

Intelligence in Chip: Integrated Sensors and Memristive Computing

Editors:

Alex James, Digital University Kerala

Alon Ascoli, Politecnico di Torino

Bhaskar Choubey, Siegen University

Intelligence in Chips: Integrated Sensors and Memristive Computing is an authoritative resource that navigates the exciting landscape of in-memory computing, neuromorphic circuits, and memristive technologies. This book curates expert insights from leading researchers like Abu Sebastian, Alex James, Alon Ascoli, Arindam Basu, Cory Merkel, Fernando Corinto, Jason Eshraghian, Rainer Waser, Spiros Nikolaidis, Stephan Menzel, and Vishal Saxena, highlighting some of the important contributions in the field. Through a comprehensive collection of talks, readers will gain deep insights into how memristive neural computing is revolutionizing artificial intelligence.

The book covers the latest innovations in memristor array computing, brain-inspired circuits, neuromorphic event-driven vision, bio-inspired computing, and nonlinear phenomena in biological systems. Each chapter is authored by a distinguished expert, offering a multi-perspective analysis on how emerging technologies are pushing the boundaries of edge-AI and mixed-signal hardware.

Whether you're a researcher, engineer, or student, this book is an essential guide that explores the confluence of circuit theory, artificial intelligence, and memristor technology, providing readers with practical methodologies and visionary outlooks for the future.

TABLE OF CONTENTS

SECTION 1: MEMRISTIVE DEVICES

Chapter 1 - Overview of redox-based resistive RAM (ReRAM) -

Physico-chemical background and history, by Rainer Waser

Chapter 2 - Deep learning inference with in-memory computing, by Abu Sebastian

Chapter 3 - Modeling of Memristive Devices, by Stephan Menzel

SECTION 2: NONLINEAR MEMRISTIVE CIRCUITS

Chapter 4 - Analog Neural Computing Under Variability Intense Memristor Arrays, by Alex James

Chapter 5 - Edge of Chaos Clarifies the Origin for Yet-Unexplained Nonlinear Phenomena in Biological Systems, by Alon Ascoli

Chapter 6 - Memristor Computing Systems: at the crossroad between Circuit Theory and Artificial Intelligence, by Fernando Corinto

SECTION 3: MEMRISTIVE CIRCUIT APPLICATIONS

Chapter 7 - Aspects of Digital Circuit Design using Memristor Ratioed Logic (MRL), by Spiros Nikolaidis

Chapter 8 - Neuromorphic Computing with Memristors: From Circuits to Algorithms, by Cory Merkel

Chapter 9 - In-memory computing meets Neuromorphic Event-Driven Vision, by Arindam Basu

SECTION 4: MEMRISTIVE SYSTEMS

Chapter 10 - Open-Source RRAM Neuromorphic Accelerators, by Jason Eshraghian

Chapter 11 - Mixed-Signal Neuromorphic Computing: Devices Algorithms and Circuits, by Vishal Saxena

INTELLIGENCE IN CHIP

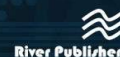
INTEGRATED SENSORS AND MEMRISTIVE COMPUTING

Editors

Alex James

Alon Ascoli

Bhaskar Choubey



River Publishers Series in Electronic Materials, Circuits and Devices

ISBN: 9788770228343

e-ISBN: 9788770228695

Available From: December 2024

Price: \$ 140.00

KEYWORDS:

Analog neural computing, memristive systems, neuromorphic circuits, in-memory computing, bio-inspired computing, brain-inspired circuits, nonlinear circuits, spiking neural networks, memristor array computing, AI hardware, edge-AI.



www.riverpublishers.com
marketing@riverpublishers.com