

1. Record Nr.	UNINA9910826759503321
Autore	Chua Leon O. <1936->
Titolo	Cellular neural networks and visual computing : foundation and applications // Leon O. Chua and Tamaz Roska
Pubbl/distr/stampa	Cambridge, UK ; ; New York, NY, : Cambridge University Press, 2002
ISBN	1-107-11746-1 0-511-04051-2 1-280-42067-7 9786610420674 0-511-17694-5 0-511-15782-7 0-511-32984-9 0-511-75449-3 1-60119-735-7 0-511-04825-4
Edizione	[1st ed.]
Descrizione fisica	1 online resource (xi, 396 pages) : digital, PDF file(s)
Altri autori (Persone)	RoskaT
Disciplina	006.3/2
Soggetti	Neural networks (Computer science)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Title from publisher's bibliographic system (viewed on 05 Oct 2015).
Nota di bibliografia	Includes bibliographical references (p. 348-360) and index.
Nota di contenuto	Cover; Half-title; Title; Copyright; Dedication; Contents; Acknowledgements; 1 Introduction; 2 Notation, definitions, and mathematical foundation; 3 Characteristics and analysis of simple CNN templates; 4 Simulation of the CNN dynamics; 5 Binary CNN characterization via Boolean functions; 6 Uncoupled CNNs: unified theory and applications; 7 Introduction to the CNN Universal Machine; 8 Back to basics: Nonlinear dynamics and complete stability; 9 The CNN Universal Machine (CNN-UM); 10 Template design tools; 11 CNNs for linear image processing; 12 Coupled CNN with linear synaptic weights 13 Uncoupled standard CNNs with nonlinear synaptic weights 14 Standard CNNs with delayed synaptic weights and motion analysis; 15 Visual microprocessors ... analog and digital VLSI implementation of the CNN Universal Machine; 16 CNN models in the visual pathway and the Bionic EyeZ; Notes; Bibliography; Exercises; Appendices; Index

Sommario/riassunto

Cellular Nonlinear/neural Network (CNN) technology is both a revolutionary concept and an experimentally proven new computing paradigm. Analogic cellular computers based on CNNs are set to change the way analog signals are processed and are paving the way to an analog computing industry. This unique undergraduate level textbook includes many examples and exercises, including CNN simulator and development software accessible via the Internet. It is an ideal introduction to CNNs and analogic cellular computing for students, researchers and engineers from a wide range of disciplines. Although its prime focus is on visual computing, the concepts and techniques described in the book will be of great interest to those working in other areas of research including modeling of biological, chemical and physical processes. Leon Chua, co-inventor of the CNN, and Tamas Roska are both highly respected pioneers in the field.
