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Nota di contenuto	Are there universal principles of brain computation? -- Modeling cortical networks -- Cooperative organization of connectivity patterns and receptive fields in the visual pathway: application to adaptive tresholding -- Neurobiological inspiration for the architecture and functioning of cooperating neural networks -- Synaptic modulation based artificial neural networks -- Self-organization of cortical receptive fields and columnar structures in a Hebb-trained neural network -- An analytical solution of the compartmental model for use

in local learning in artificial neural networks -- Should ANN be ANGN? -- Modeling retinal high and low contrast sensitivity filters -- Neural micro-structures three simple models -- Adaptive hierarchical structures -- Optimal range of input resistance in the oscillatory behavior of the pancreatic ?-cell -- A computational model of periodic-pattern-selective cells -- Modeling and analysis of some neural mechanisms for the genesis and control of respiratory pattern -- A neural network model for plasticity in adult striate cortex -- Regenerative-type neural interface -- New perspectives in auditory coding: Bases for a new cochlear behavioural model -- Nervous system as a closed neuronal network: behavioral and cognitive consequences -- Local accumulation of persistent activity at synaptic level: Application to motion analysis -- High Order Boltzmann Machines with continuous units: Some experimental results -- An adaptive control model of a locomotion by the central pattern generator -- Self-consistent neural receptive fields -- A simple probabilistic neural model producing multimodal ISHs -- An associative neural network to model the developing mammalian hippocampus -- The implementation of propositional logic in random neural networks -- A learning rule for extracting temporal invariances -- The influence of the sigmoid function parameters on the speed of backpropagation learning -- General transient length upper bound for recurrent neural networks -- On some methods in neuromathematics (or the development of mathematical methods for the description of structure and function in neurons) -- Logistic networks with DNA-like encoding and interactions -- A review on the stochastic firing behaviour of real neurons and how it can be modelled -- The BP-?L1 algorithm: Non-chaotic and accelerated learning in a MLP network -- Analysis of pruning in backpropagation networks for artificial and real world mapping problems -- Oscillatory networks with Hebbian matrix of connections -- A new algorithm for implementing a recursive neural network -- Visual information processing from the viewpoint of symbolic operations -- Dentritic computation in the brain -- Stochastic neuronal models with realistic synaptic inputs and oscillatory inputs -- A neural paradigm for controlling autonomous systems with reflex behaviour and learning capability -- Fast automatic architecture selection in RBF networks -- Collective behaviour of a chain of Hopfield subnetworks interconnected unidirectionally -- A comparative study of three neural networks that use soft competition -- Neural networks and genetic algorithms for the attitude control problem -- Self-organising Artifical Neural Networks -- A distributed classifier based on Yprel networks cooperation -- A fractal, selforganizing map with partially chaotic neurons -- Multiple self-organizing maps for supervised learning -- An application of the saturated attractor analysis to three typical models -- Learning in evolutive neural architectures: An ill-posed problem? -- Automatic scaling using gamma learning for feedforward neural networks -- Determining the significance of input parameters using sensitivity analysis -- Multi-valued neurons: Learning, networks, application to image recognition and extrapolation of temporal series -- Individual evolutionary algorithm and its application to learning of nearest neighbor based MLP -- A practical view of suboptimal Bayesian classification with radial Gaussian kernels -- Schema based learning & learning to Detour -- Neurons with continuous varying activation in self-organizing maps -- Improving back-propagation: Epsilon-back-propagation -- Finite State Automata and Connectionist Machines: A survey -- Learning transformed prototypes (LTP) — A statistical pattern classification technique of neural networks -- Fuzzy function estimators as basis on learning from experience -- Connectionists and

statisticians, friends or foes? -- Unsupervised neural networks for speech perception with Cochlear Implant systems for the profoundly deaf -- Obstacle avoidance by means of an operant conditioning model -- Qualitative approach to gradient based learning algorithms -- Character recognition with neural assemblies -- Learning by attentional scanning -- The synthesis of the ranked neural networks applying genetic algorithm with the dynamic probability of mutation -- Global versus local Heuristic Terminal Attractor -- Dynamic learning of radial bases functions for fuzzy clustering -- Incremental learning with a stopping criterion experimental results -- Learning algorithm with gaussian membership function for Fuzzy RBF Neural Networks -- Neural network initialization -- Bidirectional Neural Networks reduce generalisation error -- Balancing bias and variance: Network topology and pattern set reduction techniques -- Priming an artificial neural classifier -- Artificial neuroconsciousness an update -- Physical and linguistic problems in the modelling of consciousness by neural networks -- A neural network model for the velocity vector of an object and its consistency with psychological phenomena -- Implementation and evaluation of a Relevance Feedback device based on Neural Networks -- Second-order recurrent neural networks can learn regular grammars from noisy strings -- Extracting DNF rules from artificial neural networks -- Dynamic symbol grounding, state construction and the problem of teleology -- Analysis of industrial economics by means of neural nets -- Effects of spatial frequency and stimulus size on the orientation sensitivity of humans -- Object oriented design of a simulator for large BP Neural Networks -- Introducing XSim: A neural network simulator that incorporates biological parameters -- NETTOOL: A hybrid connectionist-symbolic development environment -- EL-SIM: a development environment for neuro-fuzzy intelligent controllers -- Packlib, an interactive environment to develop modular software for data processing -- NSL — Neural Simulation Language -- Low-cost accelerator for the simulation of Cellular Neural Networks -- A VLSI system for neural Bayesian and LVQ classification -- An associative processor dedicated to classification by neural methods -- Hardware-Oriented models for VLSI implementation of Self-Organizing Maps -- Hardware requirements for spike-processing neural networks -- A VLSI approach to the implementation of additive and shunting neural networks -- A low-power analog implementation of Cellular Neural Networks -- Asynchonously parallel Boltzmann Machines mapped onto distributed-memory multiprocessors -- A coprocessor card for fast neural network emulation -- Digital hardware implementation of ROI incremental algorithms -- Comparing implementations of Radial Basis Function Neural Networks on three parallel machines -- Implementing Radial Basis Functions Neural Networks on the systolic MANTRA machine -- A mixed parallel-sequential SHNN for large networks -- A modular VLSI architecture for neural networks implementation -- A massively parallel neurocomputer with a reconfigurable arithmetical unit -- An all-optical forward propagation multilayer neural network -- A VLSI current mode synapse chip -- Optimal mapping of neural networks onto FPGAs -- A CPWM synapsis for Weighted Radial Basis Functions -- Test pattern generation for analog circuits using neural networks and evolutive algorithms -- About some perception problems in neural networks -- Optimization neural networks for image segmentation -- Segmentation of range images: A neural network approach -- A neural architecture for preattentive segmentation of sewage pipes video images -- A CNN model for grey scale image processing -- Kohonen's self-organizing maps for contour segmentation of gray level and color images -- A

geometrical based procedure for source separation mapped to a neural network -- Quasi-optimum combination of multilayer perceptrons for adaptive multiclass pattern recognition -- A text recognition system based on a Neural Network and on a Deformed System -- Simultaneous recognition of multiple objects using the MEM model -- On-line handwritten character recognition by a hybrid method based on neural networks and pattern matching -- Analysis and application of the store neural model in recognizing handwritted symbols -- An adaptative orthogonal asociative memory and its application to character recognition -- Texture classification on real time using semi-cover vector and an orthogonal neural network -- An architecture for texture segmentation: from energy features to region detection -- A lattice-based Time-Delay Neural Network for speech processing -- Acquisition of internal representation by learning of identity-mapping using overload learning -- A multiacuity connectionist model for local speed estimation -- Using Artificial Neural Networks for ultrasonic signals processing from simple geometric shapes -- A hierarchical neural network for mobile visual tracking with a robot head -- Short-term load forecasting using neural nets -- Image compression using feedforward neural networks — Hierarchical approach -- Neural approaches to robot control: Four representative applications -- On line identification of causal relationships between variables in the feed water system of a nuclear power plant -- Dynamic neural units for nonlinear dynamic systems identification -- Optimal identification using feed-forward neural networks -- .

Sommario/riassunto

This volume presents the proceedings of the International Workshop on Artificial Neural Networks, IWANN '95, held in Torremolinos near Malaga, Spain in June 1995. The book contains 143 revised papers selected from a wealth of submissions and five invited contributions; it covers all current aspects of neural computation and presents the state of the art of ANN research and applications. The papers are organized in sections on neuroscience, computational models of neurons and neural nets, organization principles, learning, cognitive science and AI, neurosimulators, implementation, neural networks for perception, and neural networks for communication and control.