

Computational Models of Conditioning

Since first described, multiple properties of classical conditioning have been discovered, establishing the need for mathematical models to help explain the defining features. The mathematical complexity of the models puts our understanding of their workings beyond the ability of our intuitive thinking and makes computer simulations irreplaceable. The complexity of the models frequently results in function redundancy, a natural property of biologically evolved systems that is much desired in technologically designed products. Featuring contributions from experts in the field, this book discusses the latest advancements and presents detailed descriptions of how the models simulate conditioned behavior and its physiological bases. It offers advanced students and researchers examples of how the models are used to analyze existing experimental results and design future experiments. This volume is of great interest to psychologists and neuroscientists, as well as computer scientists and engineers searching for ideas applicable to the design of robots that mimic animal behavior.

NESTOR SCHMAJUK is Professor of Psychology and Neuroscience at Duke University. He has developed and tested several neural network models of classical conditioning, operant conditioning, animal communication, creativity, spatial learning, cognitive mapping, and prepulse inhibition. His previous books include *Animal Learning and Cognition: A Neural Network Approach* (Cambridge University Press, 1997), *Latent Inhibition and its Neural Substrates* (Kluwer Academic, 2002), and *Mechanisms in Classical Conditioning: A Computational Approach* (Cambridge University Press, 2010).

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