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Intelligent and Connected Vehicle Security - Jiajia Liu 2022-09-01 Intelligent and Connected Vehicles (ICVs) are moving into the mainstream of the worldwide automotive industry. A lot of advanced technologies, like artificial intelligence, big data, millimeter wave radar, LiDAR and high-definition camera based real-time environmental perception, etc., are increasingly being applied in ICVs, making them more intelligent and connected with devices surrounding the vehicles. However, although the versatile connection and information exchange among ICVs, external devices and human beings provides vehicles with a better and faster perception of surrounding environments and a better driving experience for users, they also create a series of intrusion portals for malicious attackers which threaten the safety of drivers and passengers.

This book is concerned with the recognition and protection against such threats.Security for ICVs includes information across the fields of automobile engineering, artificial intelligence, computer, microelectronics, automatic control, communication technology, big data, edge/cloud computing and others. This book comprehensively and systematically introduces security threats to ICVs coming from automotive technology development, on-board sensors, vehicle networking, automobile communications, intelligent transportation, big data, cloud computing, etc. Then, through discussion of some typical automobile cyber-attack cases studies, readers will gain a deeper understanding of the working principle of ICVs, so that they can test vehicles more objectively and scientifically. In this way they will find the existence of vulnerabilities and security risks and take the corresponding protective measures to prevent malicious attacks.

Scientific and Technical Aerospace Reports - 1990-06

Antenna Arrays and Automotive Applications - Victor Rabinovich 2012-08-09

This book throws a lifeline to designers wading through mounds of antenna array patents looking for the most suitable systems for their projects. Drastically reducing the research time required to locate solutions to the latest challenges in automotive communications, it sorts and systematizes material on cutting-edge antenna arrays that feature multi-element communication systems with enormous potential for the automotive industry. These new systems promise to make driving safer and more efficient, opening up myriad applications, including vehicle-to-vehicle traffic that prevents collisions, automatic toll collection, vehicle location and fine-tuning for cruise control systems. This book's exhaustive coverage begins with currently deployed systems, frequency ranges and key parameters. It proceeds to examine system geometry, analog and digital beam steering technology (including "smart" beams formed in noisy environments), maximizing signal-to-noise ratios, miniaturization, and base station technology that facilitates in-car connectivity while on the move. An essential guide for technicians working in a fast-developing field, this new volume will be warmly welcomed as a powerful aid in their endeavors.

High-Frequency Integrated Circuits - Sorin Voinigescu 2013-02-28

A transistor-level, design-intensive overview of high speed

and high frequency monolithic integrated circuits for wireless and broadband systems from 2 GHz to 200 GHz, this comprehensive text covers high-speed, RF, mm-wave and optical fiber circuits using nanoscale CMOS, SiGe BiCMOS and III-V technologies. Step-by-step design methodologies, end-of-chapter problems and practical simulation and design projects are provided, making this an ideal resource for senior undergraduate and graduate courses in circuit design. With an emphasis on device-circuit topology interaction and optimization, it gives circuit designers and students alike an in-depth understanding of device structures and process limitations affecting circuit performance.

Small and Short-Range Radar Systems - Gregory L. Charvat 2014-04-04

Radar Expert, Esteemed Author Gregory L. Charvat on CNN and CBSAuthor Gregory L. Charvat appeared on CNN on March 17, 2014 to discuss whether Malaysia Airlines Flight 370 might have literally flown below the radar. He appeared again on CNN on March 20, 2014 to explain the basics of radar, and he explored the hope and limitations of the technology i

Conference Proceedings - 1996

Adaptive Cruise Control - Ronald K. Jurgen 2006

Contains 63 papers covering 11 years of research on the progress and challenges in the design of Adaptive Cruise Control (ACC) systems and components. Subjects covered include: ACC sensors overview; Hybrid ACC systems; Interactive cruise control; Predictive safety systems; Brake actuation; ACC radar sensors; Vision sensors; and Miscellaneous ACC sensors.

2021 IEEE International Conference on Power Electronics, Computer Applications (ICPECA) - IEEE Staff 2021-01-22

2021 IEEE International Conference on Power, Electronics and Computer Applications (ICPECA 2021) will take place in Shenyang, China, on January 22 24, 2021 ICPECA 2021 seeks to provide a high level forum for experts, researchers, professionals, innovators and practitioners in the field of Power, Electronics and Computer Applications from industry and academia to present and discuss the wide spectrum of original and novel researches and contributions together

Fundamentals of Short-range FM Radar - Igor V. Komarov 2003

Here's a unique new resource that offers you a solid understanding of the fundamental theory, operation principles and

applications of short-range frequency modulated continuous wave (FM CW) radar. You learn how to choose the structural scheme of short-range FM radar, and determine the optimal algorithm of useful signal processing necessary for ensuring the technical characteristic of radar. Moreover, this practical reference shows you how to ensure the minimum level of radar signal parasitic amplitude, calculate modulation signal distortion, and compensate for nonlinear distortion.

Mems for Automotive and Aerospace Applications - Michael Kraft 2013-01-02

MEMS for automotive and aerospace applications reviews the use of Micro-Electro-Mechanical-Systems (MEMS) in developing solutions to the unique challenges presented by the automotive and aerospace industries. Part one explores MEMS for a variety of automotive applications. The role of MEMS in passenger safety and comfort, sensors for automotive vehicle stability control applications and automotive tire pressure monitoring systems are considered, along with pressure and flow sensors for engine management, and RF MEMS for automotive radar sensors. Part two then goes on to explore MEMS for aerospace applications, including devices for active drag reduction in aerospace applications, inertial navigation and structural health monitoring systems, and thrusters for nano- and pico-satellites. A selection of case studies are used to explore MEMS for harsh environment sensors in aerospace applications, before the book concludes by considering the use of MEMS in space exploration and exploitation. With its distinguished editors and international team of expert contributors, MEMS for automotive and aerospace applications is a key tool for MEMS manufacturers and all scientists, engineers and academics working on MEMS and intelligent systems for transportation. Chapters consider the role of MEMS in a number of automotive applications, including passenger safety and comfort, vehicle stability and control MEMS for aerospace applications are also discussed, including active drag reduction, inertial navigation and structural health monitoring systems Presents a number of case studies exploring MEMS for harsh environment sensors in aerospace

RF and Microwave Applications and Systems - Mike Golio 2018-10-03

This volume, RF and Microwave Applications and Systems, includes a wide range of articles that discuss RF and microwave

systems used for communication and radar and heating applications. Commercial, avionics, medical, and military applications are addressed. An overview of commercial communications systems is provided. Past, current, and emerging cellular systems, navigation systems, and satellite-based systems are discussed. Specific voice and data commercial systems are investigated more thoroughly in individual chapters that follow. Detailed discussions of military electronics, avionics, and radar (both military and automotive) are provided in separate chapters. A chapter focusing on FR/microwave energy used for therapeutic medicine is also provided. Systems considerations including thermal, mechanical, reliability, power management, and safety are discussed in separate chapters. Engineering processes are also explored in articles about corporate initiatives, cost modeling, and design reviews. The book closes with a discussion of the underlying physics of electromagnetic propagation and interference. In addition to new chapters on WiMAX and broadband cable, nearly every existing chapter features extensive updates and several were completely rewritten to reflect the massive changes areas such as radio navigation and electronic warfare.

The RF and Microwave Handbook - John Michael Golio 2008

Handbook of Driver Assistance Systems - Hermann Winner 2015-10-15

This fundamental work explains in detail systems for active safety and driver assistance, considering both their structure and their function. These include the well-known standard systems such as Anti-lock braking system (ABS), Electronic Stability Control (ESC) or Adaptive Cruise Control (ACC). But it includes also new systems for protecting collisions protection, for changing the lane, or for convenient parking. The book aims at giving a complete picture focusing on the entire system. First, it describes the components which are necessary for assistance systems, such as sensors, actuators, mechatronic subsystems, and control elements. Then, it explains key features for the user-friendly design of human-machine interfaces between driver and assistance system. Finally, important characteristic features of driver assistance systems for particular vehicles are presented: Systems for commercial vehicles and motorcycles.

Artificial Intelligence - Lu Fang 2022-01-01

This two-volume set LNCS

13069-13070 constitutes selected papers presented at the First CAAI International Conference on Artificial Intelligence, held in Hangzhou, China, in June 2021. Due to the COVID-19 pandemic the conference was partially held online. The 105 papers were thoroughly reviewed and selected from 307 qualified submissions. The papers are organized in topical sections on applications of AI; computer vision; data mining; explainability, understandability, and verifiability of AI; machine learning; natural language processing; robotics; and other AI related topics.

mm-Wave Silicon Power Amplifiers and Transmitters - Hossein Hashemi 2016-04-04

Build high-performance, energy-efficient circuits with this cutting-edge guide to designing, modeling, analysing, implementing and testing new mm-wave systems.

2001 CIE International Conference on Radar Proceedings - Shunjun Wu 2001

Advances in Sensing With Security Applications - J. S. Byrnes 2006

The fusion of basic ideas in mathematics, biology, and chemistry with ongoing improvements in hardware and computation offers the promise of much more sophisticated and accurate sensing capabilities than currently exist. Coupled with the dramatic rise in the need for surveillance in innumerable aspects of our daily lives, brought about by hostile acts deemed unimaginable only a few short years ago, the time is ripe for scientists in the diverse areas of sensing and security to join together in a concerted effort to combat the new brands of terrorism.The contents of this volume can be divided into three broadly defined but interrelated areas: 1. The increasing need for fast and accurate sensing - what is the threat; 2. The scientific underpinnings of the ongoing revolution in sensing; 3. Specific sensing algorithms and techniques.

Highway Safety Literature - 1977

Automotive Sensors - John Turner 2009

This book will help engineers, technicians, and designers to better understand a wide range of sensors, from those based on piezoelectric phenomena through those for thermal and flow measurement to the directional sensors that can inform the driver of his orientation on the road. Author John Turner, concludes his book with future trends in use of telematic sensing systems for traffic control and traffic automation.

Ultra-Wideband Radio Technologies for Communications,

Localization and Sensor Applications - Reiner Thomä 2013-03-13

Ultra-Wideband Radio (UWB) earmarks a new radio access philosophy and exploits several GHz of bandwidth. It promises high data rate communication over short distances as well as innovative radar sensing and localization applications with unprecedented resolution. Fields of application may be found, among others, in industry, civil engineering, surveillance and exploration, for security and safety measures, and even for medicine. The book considers the basics and algorithms as well as hardware and application issues in the field of UWB radio technology for communications, localization and sensing based on the outcome of DFG's priority-funding program "Ultra-Wideband Radio Technologies for Communications, Localization and Sensor Applications (UKoLoS)".

The RF and Microwave Handbook - 3 Volume Set - Mike Golio 2018-10-08

By 1990 the wireless revolution had begun. In late 2000, Mike Golio gave the world a significant tool to use in this revolution: The RF and Microwave Handbook. Since then, wireless technology spread across the globe with unprecedented speed, fueled by 3G and 4G mobile technology and the proliferation of wireless LANs. Updated to reflect this tremendous growth, the second edition of this widely embraced, bestselling handbook divides its coverage conveniently into a set of three books, each focused on a particular aspect of the technology. Six new chapters cover WiMAX, broadband cable, bit error ratio (BER) testing, high-power PAs (power amplifiers), heterojunction bipolar transistors (HBTs), as well as an overview of microwave engineering. Over 100 contributors, with diverse backgrounds in academic, industrial, government, manufacturing, design, and research reflect the breadth and depth of the field. This eclectic mix of contributors ensures that the coverage balances fundamental technical issues with the important business and marketing constraints that define commercial RF and microwave engineering. Focused chapters filled with formulas, charts, graphs, diagrams, and tables make the information easy to locate and apply to practical cases. The new format, three tightly focused volumes, provides not only increased information but also ease of use. You can find the information you need quickly, without wading through material you don't immediately need, giving you access to the caliber of data

you have come to expect in a much more user-friendly format.

Highway Safety Literature - 1977

Communications and Networking - Honghao Gao 2021-02-01

This proceedings constitutes the refereed proceedings of the 15th EAI International Conference on Communications and Networking, ChinaCom 2020, held in November 2020 in Shanghai, China. Due to COVID-19 pandemic the conference was held virtually. The 54 papers presented were carefully selected from 143 submissions. The papers are organized in topical sections on Transmission Optimization in Edge Computing; Performance and Scheduling Optimization in Edge Computing; Mobile Edge Network System; Communication Routing and Control; Transmission and Load Balancing; Edge Computing and Distributed Machine Learning; Deep Learning.

Encyclopedia of Transportation - Mark Garrett 2014-08-13

Viewing transportation through the lens of current social, economic, and policy aspects, this four-volume reference work explores the topic of transportation across multiple disciplines within the social sciences and related areas, including geography, public policy, business, and economics. The book's articles, all written by experts in the field, seek to answer such questions as: What has been the legacy, not just economically but politically and socially as well, of President Eisenhower's modern interstate highway system in America? With that system and the infrastructure that supports it now in a state of decline and decay, what's the best path for the future at a time of enormous fiscal constraints? Should California politicians plunge ahead with plans for a high-speed rail that every expert says—despite the allure—will go largely unused and will never pay back the massive investment while at this very moment potholes go unfilled all across the state? What path is best for emerging countries to keep pace with dramatic economic growth for their part? What are the social and financial costs of gridlock in our cities? Features: Approximately 675 signed articles authored by prominent scholars are arranged in A-to-Z fashion and conclude with Further Readings and cross references. A Chronology helps readers put individual events into historical context; a Reader's Guide organizes entries by broad topical or thematic areas; a detailed index helps users quickly locate entries of most immediate interest; and a Resource Guide provides a list of journals, books, and associations and their websites. While articles

were written to avoid jargon as much as possible, a Glossary provides quick definitions of technical terms. To ensure full, well-rounded coverage of the field, the General Editor with expertise in urban planning, public policy, and the environment worked alongside a Consulting Editor with a background in Civil Engineering. The index, Reader's Guide, and cross references combine for thorough search-and-browse capabilities in the electronic edition. Available in both print and electronic formats, Encyclopedia of Transportation is an ideal reference for libraries and those who want to explore the issues that surround transportation in the United States and around the world.

MATLAB Simulations for Radar Systems Design - Bassem R. Mahafza 2003-12-17

Simulation is integral to the successful design of modern radar systems, and there is arguably no better software for this purpose than MATLAB. But software and the ability to use it does not guarantee success. One must also: Understand radar operations and design philosophy Know how to select the radar parameters to meet the design req

International Aerospace Abstracts - 1999

Polarimetric Radar for Automotive Applications - Visentin, Tristan 2019-04-10

Large Aperture Array Radar Systems for Automotive Applications - Fabian Schwartau 2021-10-18

The radar, besides camera and Lidar systems, is a core sensor to enable autonomous driving. The relatively limited angular resolution is the major drawback of the radar. This thesis shows the development of a conceptual future radar system for automotive applications. The focus is on providing a large antenna aperture to achieve the required high angular resolution. Two genetic algorithms are developed to optimize the antenna array for a good side lobe level while providing high angular resolution. Two demonstrators are built to implement certain aspects of the proposed radar system and prove the general concept viable. The first demonstrator features a large aperture with a limited side lobe level and is using a modular approach. The modules are synchronized with a radio over fiber system. The second demonstrator uses the previously proposed antenna array, which is implemented with a synthetic aperture radar approach. The system's capabilities in a real scenario are demonstrated, and the

reconstruction of a high-resolution three-dimensional image from the captured data is shown. Das Radar stellt, neben Kamera- und Lidar-Systemen, einen zentralen Sensor f? r das autonome Fahren dar. Dabei ist die relativ geringe Winelaufl? sung der prim? re Nachteil des Radars. Diese Arbeit zeigt die Entwicklung eines konzeptionellen zuk? nftigen Radarsystems f? r automobile Anwendungen. Der Schwerpunkt liegt auf der Umsetzung einer gro? en Antennenapertur, um die erforderliche hohe Winkelaufl? sung zu erreichen. Zwei evolution? re Algorithmen werden vorgestellt, um das Antennen-Array auf einen guten Nebenkeulen-Pegel zu optimieren und gleichzeitig eine hohe Winkelaufl? sung zu erreichen. Zwei Demonstratoren werden gebaut, um bestimmte Aspekte des vorgeschlagenen Radarsystems zu implementieren und die Durchf? hrbarkeit des allgemeinen Konzepts zu zeigen. Der erste Demonstrator weist eine gro? e Apertur mit einem begrenzten Nebenkeulen-Niveau auf und verwendet einen modularen Ansatz. Die Module sind mit einem Radio-over-Fiber-System synchronisiert. Der zweite Demonstrator verwendet die zuvor entworfene Antennenanordnung, die mit einem Radar mit synthetischer Apertur realisiert wird. Die F? higkeiten des Systems werden in einem realen Szenario demonstriert und die Rekonstruktion eines hochaufl? senden dreidimensionalen Bildes aus den erfassten Daten gezeigt.

Radar 97 - 1997

This volume contains the 178 papers that were presented at the International Conference on RADAR in 1997.

Principles of Modern Radar - James A. Scheer 2013-12-31

This series will appeal to radar practitioners within military or government. The first volume was written as a textbook for courses in radar systems and technology and the second volume is aimed at practicing radar engineers and graduate level students. The third volume is designed to serve as a self-contained reference for those aiming to become experts in an advanced technology or application area. POMR: Radar Applications Volume 3 includes concise descriptions of the purposes, principal issues and radar methods found in a wide variety of current radar types. POMR: Advanced Techniques Volume 2 is a professional reference for practicing engineers that provides a stepping stone to advanced practice. POMR: Basic Principles Volume 1 focuses on 4 keys areas; basic concepts, radar signal phenomenology, major subsystems of modern radars and signal and data processing basics.

HRIS Abstracts - 1977

Science Abstracts - 1993

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 wei- ing 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 nec- sary 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.

Computational Intelligence in Pattern Recognition - Asit Kumar Das 2021-09-04

This book features high-quality research papers presented at the 3rd International Conference on Computational Intelligence in Pattern Recognition (CIPR 2021), held at the Institute of Engineering and Management, Kolkata, West Bengal, India, on 24 – 25 April 2021. It includes practical development experiences in various areas of data analysis and pattern recognition, focusing on soft computing technologies, clustering and classification algorithms, rough set and fuzzy set theory, evolutionary computations, neural science and neural network systems, image processing, combinatorial pattern matching, social network analysis, audio and video data analysis, data mining in dynamic environments, bioinformatics, hybrid computing, big data analytics and deep learning. It also provides innovative solutions to the challenges in these areas and discusses recent

developments.

Detecting and Classifying Low Probability of Intercept Radar - Phillip E. Pace 2009

This revised and expanded second edition brings you to the cutting edge with new chapters on LPI radar design, including over-the-horizon radar, random noise radar, and netted LPI radar. You also discover critical LPI detection techniques, parameter extraction signal processing techniques, and anti-radiation missile design strategies to counter LPI radar.

Wireless Power Transfer Technologies for Electric Vehicles - Xi Zhang 2022-01-22

This book introduces the most state-of-the-art wireless power transfer technologies for electric vehicles from the fundamental theories to practical designs and applications, especially on the circuit analysis methods, resonant compensation networks, magnetic couplers, and related power electronics converters. Moreover, some other necessary design considerations, such as communication systems, detection of foreign and living objects, EMI issues, and battery charging strategies, are also introduced to provide sufficient insights into the industrial applications. Finally, some future points are mentioned in brief. Different from other works, all the WPT technologies in this book are applied in real EV applications, whose effectiveness and reliability have been already tested and verified. From this book, readers who are interested in the area of wireless power transfer can have a broad view of modern WPT technologies. Readers who have no experience in the WPT area can learn the basic concept, analysis methods, and design principles of the WPT system for EV charging. Even for the readers who are occupied in this area, this book also provides rich knowledge on engineering applications and future trends of EV wireless charging.

Digital Signal Processing 101 - Michael Parker 2017-06-28

Digital Signal Processing 101: Everything You Need to Know to Get Started provides a basic tutorial on digital signal processing (DSP). Beginning with discussions of numerical representation and complex numbers and exponentials, it goes on to explain difficult concepts such as sampling, aliasing, imaginary numbers, and frequency response. It does so using easy-to-understand examples with minimum mathematics. In addition, there is an overview of the DSP functions and implementation used in several DSP-intensive fields or applications, from error correction to CDMA mobile communication to airborne radar systems. This book has been

updated to include the latest developments in Digital Signal Processing, and has eight new chapters on: Automotive Radar Signal Processing Space-Time Adaptive Processing Radar Field Orientated Motor Control Matrix Inversion algorithms GPUs for computing Machine Learning Entropy and Predictive Coding Video compression Features eight new chapters on Automotive Radar Signal Processing, Space-Time Adaptive Processing Radar, Field Orientated Motor Control, Matrix Inversion algorithms, GPUs for computing, Machine Learning, Entropy and Predictive Coding, and Video compression Provides clear examples and a non-mathematical approach to get you up to speed quickly Includes an overview of the DSP functions and implementation used in typical DSP-intensive applications, including error correction, CDMA mobile communication, and radar systems

IGARSS. - 1981

Sensors and Microsystems - Girolamo Di Francia 2023-02-01

This book showcases the state of the art in the field of sensors and microsystems, revealing the impressive potential of novel methodologies and technologies. It covers a broad range of aspects, including: bio-, physical and chemical sensors; actuators; micro- and nano-structured materials; mechanisms of interaction and signal transduction; polymers and biomaterials; sensor electronics and instrumentation; analytical microsystems, recognition systems and signal analysis; and sensor networks, as well as manufacturing technologies, environmental, food and biomedical applications. The book gathers a selection of papers presented at the 21st AISEM National Conference on Sensors and Microsystems, held in Rome, Italy, in February 2022, which brought together researchers, end users, technology teams and policymakers.

Innovations in Electronics and Communication Engineering - H. S. Saini 2020-04-22

This book is a collection of the best research papers presented at the 8th International Conference on Innovations in Electronics and Communication Engineering at Guru Nanak Institutions Hyderabad, India. Featuring contributions by researchers, technocrats and experts, the book covers various areas of communication engineering, like signal processing, VLSI design, embedded systems, wireless communications, and electronics and communications in general, as well as cutting-edge technologies. As such, it is a valuable reference resource for young researchers.