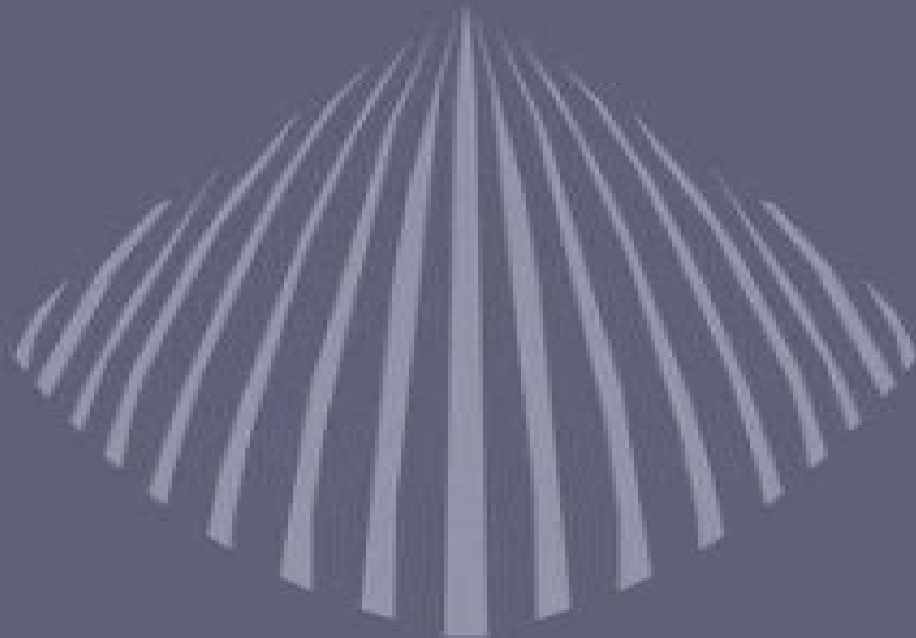


# **Smart Adaptive Systems on Silicon**

Maurizio Valle (Ed.)



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# Smart Adaptive Systems On Silicon

**Lei Huang**



## **Smart Adaptive Systems On Silicon:**

*Smart Adaptive Systems on Silicon* Maurizio Valle, 2013-06-05 Intelligent smart systems have become common practice in many engineering applications On the other hand current low cost standard CMOS technology and future foreseeable developments makes available enormous potentialities The next breakthrough will be the design and development of smart adaptive systems on silicon i e very power and highly size efficient complete systems i e sensing computing and actuating actions with intelligence on board on a single silicon die Smart adaptive systems on silicon will be able to adapt autonomously to the changing environment and will be able to implement intelligent behaviour and both perceptual and cognitive tasks At last they will communicate through wireless channels they will be battery supplied or remote powered via inductive coupling and they will be ubiquitous in our every day life Although many books deal with research and engineering topics i e algorithms technology implementations etc few of them try to bridge the gap between them and to address the issues related to feasibility reliability and applications *Smart Adaptive Systems on Silicon* though not exhaustive tries to fill this gap and to give answers mainly to the feasibility and reliability issues *Smart Adaptive Systems on Silicon* mainly focuses on the analog and mixed mode implementation on silicon because this approach is amenable of achieving impressive energy and size efficiency Moreover analog systems can be more easily interfaced with sensing and actuating devices **Smart**

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recent research results but as a practical guide for experts from other areas and industrial users interested in building solutions to their problems using intelligent techniques One of the main issues covered is an attempt to answer the question of how to select and or combine suitable intelligent techniques from a large pool of potential solutions Another attractive feature of the book is that it brings together experts from neural network fuzzy machine learning evolutionary and hybrid systems communities who will provide their views on how these different intelligent technologies have contributed and will contribute to creation of smart adaptive systems of the future

*Smart CMOS Image Sensors and Applications* Jun Ohta, 2020-05-12 Revised and expanded for this new edition Smart CMOS Image Sensors and Applications Second Edition is the only book available devoted to smart CMOS image sensors and applications The book describes the fundamentals of CMOS image sensors and optoelectronic device physics and introduces typical CMOS image sensor structures such as the active pixel sensor APS Also included are the functions and materials of smart CMOS image sensors and present examples of smart imaging Various applications of smart CMOS image sensors are also discussed Several appendices supply a range of information on constants illuminance MOSFET characteristics and optical resolution Expansion of smart materials smart imaging and applications including biotechnology and optical wireless communication are included Features Covers the fundamentals and applications including smart materials smart imaging and various applications Includes comprehensive references Discusses a wide variety of applications of smart CMOS image sensors including biotechnology and optical wireless communication Revised and expanded to include the state of the art of smart image sensors

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*Smart Electronic Systems* Li-Rong Zheng, Hannu Tenhunen, Zhuo Zou, 2018-09-06 Unique in focusing on both organic and inorganic materials from a system point of view this text offers a complete overview of printed electronics integrated with classical silicon electronics Following an introduction to the topic the book discusses the materials and processes required for printed

electronics covering conducting semiconducting and insulating materials as well as various substrates such as paper and plastics Subsequent chapters describe the various building blocks for printed electronics while the final part describes the resulting novel applications and technologies including wearable electronics RFID tags and flexible circuit boards Suitable for a broad target group both industrial and academic ranging from mechanical engineers to ink developers and from chemists to engineers

*Smart MemS and Sensor Systems* Elena Gaura, Robert M. Newman, 2006 In recent years MEMS have revolutionized the semiconductor industry with sensors being a particularly buoyant sector Smart MEMS and Sensor Systems presents readers with the means to understand evaluate appreciate and participate in the development of the field from a unique systems perspective The combination of MEMS and integrated intelligence has been put forward as a disruptive technology The full potential of this technology is only evident when it is used to construct very large pervasive sensing systems The book explores the many different technologies needed to build such systems and integrates knowledge from three different domains MEMS technology sensor system electronics and pervasive computing science Throughout the book a top down design perspective is taken be it for the development of a single smart sensor or that of adaptive ad hoc networks of millions of sensors For experts in any of the domains named above the book provides the context for their MEMS based design work and an understanding of the role the other domains play For the generalist either in engineering or computing or the technology manager the underpinning knowledge is provided which can inform specialist decision making

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