



electronics



Special Issue Reprint

Semiconductor Memory Devices for Hardware-Driven Neuromorphic Systems

Edited By:

Seongjae Cho

[mdpi.com/books/pdfview/book/4351](https://www.mdpi.com/books/pdfview/book/4351)

ISBN 978-3-0365-1734-6 (hardback)

ISBN 978-3-0365-1733-9 (PDF)



This book aims to convey the most recent progress in hardware-driven neuromorphic systems based on semiconductor memory technologies. Machine learning systems and various types of artificial neural networks to realize the learning process have mainly focused on software technologies. Tremendous advances have been made, particularly in the area of data inference and recognition, in which humans have great superiority compared to conventional computers. In order to more effectively mimic our way of thinking in a further hardware sense, more synapse-like components in terms of integration density, completeness in realizing biological synaptic behaviors, and most importantly, energy-efficient operation capability, should be prepared. For higher resemblance with the biological nervous system, future developments ought to take power consumption into account and foster revolutions at the device level, which can be realized by memory technologies. This book consists of seven articles in which most recent research findings on neuromorphic systems are reported in the highlights of various memory devices and architectures. Synaptic devices and their behaviors, many-core neuromorphic platforms in close relation with memory, novel materials enabling the low-power synaptic operations based on memory devices are studied, along with evaluations and applications. Some of them can be practically realized due to high Si processing and structure compatibility with contemporary semiconductor memory technologies in production, which provides perspectives of neuromorphic chips for mass production.



Order Your Print Copy

Print copies (170x244mm, Pbk) can be ordered at:

www.mdpi.com/books/pdfview/book/4351

MDPI Books offers quality open access book publishing to promote the exchange of ideas and knowledge in a globalized world. MDPI Books encompasses all the benefits of open access – high availability and visibility, as well as wide and rapid dissemination. With MDPI Books, you can complement the digital version of your work with a high quality printed counterpart.



Open Access

Your scholarly work is accessible worldwide without any restrictions. All authors retain the copyright for their work distributed under the terms of the Creative Commons Attribution License.



Author Focus

Authors and editors profit from MDPI's over two decades of experience in open access publishing, our customized personal support throughout the entire publication process, and competitive processing charges as well as unique contributor discounts on book purchases.



High Quality & Rapid Publication

MDPI ensures a thorough review for all published items and provides a fast publication procedure. State-of-the-art research and time-sensitive topics are released with a minimum amount of delay.



High Visibility

Due to our global network and well-known channel partners, we ensure maximum visibility and broad dissemination. Title information of books is sent to international indexing databases and archives, such as the Directory of Open Access Books (DOAB), and the Verzeichnis lieferbarer Bücher (VLB).



Print on Demand and Multiple Formats

MDPI Books are available for purchase and to read online at any time. Our print-on-demand service offers a sustainable, cost-effective and fast way to publish MDPI Books printed versions.