

Part I Fundamentals of Learning

1. Introduction to Learning

- 1.1 Artificial Intelligence
- 1.2 Data and Signal Definition
- 1.3 Data Versus Signal
- 1.4 Signal Models
- 1.5 Noise and Interference
- 1.6 Time Series Definition
- 1.7 Time Series Analysis
- 1.8 Deep Learning and Time Series Analysis
- 1.9 Organisation of the Book

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- 2.2 Learning in a Practical Example
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 - 2.3.2 Training Method
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 - 2.3.4 Hyperparameters
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- 2.5 Training, Validation, and Test
- 2.6 Learning Schemes
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- 2.7 Training Criteria
- 2.8 Optimization, Training, and Learning

- 2.9 Evaluation of Learning Performance
 - 2.9.1 Structural Risk
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- 2.10 Validation
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 - 2.10.3 A-Test Validation
- 2.11 Privileges of A-Test Method
 - 2.11.1 A-Test and Structural Risk
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 - 2.11.3 A-Test vs other Methods
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- 3.1 Dimension Reduction
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 - 3.1.1.2 Linear Discriminant Analysis (LDA)
 - 3.1.1.3 Fisher Method
 - 3.1.2 Linear Transformation
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 - 3.2.1 K-Nearest Neighbours (KNN)
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- 4.2 Deterministic, Chaotic and Stochastic
- 4.3 Stochastic Behaviors of Time Series
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 - 4.3.1.1 Sector Definition
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- 4.4 Time Series Prediction
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5. Multi-Layer Perceptron (MLP) Neural Networks for Time Series Classification

- 5.1 Time-Delayed Neural Network (TDNN)
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- 5.3 Forward, Backward and Bilateral Time-Growing Window
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