

## CONTENTS

Preface		v
PART ONE: MATHEMATICAL THEORY		
Connectionist Learning through Gradient Following	<b>R. J. Williams</b>	<b>3</b>
Efficient Stochastic Gradient Learning Algorithm for Neural Network	<b>Y. C. Lee</b>	<b>27</b>
Information Storage in Fully Connected Networks	<b>D. Psaltis &amp; S. Venkatesh</b>	51
Neuronid Equations and their Solutions	<b>E. R. Caianiello</b>	91
The Dynamics of Searches Directed by Genetic Algorithms	<b>J. H. Holland</b>	111
Probabilistic Neural Networks	<b>J. W. Clark</b>	129
PART TWO: ARCHITECTURAL DESIGN		
Some Quantitative Issues in the Theory of Perception	<b>A. Zee</b>	183
Speech Perception and Production by a Self-Organizing Neural Network	<b>M. A. Cohen, S. Grossberg &amp; D. G. Stork</b>	217
Neocognitron: A Neural Network Model for Visual Pattern Recognition	<b>K. Fukushima, S. Miyake &amp; T. Ito</b>	<b>233</b>
PART THREE: APPLICATIONS		
Learning to Predict the Secondary Structure of Globular Proteins	<b>N. Qian &amp; T. J. Sejnowski</b>	<b>257</b>
Exploiting Chaos to Predict the Future and Reduce Noise	<b>J. D. Fanner &amp; J. J. Sidorowich</b>	<b>277</b>
How Neural Nets Work	<b>A. Lapedes &amp; R. Farber</b>	331

Pattern Recognition and Single Layer Networks	<i>T. Maxwell</i>	347
What <b>is</b> the Significance of Neural Networks for AI?	<i>H. H. Szu</i>	373
Selected Bibliography on Connectionism		391
	<i>O. G. Selfridge, R. S. Sutton &amp; C. W. Anderson</i>	
Hiertalker: A Default Hierarchy of High Order Neural Networks that Learns to Read English Aloud		405
	<i>Z. G. An, Y. C. Lee &amp; G. D. Doolen</i>	