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Book Announcements

R. Beale and T. Jackson, *Neural Computing, an Introduction* (Adam Hilger, Bristol, 1990) 240 pages

Chapter 1: Introduction. Humans and computers. The structure of the brain. Learning in machines. The differences. *Chapter 2: Pattern Recognition.* Introduction. Pattern recognition in perspective. Pattern recognition – a definition. Feature vectors and feature space. Discriminant functions. Classification techniques. Linear classifiers. Statistical techniques. Pattern recognition – a summary. *Chapter 3: The Basic Neuron.* Introduction. Modelling the single neuron. Learning in simple neurons. The perceptron: a vectorial perspective. The perceptron learning rule: proof. Limitations of perceptrons. The end of the line? *Chapter 4: The Multilayer Perceptron.* Introduction. Altering the perceptron model. The new model. The new learning rule. The multilayer perceptron algorithm. The XOR problem revisited. Visualising network behaviour. Multilayer perceptrons as classifiers. Generalisation. Fault tolerance. Learning difficulties. Radial basis functions. Applications. *Chapter 5: Kohonen Self-Organising Networks.* Introduction. The Kohonen algorithm. Weight training. Neighbourhoods. Reducing the neighbourhood. Learning vector quantisation (LVQ). The phonetic typewriter. *Chapter 6: Hopfield Networks.* Introduction. The Hopfield model. The energy landscape. The Boltzmann machine. Constraint satisfaction. *Chapter 7: Adaptive Resonance Memory.* Introduction. Adaptive resonance theory – ART. Architecture and operation. ART algorithm. Training the ART network. Classification. Conclusion. Summary of ART. *Chapter 8: Associative Memory.* Standard computer memory. Implementing associative memory. Implementation in RAMs. RAMs and n -tupling. Willshaw's associative net. The ADAM system. Kanerva's sparse distributed memory. Bidirectional associative memories. *Chapter 9: Into the Looking Glass.* Overview. Hardware and software implementations. Optical computing. Optical computing and neural networks.

R.J. Mammone and Y. Zeevi, eds., *Neural Networks: Theory and Applications* (Academic Press, Boston, 1991) 355 pages

Weightless Neurons Tools: Towards Cognitive Macrostructures (Igor Aleksander). *An Estimation Theoretic Basis for the Design of Sorting and Classification Networks* (R.W. Brockett). *A Self Organizing ARTMAP Neural Architecture for Supervised Learning and Pattern Recognition* (Gail A. Carpenter, Stephen Grossberg and John H. Reynolds). *Hybrid Neural Network Architectures: Equilibrium Systems That Pay Attention* (Leon N. Cooper). *Neural Networks for Internal Representation of Movements in Primates and Robots* (Rolf Eckmiller, Nils Goerke and Jürgen Hakala). *Recognition and Segmentation of Characters in Handwriting with Selective Attention* (Kunihiko Fukushima and Taro Imagawa). *Adaptive Acquisition of Language* (A.L. Gorin, S.E. Levison, A.N. Gertner and E. Goldman). *What Connectionist Models Learn: Learning and Representation in Connectionist Networks* (Stephen José Hanson and David J. Burr). *Early Vision, Focal Attention, and Neural Nets* (Bela Julesz). *Towards Hierarchical Matched Filtering* (Robert Hecht-Nielsen). *Some Variations on Training of Recurrent Networks* (Gary M. Kuhn and Norman P. Herzberg). *Generalized Perceptron Networks with Nonlinear Discriminant Functions* (S.Y. Kung, K. Diamantaras, W.D. Mao and J.S. Taur). *Neural Tree Networks* (Ananth

Elsevier Science Publishers B.V.

Sankar and Richard Mammon). *Capabilities and Training of Feedforward Nets* (Eduardo D. Sontag). *A Fast Learning Algorithm for Multilayer Neural Network Based on Projection Methods* (Shu-jeu Yeh and Henry Stark).

Cary G. deBessonet, A Many-Valued Approach to Deduction and Reasoning for Artificial Intelligence (Kluwer Academic Publishers, Boston, 1991) 248 pages

Chapter 1: Observations and Issues. Frames, nets, FOL and SL. Automating SMS. Semantics. Immediate goals. Relationship between SL and SMS. Language used to describe SMS. *Chapter 2: Introduction to SMS and SL.* SMS as a formal system that employs sequences, signs and tokens. Use of SL in SMS. Description of SL. Formation rules. The expressive power of SL. *Chapter 3: Addressing the Problem of Imprecision.* Preliminary remarks. Need for a many-valued approach. Qualified response. Multiquerying. Justification for use of a many-valued approach. *Chapter 4: Inferencing in SMS.* Preliminary remarks. Inferencing. The relation of identity. Normal forms. Ontological distinctions. Derivations. Modal and epistemic inferencing. Nonmonotonic reasoning. Expansions and causal formalisms. Using fuzzy set theory and probabilistic methods in SMS. *Chapter 5: Ontological Considerations.* Ontological realms. The realm of OW. The realm of FW. The realm of AW. The realm of SW. The realm of NW. The realm of UW. The realm of MW. Interaction between realms. *Chapter 6: Philosophical Considerations.* The many-valued approach. Is a theory of truth really necessary?. More on semantics. Effects of avoidance of the truth predicate. *Chapter 7: SMS Compared and Contrasted with FOL.* FOL. Variables. Constants. Predicates. Connectives and negation. Quantifiers. Functions. Conjugation. Assertions. Enhancement of capabilities of SMS through use of SL. *Chapter 8: SMS Metalanguage.* Current description. Notation for inclusion, entailment and other relations. The consistency relation. Suggestions for reading the metalanguage. *Chapter 9: Tying Up Some Loose Ends.* Unfinished matters. Signs, restrictions and marking. More on assertions. Consistency specifications for realms. *Chapter 10: Quantification, Instantiation and Event Individuation.* Quantifiers in SL. Instantiation, generalization, unification and quantification. Sentential quantification and instantiation. Instantiation of concrete markers. Event and state individuation. *Chapter 11: Correspondence and Inferencing.* Preliminary remarks. WFSSs, WFSFs and their penumbras. Intrasentential inferencing. Intersentential inferencing. Querying and the process of proof. Many-valued approach appreciable at the atomic level. Maintaining consistency. Using the resolution principle. Implementing SMS theory. *Chapter 12: SMS in Action.* A session with SMS. System limitations. Future work and concluding remarks.

U. Tietze and Ch. Schenk, Electronic Circuits: Design and Applications (Springer, Berlin, 1991) 928 pages

PART I: BASICS. *Chapter 1: Definitions and Nomenclature.* *Chapter 2: Passive RC and LRC Networks.* The lowpass filter. The highpass filter. Compensated voltage divider. Passive RC bandpass filter. Wien-Robinson bridge. Parallel-T filter. Resonant circuit. *Chapter 3: Diodes.* Characteristics and relevant data. Zener diodes. Varactor diodes. *Chapter 4: Bipolar Transistors.* Characteristics and small-signal parameters. Transistor ratings. Common-emitter connection. Common-base connection. Common-collector connection, emitter follower. Transistor as a constant current source. Darlington circuit. Differential amplifier. Measuring some transistor parameters. Transistor noise. *Chapter 5: Field Effect Transistors.* Classification. Characteristics and small-signal parameters. Ratings. Basic circuits. FETs as constant current sources. FET differential amplifier. FET as a controllable resistor. *Chapter 6: Optoelectronic Components.* Basic photometric terms. Photoconductive cell. Photodiode. Phototransistor. Light-emitting diodes. Optocouplers. Visual display. *Chapter 7: Operational Amplifiers.* Characteristics of an operational amplifier. Principle of negative feedback. Non-inverting amplifier. Inverting amplifier.