

Table of Contents

Architectures and Learning in Recurrent Neural Networks

Recurrent Neural Network Architectures: An Overview	1
<i>A.C. Tsoi</i>	
Gradient Based Learning Methods	27
<i>A.C. Tsoi</i>	
Diagrammatic Methods for Deriving and Relating Temporal Neural Network Algorithms	63
<i>E.A. Wan and F. Beaufays</i>	

Processing of Data Structures

An Introduction to Learning Structured Information	99
<i>P. Frasconi</i>	
Neural Networks for Processing Data Structures	121
<i>A. Sperduti</i>	
The Loading Problem: Topics in Complexity	145
<i>M. Gori</i>	

Probabilistic Models

Learning Dynamic Bayesian Networks	168
<i>Z. Ghahramani</i>	
Probabilistic Models of Neuronal Spike Trains	198
<i>P. Baldi</i>	
Temporal Models in Blind Source Separation	229
<i>L.C. Parra</i>	

Analog vs Symbolic Computation

Recursive Neural Networks and Automata	248
<i>M. Maggini</i>	
The Neural Network Pushdown Automaton: Architecture, Dynamics and Training	296
<i>G.Z. Sun, C.L. Giles and H.H. Chen</i>	
Neural Dynamics with Stochasticity	346
<i>H. T. Siegelmann</i>	

Applications

Parsing the Stream of Time: The Value of Event-Based Segmentation in a Complex Real-World Control Problem	370
<i>M.C.Mozer and D. Miller</i>	
Hybrid HMM/ANN Systems for Speech Recognition: Overview and New Research Directions	389
<i>H. Bourlard and N. Morgan</i>	
Predictive Models for Sequence Modelling, Application to Speech and Character Recognition	418
<i>P. Gallinari</i>	