Deep Learning Handbook

Introduction

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1.1 Motivations and Applications

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1.2 Historical Background

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2. Neural Networks Basics

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2.1.1 Mathematical Foundations

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2.1.2 Limitations

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2.2 Activation Functions

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3. Deep Learning Architectures

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3.1 Feedforward Networks

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3.2 Convolutional Neural Networks (CNN)

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3.2.1 Applications of CNN

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3.2.2 CNN Structural Variations

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3.3 Recurrent Neural Networks (RNN)

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3.3.1 Sequence Modeling

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4. Training Deep Networks

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4.1 Optimization Algorithms

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4.1.2 Adam Optimizer

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4.2 Regularization Techniques

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4.2.1 Dropout

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4.2.2 Batch Normalization

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4.3 Data Augmentation

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5. Applications and Future Directions

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5.1 Natural Language Processing

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5.2 Computer Vision

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5.3 Reinforcement Learning

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6. References

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