapter 8: Data Science Pipeline	###

Part III: Learning Machines

Chapter 9: Machine Learning Foundations	###
Chapter 10: Deep Learning	###
Chapter 11: Sequence Models	###

Part IV: Frontier Models

Chapter 12: Large Language Models	###
Chapter 13: Multimodal Models	###

Part V: Ethics & Futures

Chapter 15: Ethical AI	###
Chapter 16: Future Directions	###

Part VI: Advanced Applications

Chapter 17: BCI & Human-AI Interfaces	###
Chapter 18: Neuromorphic Computing	###
Chapter 19: Cognitive Neuroscience & Deep Learning	###

Chapter 20: Case Studies	###
Chapter 21: AI for Neuroscience Discovery	###
Chapter 22: Embodied AI & Robotics	###
Chapter 24: Quantum Computing in NeuroAI	###
Chapter 23: Lifelong Learning	###

Part VII: Appendices

Mathematical & Python Refresher	###
Dataset Catalogue	###
Colab Setup Guide	###