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Complementary Metal Oxide Semiconductor - Kim Ho Yeap 2018-08-01

In this book, Complementary Metal Oxide Semiconductor (CMOS) devices are extensively discussed. The topics encompass the technology advancement in the fabrication process of metal oxide semiconductor field effect transistors or MOSFETs (which are the fundamental building blocks of CMOS devices) and the applications of transistors in the present and future eras. The book is intended to provide information on the latest technology development of CMOS to researchers, physicists, as well as engineers working in the field of semiconductor transistor manufacturing and design.

Advanced Microsystems for Automotive Applications 2010 - Gereon Meyer 2011-02-11
The automobile of the future has to meet two

primary requirements: the super-efficient use of energy and power and the ultra-safe transportation of people and goods. Both features are increasingly enabled by smart, adaptive and context aware information and communication technologies (ICT), electrical or electronic components and systems rather than solely by the mechanical means of classic automotive engineering. The most advanced example of this trend is the electrified vehicle combining a full electric powertrain with completely electronic controls like smart power and energy managers, step-by-wire technologies and intelligent networking capabilities allowing all providers and consumers of energy to work in efficient synergy. In the course of this year the first series production electric vehicles will finally come into the market. Automakers – unsure if electric

vehicles would really sell – have long time been hesitant to make the necessary changes of their product portfolios. In the coincidence of economic crisis and growing concerns about global warming and energy security companies and public authorities jointly succeeded to overcome many obstacles on the path towards electrification.

Natural Language Processing for Electronic Design Automation - Mathias Soeken 2020-08-31

This book describes approaches for integrating more automation to the early stages of EDA design flows. Readers will learn how natural language processing techniques can be utilized during early design stages, in order to automate the requirements engineering process and the translation of natural language specifications into formal descriptions. This book brings together leading experts to explain the state-of-the-art in natural language processing, enabling designers to integrate these techniques into algorithms, through existing frameworks.

Advanced Microsystems for Automotive Applications 2018 - Jörg Dubbert 2018-08-17

This volume of the Lecture Notes in Mobility series contains papers written by speakers at the 22nd International Forum on Advanced Microsystems for Automotive Applications (AMAA 2018) "Smart Systems for Clean, Safe and Shared Road Vehicles" that was held in Berlin, Germany in September 2018. The authors report about recent breakthroughs in electric and

electronic components and systems, driver assistance, vehicle automation and electrification as well as data, clouds and machine learning.

Furthermore, innovation aspects and impacts of connected and automated driving are covered.

The target audience primarily comprises research experts and practitioners in industry and academia, but the book may also be beneficial for graduate students alike.

Handbook of Research on Embedded Systems Design - Bagnato, Alessandra 2014-06-30

As real-time and integrated systems become increasingly sophisticated, issues related to development life cycles, non-recurring engineering costs, and poor synergy between development teams will arise. The Handbook of Research on Embedded Systems Design provides insights from the computer science community on integrated systems research projects taking place in the European region. This premier references work takes a look at the diverse range of design principles covered by these projects, from specification at high abstraction levels using standards such as UML and related profiles to intermediate design phases. This work will be invaluable to designers of embedded software, academicians, students, practitioners, professionals, and researchers working in the computer science industry.

Advanced Microsystems for Automotive Applications 2008 - Jürgen Valldorf 2008-04-16

With the total number of vehicles steadily increasing and soon approaching one billion, the world is facing serious challenges in terms of both safety of road transport and sustainability.

Consequently the two major persistent issues for the automotive industry are improved safety and reduced emissions. The estimated number of road fatalities is about one million per year. Fast growth of mobility in the developing world and an accelerated urbanisation pose high demands to the automotive industry. Thanks to smart systems anticipating dangerous traffic situations road fatalities will have dropped by more than 30% from 2001 to 2010. Beyond intensive stock-rearing – with 30% the major contributor to climate change – road traffic is one of the main sectors contributing to climate change: exhaust gases from vehicle engines account for about 20% of the greenhouse gas emissions. Car industry is bearing this challenge and enormous progress has been achieved particularly during the last decade.

Electronic Engine Control Technologies - Ronald K Jurgen 2004-03-13

In this second edition of *Electronic Engine Control Technologies*, the latest advances and technologies of electronic engine control are explored in a collection of 99 technical papers, none of which were included in the book's first edition. Editor Ronald K. Jurgen offers an informative introduction, "Neural Networks on the

Rise," clearly explaining the book's overall format and layout. The book then closely examines the many areas surrounding electronic engine control technologies, including: specific engine controls, diagnostics, engine modeling, innovative solid-state hardware and software systems, communication techniques for engine control, neural network applications, and the future of electronic engine controls.

Advanced Microsystems for Automotive

Applications 2009 - Gereon Meyer 2009-04-15

The current economic crisis is cutting the automotive sector to the quick. Public authorities worldwide are now faced with requests for providing loans and accepting guarantees and even for putting large automotive companies under state control. Assessing the long-term benefits of such help and weighing the needs of different sectors against each other poses a major challenge for the national policies. Given the upcoming change of customer preferences and state regulations towards safety, sustainability and comfort of a car, the automotive industry is particularly called to prove its ability to make necessary innovations available in order to accelerate its pace to come out of the crisis. Consequently the Green Car is assuming a prominent role in the current debate. Various power train concepts are currently under discussion for the Green Car including extremely optimised internal combustion engines, hybrid

drives and battery-electric traction. Electrical cars are the most appealing option because they are free of local emissions and provide the opportunity to use primary energy from sources other than crude oil for transport. Well to wheel analysis show that their green-house gas emissions can be rated negligibly small if electricity from renewable sources like wind and solar is used.

Robotic Vehicles: Systems and Technology - Tian Seng Ng 2021-03-06

This book introduces the technological innovations of robotic vehicles. It presents the concepts required for self-driving cars on the road. Besides, readers can gain invaluable knowledge in the construction, programming, and control of the six-legged robot. The book also presents the controllers and aerodynamics of several different types of rotorcrafts. It includes the simulation and flight of the various kinds of rotor-propelled air vehicles under each of their different aerodynamics environment. The book is suitable for academia, educators, students, and researchers who are interested in autonomous vehicles, robotics, and rotor-propelled vehicles.

Bridging Theory Into Practice - Infineon

Technologies AG 2006-09-01

Advanced Microsystems for Automotive

Applications Yearbook 2002 - Sven Krueger

2012-02-02

Microsystems are an important success factor in the automobile industry. In order to fulfil the customers requests for safety convenience and vehicle economy, and to satisfy environmental requirements, microsystems are becoming indispensable. Thus a large number of microsystem applications came into the discussion. With the international conference AMAA 2002, VDI/VDE-IT provides a platform for the discussion of all MST relevant components for automotive applications. The conference proceedings gather the papers by authors from automobile suppliers and manufacturers.

Advanced Microsystems for Automotive Applications 2005 - Jürgen Valldorf 2006-01-17

Since 1995 the annual international forum on Advanced Microsystems for Automotive Applications (AMAA) has been held in Berlin. The event offers a unique opportunity for microsystems component developers, system suppliers and car manufacturers to show and to discuss competing technological approaches of microsystems based solutions in vehicles. The book accompanying the event has demonstrated to be an efficient instrument for the diffusion of new concepts and technology results. The present volume including the papers of the AMAA 2005 gives an overview on the state-of-the-art and outlines imminent and mid-term R&D perspectives. The 2005 publication reflects – as in the past – the current state of discussions

within industry. More than the previous publications, the AMAA 2005 "goes back" to the technological requirements and indispensable developments for fulfilling the market needs. The large part of contributions dealing with sensors as well as "sensor technologies and data fusion" is exemplary for this tendency. In this context a paradigm shift can be stated. In the past the development focused predominantly on the detection and processing of single parameters originating from single sensors. Today, the challenge increasingly consists in getting information of complex situations with a series of variables from different sensors and in evaluating this information. Smart integrated devices using the information deriving from the various sensor sources will be able to describe and assess a traffic situation or behaviour much faster and more reliable than a human being might be able to do. Additional information is available on www.amaa.de

Distributed Embedded Systems Engineering - 2004

Automotive Global Value Chain - Wilson Kia Onn Wong 2017-08-09

Today, some suppliers have grown increasingly powerful and in certain cases, earn revenues that rival or even exceed that of their automaker clients. In the pre-globalisation period, automakers wielded absolute power over their

significantly smaller suppliers. This book reveals the upending of this relationship, with the gradual shift in the balance of power from automakers to their suppliers in this era of globalisation. The book examines how suppliers in the global tyres, seats, constant velocity joints (hereafter 'CVJs'), braking systems and automotive semiconductor industries have evolved into powerful oligopolies through a mix of acquisition and organic growth strategies. It also highlights how joint ventures could be strategically deployed as springboards to acquisition, as they enable firms to familiarise themselves with their partners' markets and operations. Moreover, the book analyses the disruption stirred by the entry of well-resourced technology titans into this industry and their inevitable clash with the traditional incumbents. This book is an invaluable reference for anyone interested in learning more about the automakers' and now their suppliers' relentless quest to create market-dominating intelligent driving systems.

Bridging Theory Into Practice - 2008

Advanced Microsystems for Automotive Applications 2003 - Jürgen Valldorf 2007-12-22

Microsystems are an important factor that contribute to an automobile model's success. To meet the customer's desire for safety, convenience and vehicle economy, and to satisfy environmental standards, microsystems play a critical factor. Microsystems applications (MST)

have already resulted in improved performance and better value for money. But the advances implemented reveal only the beginning of a revolution in the vehicle sector, which aims at a complete transition from the mechanically driven automobile system to a mechanically based but ICT-driven system. The selected contributions from AMAA 2003 treat safety (both preventive and protective), powertrain (online measurement and control of engine and transmission subsystems), comfort and HMI (systems to enhance the comfort of passengers and human machine interface issues), and networked Vehicle (all aspects of intra car systems and ambient communication networks).

Reliability of High-Power Mechatronic Systems 2 - Abdelkhalak El Hami 2017-10-17

This second volume of a series dedicated to the reliability of high-power mechatronic systems focuses specifically on issues, testing and analysis in automotive and aerospace applications. In the search to improve industrial competitiveness, the development of methods and tools for the design of products is especially pertinent in the context of cost reduction. This book proposes new methods that simultaneously allow for a quicker design of future mechatronic devices in the automotive and aerospace industries while guaranteeing their increased reliability. The reliability of these critical elements is further validated digitally through new multi-

physical and probabilistic models that could ultimately lead to new design standards and reliable forecasting. Presents a methodological guide that demonstrates the reliability of fractured mechatronic components and devices Includes numerical and statistical models to optimize the reliability of the product architecture Develops a methodology to characterize critical elements at the earliest stage in their development

Languages, Design Methods, and Tools for Electronic System Design - Frank Oppenheimer 2015-12-11

This book brings together a selection of the best papers from the seventeenth edition of the Forum on specification and Design Languages

Conference (FDL), which took place on October 14-16, 2014, in Munich, Germany. FDL is a well-established international forum devoted to dissemination of research results, practical experiences and new ideas in the application of specification, design and verification languages to the design, modeling and verification of integrated circuits, complex hardware/software embedded systems, and mixed-technology systems.

Mobile Virtual Synchronous Machine for Vehicle-to-Grid Applications - Christopher Pelczar 2012-03-23

The Mobile VISMA is a power electronics device for V2G applications which behaves like an electromechanical synchronous machine and offers the same beneficial properties to the power

network, increasing inertia in the system, stabilizing the grid voltage, and providing a short-circuit current in case of grid faults. The VISMA performs a real-time simulation of a synchronous machine and calculates the phase currents that an electromagnetic synchronous machine would produce under the same local grid conditions. These currents are fed into the grid using a current-controlled inverter. In this dissertation the requirements for a machine model suitable for the VISMA are set, and a mathematical model suitable for use in the VISMA algorithm is found and implemented. A new hardware architecture for the Mobile VISMA based on microcontroller and FPGA technologies is presented. The new architecture allows the reduction of the size and cost of the VISMA, making it suitable for installation in electric vehicles. A simulation model of the inverter hardware and hysteresis current controller is created and validated by experiment. The verified hardware model is then used to design a new type of PWM-based current controller. The performance of the hysteresis- and PWM-based current controllers is evaluated and compared. Finally, the behavior of the VISMA during power network faults is examined, and it is shown that the VISMA, inverter hardware, and current controllers are capable of fault ride-through and can support the power network during faults.

Polymeric Nanocomposite Materials for Sensor

Applications - Jyotishkumar Parameswaranpillai
2022-11-25

Polymeric Nanocomposite Materials for Sensor Applications covers all the important aspects of polymer composite-based sensors, from fundamentals to fabrication. Key chapters focus on the materials used for sensors and their characterization, properties, fabrication and classification. Various applications of polymeric sensors are also discussed in detail. This book is an essential reference resource, not only for the materials scientist, but also for researchers, academics, technologists and students working in the sensor technology industry. In modern society, sensors are used in electronics, food packaging, construction, automobile and aerospace applications. The advancement of smart technologies has increased their usage because of their affordability and reliability. Among the materials used for the fabrication of sensors, polymer composites are the most preferred because they are lightweight, versatile, low cost and easy to process. Discusses fundamentals, classification, recent progress, and the current status of polymer nanocomposites in sensing applications Includes coverage of materials and their application-specific modeling Addresses safety issues and environmental degradation Includes broad coverage of a wide range of engineering applications, including food, safety, healthcare, automotive and aerospace

Covers pressure sensors, gas sensors, pH sensors, ion selective sensors, alcohol sensors, humidity sensors, aromatic small molecule sensors, enzyme sensors, immunosensors, strain sensors and electrochemical sensors

Advanced Microsystems for Automotive

Applications 2015 - Tim Schulze 2015-06-30

This edited volume presents the proceedings of the AMAA 2015 conference, Berlin, Germany.

The topical focus of the 2015 conference lies on smart systems for green and automated driving.

The automobile of the future has to respond to two major trends, the electrification of the drivetrain, and the automation of the transportation system. These trends will not only lead to greener and safer driving but re-define the concept of the car completely, particularly if they interact with each other in a synergetic way as for autonomous parking and charging, self-driving shuttles or mobile robots. Key functionalities like environment perception are enabled by electronic components and systems, sensors and actuators, communication nodes, cognitive systems and smart systems integration. The book will be a valuable read for research experts and professionals in the automotive industry but the book may also be beneficial for graduate students.

Plunkett's Engineering & Research Industry

Almanac 2006: The Only Complete Guide to the Business of Research, Development and

Engineering - Jack W. Plunkett 2006-05

A complete guide to trends and leading companies in the Engineering and Research business fields, design, development and technology-based research. Includes market analysis, R&D data and several statistical tables. Nearly 400 in-depth profiles of Engineering and Research firms.

Fiber Optics Weekly Update -

Advanced Microsystems for Automotive

Applications 2014 - Jan Fischer-Wolfarth

2014-06-17

The automobile is going through the biggest transformation in its history. Automation and electrification of vehicles are expected to enable safer and cleaner mobility. The prospects and requirements of the future automobile affect innovations in major technology fields like driver assistance systems, vehicle networking and drivetrain development. Smart systems such as adaptive ICT components and MEMS devices, novel network architectures, integrated sensor systems, intelligent interfaces and functional materials form the basis of these features and permit their successful and synergetic integration. It has been the mission of the International Forum on Advanced Microsystems for Automotive Applications (AMAA) for more than fifteen years to detect novel trends and to discuss the technological implications from early on.

Therefore, the topic of the AMAA 2014 will be “Smart Systems for Safe, Clean and Automated Vehicles”. This book contains peer-reviewed papers written by leading engineers and researchers which all address the ongoing research and novel developments in the field.

Giant Magnetoresistance (GMR) Sensors - Candid Reig 2013-12-06

Since the discovery of the giant magnetoresistance (GMR) effect in 1988, spintronics has been presented as a new technology paradigm, awarded by the Nobel Prize in Physics in 2007. Initially used in read heads of hard disk drives, and while disputing a piece of the market to the flash memories, GMR devices have broadened their range of usage by growing towards magnetic field sensing applications in a huge range of scenarios. Potential applications at the time of the discovery have become real in the last two decades. Definitely, GMR was born to stand. In this sense, selected successful approaches of GMR based sensors in different applications: space, automotive, microelectronics, biotechnology ... are collected in the present book. While keeping a practical orientation, the fundamentals as well as the current trends and challenges of this technology are also analyzed. In this sense, state of the art contributions from academy and industry can be found through the contents. This book can be used by starting researchers, postgraduate students and

multidisciplinary scientists in order to have a reference text in this topical fascinating field.

Advanced Microsystems for Automotive Applications 2007 - Jürgen Valldorf 2007-08-17

From the beginnings of the International Forum on Advanced Microsystems for Automotive Application (AMAA) to the recent 11th AMAA Forum, enormous progress has been made in reducing casualties, emissions and in increasing comfort and performance. In many cases Microsystems provided key functions for this progress. This publication is a cut-out of new technological priorities in the area of microsystems-based smart devices, taking a mid-term perspective of future smart systems applications in automobiles.

Advanced Microsystems for Automotive Applications 2011 - Gereon Meyer 2011-06-29

Fundamental transformations are imminent for the automobile today: propulsion technologies are going to shift from combustion engines to electric motors; cars and roads will soon be as safe and convenient as never before; and traffic will flow increasingly efficient. Many of these advancements are due to innovative information and communication technologies, controls and smart systems, both in the vehicle and at its interfaces with the systems for power supply, mobility and data communication. The papers published in this book are selected from the submissions to the 15th International Forum on

Advanced Microsystems for Automotive Applications (AMAA 2011) “Smart Systems for Electric, Safe and Networked Mobility”. They cover components, architectures and smart systems enabling the following functionalities: electric driving, safe cars and roads, and connected vehicles. Additional information is available at www.amaa.de

Advanced Microsystems for Automotive

Applications 2000 - Sven Krüger 2012-12-06

Microsystems are an important success factor in the automobile industry. In order to fulfil the customers' requests for safety convenience and vehicle economy, and to satisfy environmental requirements, microsystems are becoming indispensable. Thus a large number of microsystem applications came into the discussion. With the international conference AMAA 2000, VDI/VDE-IT provides a platform for the discussion of all MST relevant components for automotive applications. The conference proceedings gather the papers by authors from automobile suppliers and manufacturers.

Handbook of Automotive Power Electronics and Motor Drives - Ali Emadi 2017-12-19

Initially, the only electric loads encountered in an automobile were for lighting and the starter motor. Today, demands on performance, safety, emissions, comfort, convenience, entertainment, and communications have seen the working-in of seemingly innumerable advanced electronic

devices. Consequently, vehicle electric systems require larger capacities and more complex configurations to deal with these demands. Covering applications in conventional, hybrid-electric, and electric vehicles, the Handbook of Automotive Power Electronics and Motor Drives provides a comprehensive reference for automotive electrical systems. This authoritative handbook features contributions from an outstanding international panel of experts from industry and academia, highlighting existing and emerging technologies. Divided into five parts, the Handbook of Automotive Power Electronics and Motor Drives offers an overview of automotive power systems, discusses semiconductor devices, sensors, and other components, explains different power electronic converters, examines electric machines and associated drives, and details various advanced electrical loads as well as battery technology for automobile applications. As we seek to answer the call for safer, more efficient, and lower-emission vehicles from regulators and consumer insistence on better performance, comfort, and entertainment, the technologies outlined in this book are vital for engineering advanced vehicles that will satisfy these criteria.

Advanced Microsystems for Automotive

Applications 2006 - Jürgen Valldorf 2006-07-31

This stimulating and inspiring book explores the present and anticipates the future of Automotive

Microsystems. The past decade has seen enormous progress in the use of automotive microsystems; their effect has been dramatic in reducing casualties, controlling emissions and increasing passenger comfort and vehicle performance. The book is a snapshot of new technological priorities in microsystems-based smart devices that offers a mid-term perspective on coming smart systems applications in automobiles.

Technology Guide - Hans-Jörg Bullinger

2009-05-10

Use this technology guide to find descriptions of today's most essential global technologies. Clearly structured and simply explained, the book's reference format invites even the casual reader to explore the stimulating innovative ideas it contains.

Plunkett's Infotech Industry Almanac 2006 -

Jack W. Plunkett 2006

Plunkett's InfoTech Industry Almanac presents a complete analysis of the technology business, including the convergence of hardware, software, entertainment and telecommunications. This market research tool includes our analysis of the major trends affecting the industry, from the rebound of the global PC and server market, to consumer and enterprise software, to super computers, open systems such as Linux, web services and network equipment. In addition, we provide major statistical tables covering the

industry, from computer sector revenues to broadband subscribers to semiconductor industry production. No other source provides this book's easy-to-understand comparisons of growth, expenditures, technologies, imports/exports, corporations, research and other vital subjects. The corporate profile section provides in-depth, one-page profiles on each of the top 500 InfoTech companies. We have used our massive databases to provide you with unique, objective analysis of the largest and most exciting companies in: Computer Hardware, Computer Software, Internet Services, E-Commerce, Networking, Semiconductors, Memory, Storage, Information Management and Data Processing. We've been working harder than ever to gather data on all the latest trends in information technology. Our research effort includes an exhaustive study of new technologies and discussions with experts at dozens of innovative tech companies. Purchasers of the printed book or PDF version may receive a free CD-ROM database of the corporate profiles, enabling export of vital corporate data for mail merge and other uses.

Plunkett's InfoTech Industry Almanac 2007 (E-

Book) - Jack W. Plunkett 2007-02

Market research guide to the infotech industry a tool for strategic planning, competitive intelligence, employment searches or financial research. Contains trends, statistical tables, and

an industry glossary. Includes one page profiles of infotech industry firms, which provides data such as addresses, phone numbers, and executive names.

Decision Support Systems and Industrial IoT in Smart Grid, Factories, and Cities - Butun, Ismail
2021-06-25

Internet of things (IoT) is an emerging research field that is rapidly becoming an important part of our everyday lives including home automation, smart buildings, smart things, and more. This is due to cheap, efficient, and wirelessly-enabled circuit boards that are enabling the functions of remote sensing/actuating, decentralization, autonomy, and other essential functions.

Moreover, with the advancements in embedded artificial intelligence, these devices are becoming more self-aware and autonomous, hence making decisions themselves. Current research is devoted to the understanding of how decision support systems are integrated into industrial IoT.

Decision Support Systems and Industrial IoT in Smart Grid, Factories, and Cities presents the internet of things and its place during the technological revolution, which is taking place now to bring us a better, sustainable, automated, and safer world. This book also covers the challenges being faced such as relations and implications of IoT with existing communication and networking technologies; applications like practical use-case scenarios from the real world

including smart cities, buildings, and grids; and topics such as cyber security, user privacy, data ownership, and information handling related to IoT networks. Additionally, this book focuses on the future applications, trends, and potential benefits of this new discipline. This book is essential for electrical engineers, computer engineers, researchers in IoT, security, and smart cities, along with practitioners, researchers, academicians, and students interested in all aspects of industrial IoT and its applications.

Semiconductors - Werner Klingenstein
2004-05-31

Providing a comprehensive insight into today's standard technologies, this book covers the vast range of semiconductor products and their possible applications. The material ranges from the basics of conventional semiconductor technology through standard, power and opto semiconductors, to highly complex memories and microcontrollers and the special devices and modules for smartcards, automotive electronics, consumer electronics and telecommunications. Several chapters are devoted to the production of semiconductor components and their use in electronic systems, as well as to quality management. The book offers both students and users a unique overview of technology, architecture and areas of application of semiconductor products. The enclosed CD-ROM includes data on a multitude of products.

Artificial Intelligence for Digitising Industry –

Applications - Ovidiu Vermesan 2022-09-01

This book provides in-depth insights into use cases implementing artificial intelligence (AI) applications at the edge. It covers new ideas, concepts, research, and innovation to enable the development and deployment of AI, the industrial internet of things (IIoT), edge computing, and digital twin technologies in industrial environments. The work is based on the research results and activities of the AI4DI project, including an overview of industrial use cases, research, technological innovation, validation, and deployment. This book's sections build on the research, development, and innovative ideas elaborated for applications in five industries: automotive, semiconductor, industrial machinery, food and beverage, and transportation. The articles included under each of these five industrial sectors discuss AI-based methods, techniques, models, algorithms, and supporting technologies, such as IIoT, edge computing, digital twins, collaborative robots, silicon-born AI circuit concepts, neuromorphic architectures, and augmented intelligence, that are anticipating the development of Industry 5.0. Automotive applications cover use cases addressing AI-based solutions for inbound logistics and assembly process optimisation, autonomous reconfigurable battery systems, virtual AI training platforms for robot learning, autonomous mobile robotic agents,

and predictive maintenance for machines on the level of a digital twin. AI-based technologies and applications in the semiconductor manufacturing industry address use cases related to AI-based failure modes and effects analysis assistants, neural networks for predicting critical 3D dimensions in MEMS inertial sensors, machine vision systems developed in the wafer inspection production line, semiconductor wafer fault classifications, automatic inspection of scanning electron microscope cross-section images for technology verification, anomaly detection on wire bond process trace data, and optical inspection. The use cases presented for machinery and industrial equipment industry applications cover topics related to wood machinery, with the perception of the surrounding environment and intelligent robot applications. AI, IIoT, and robotics solutions are highlighted for the food and beverage industry, presenting use cases addressing novel AI-based environmental monitoring; autonomous environment-aware, quality control systems for Champagne production; and production process optimisation and predictive maintenance for soybeans manufacturing. For the transportation sector, the use cases presented cover the mobility-as-a-service development of AI-based fleet management for supporting multimodal transport. This book highlights the significant technological challenges that AI application developments in

industrial sectors are facing, presenting several research challenges and open issues that should guide future development for evolution towards an environment-friendly Industry 5.0. The challenges presented for AI-based applications in industrial environments include issues related to complexity, multidisciplinary and heterogeneity, convergence of AI with other technologies, energy consumption and efficiency, knowledge acquisition, reasoning with limited data, fusion of heterogeneous data, availability of reliable data sets, verification, validation, and testing for decision-making processes.

Microwave Circuits for 24 GHz Automotive Radar in Silicon-based Technologies - Vadim Issakov

2010-08-05

There are continuous efforts focussed on improving road traffic safety worldwide. Numerous vehicle safety features have been invented and standardized over the past decades. Particularly interesting are the driver assistance systems, since these can considerably reduce the number of accidents by supporting drivers' perception of their surroundings. Many driver assistance features rely on radar-based sensors. Nowadays the commercially available automotive front-end sensors are comprised of discrete components, thus making the radar modules highly-priced and suitable for integration only in premium class vehicles. Realization of low-cost radar front-end circuits would enable their implementation in

inexpensive economy cars, considerably contributing to traffic safety. Cost reduction requires high-level integration of the microwave front-end circuitry, specifically analog and digital circuit blocks co-located on a single chip. Recent developments of silicon-based technologies, e.g. CMOS and SiGe:C bipolar, make them suitable for realization of microwave sensors. Additionally, these technologies offer the necessary integration capability. However, the required output power and temperature stability, necessary for automotive radar sensor products, have not yet been achieved in standard digital CMOS technologies. On the other hand, SiGe bipolar technology offers excellent high-frequency characteristics and necessary output power for automotive applications, but has lower potential for realization of digital blocks than CMOS.

Advanced Microsystems for Automotive

Applications 2016 - Tim Schulze 2016-09-14

This book contains the papers presented at the 20th anniversary edition of the AMAA conference held in Brussels, Belgium in 2016. The theme of the conference was "Smart Systems for the Automobile of the Future". The automobile is currently being reshaped at unprecedented pace. Automation and electrification are the two dominant megatrends which dramatically change the choice and design of components, systems, vehicular architectures and ultimately the way we use cars in the coming decades. Novel E/E

architectures, vehicular connectivity and cloud services will be key to extending the perception and decision-making horizons of automated vehicles, to enable cooperative functions and a seamless digital user experience. The AMAA's ongoing mission to detect novel trends in automotive ICT, electronics and smart systems and to discuss the technological implications is once again reflected in this volume. The book will be a valuable read for research experts and professionals in the automotive and smart systems industry but the book may also be beneficial for graduate students.

Advanced Microsystems for Automotive

Applications 2001 - Sven Krueger 2012-12-06

Microsystems are an important success factor in the automobile industry. In order to fulfil the customers' requests for safety convenience and vehicle economy, and to satisfy environmental requirements, microsystems are becoming indispensable. Thus a large number of microsystem applications came into the discussion. With the international conference AMAA 2001, VDI/VDE-IT provides a platform for the discussion of all MST relevant components for automotive applications. The conference proceedings gather the papers by authors from automobile suppliers and manufacturers.

Plunkett's Engineering & Research Industry

Almanac 2007 - Jack W. Plunkett 2007-05

This reference book is a complete guide to the

trends and leading companies in the engineering, research, design, innovation and development business fields: those firms that are dominant in engineering-based design and development, as well leaders in technology-based research and development. We have included companies that are making significant investments in research and development via as many disciplines as possible, whether that research is being funded by internal investment, by fees received from clients or by fees collected from government agencies. In this carefully-researched volume, you'll get all of the data you need on the American Engineering & Research Industry, including: engineering market analysis, complete industry basics, trends, research trends, patents, intellectual property, funding, research and development data, growth companies, investments, emerging technologies, CAD, CAE, CAM, and more. The book also contains major statistical tables covering everything from total U.S. R&D expenditures to the total number of scientists working in various disciplines, to amount of U.S. government grants for research. In addition, you'll get expertly written profiles of nearly 400 top Engineering and Research firms - the largest, most successful corporations in all facets of Engineering and Research, all cross-indexed by location, size and type of business. These corporate profiles include contact names, addresses, Internet addresses, fax numbers, toll-

free numbers, plus growth and hiring plans, finances, research, marketing, technology, acquisitions and much more. This book will put the entire Engineering and Research industry in your hands. Purchasers of either the book or PDF

version can receive a free copy of the company profiles database on CD-ROM, enabling key word search and export of key information, addresses, phone numbers and executive names with titles for every company profiled.