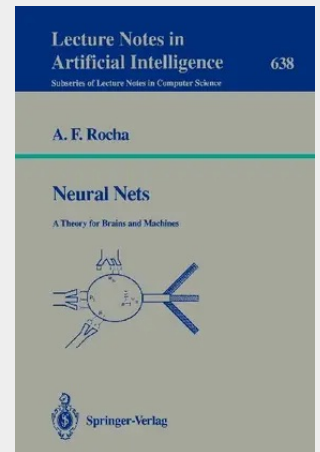


Neural Nets

A Theory for Brains and Machines

The purpose of this book is to develop neural nets as a strong theory for both brains and machines. The theory is developed in close correlation with the biology of the neuron and the properties of human reasoning. This approach implies the following: - Updating the biology of the artificial neuron. The neurosciences have experienced a tremendous development in the last 50 years. One of the main purposes of the present work is to incorporate this knowledge into a strong model of the artificial neuron. Particular attention is devoted to formalizing the complex chemical processes at the synaptic level. This formal language supports both symbolic reasoning and uncertainty processing. - Investigating the properties of expert reasoning. This kind of reasoning is approximate, partial and non-monotonic, and therefore requires special mathematical tools for its formalization, such as fuzzy set theory and fuzzy logic. Three different intelligent systems developed with this technology are presented and discussed.

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