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Automotive Engineering International - 2008

e-Design - Kuang-Hua Chang 2016-02-23
e-Design: Computer-Aided Engineering Design, Revised First Edition is the first book to integrate a discussion of computer design tools throughout the design process. Through the use of this book, the reader will understand basic design principles and all-digital design paradigms, the CAD/CAE/CAM tools available for various design related tasks, how to put an integrated system together to conduct All-Digital Design (ADD), industrial practices in employing ADD, and tools for product development. Comprehensive coverage of essential elements for understanding and practicing the e-Design paradigm in support of product design, including design method and process, and computer based tools and technology Part I: Product Design Modeling discusses virtual mockup of the product created in the CAD environment, including not only solid modeling and assembly theories, but also the critical design parameterization that converts the product solid model into parametric representation, enabling the search for better design alternatives Part II: Product Performance Evaluation focuses on applying CAE technologies and software tools to support evaluation of product performance, including structural analysis, fatigue and fracture, rigid body kinematics and dynamics, and failure probability prediction and reliability analysis Part III: Product Manufacturing and Cost Estimating introduces CAM technology to support manufacturing simulations and process planning, sheet forming simulation, RP technology and computer numerical control (CNC) machining for fast product prototyping, as well as manufacturing cost estimate that can be incorporated into product cost calculations Part IV: Design Theory and Methods discusses modern decision-making theory and the application of the theory to engineering design, introduces the mainstream design optimization methods for both single and multi-objectives problems through both batch and interactive design modes, and provides a brief discussion on sensitivity analysis, which is essential for designs using gradient-based approaches Tutorial lessons and case studies are offered for readers to gain hands-on experiences in practicing e-Design paradigm using two suites of engineering software: Pro/ENGINEER-based, including Pro/MECHANICA Structure, Pro/ENGINEER Mechanism Design, and Pro/MFG; and SolidWorks-based, including SolidWorks Simulation, SolidWorks Motion, and CAMWorks. Available on the companion website http://booksite.elsevier.com/9780123820389

Advances in Human Aspects of Transportation - Neville A. Stanton 2016-07-26
This book discusses the latest advances in research and development, design, operation and analysis of transportation systems and their complementary infrastructures. It reports on both theories and case studies on road and rail, aviation and maritime transportation. The book covers a wealth of topics, from accident analysis, vehicle intelligent control, and human-error and safety issues to next-generation transportation systems, model-based design methods, simulation and training techniques, and many more. A special emphasis is given to smart technologies and automation in transport, as well as to user-centered, ergonomic and sustainable design of transport systems. The book, which is based on the AHFE 2016 International Conference on Human Factors in Transportation, held on July 27-31, 2016, in Walt Disney World®, Florida, USA, mainly addresses transportation system designers, industrial designers, human-computer interaction researchers, civil and control engineers, as well as vehicle system engineers. Moreover, it represents a timely source of information for transportation policy-makers and social scientists dealing with traffic safety, management, and sustainability issues in transport.
Vehicles, Drivers, and Safety - John Hansen 2020-05-05
This book presents works from world-class experts from academia,

industry, and national agencies representing countries from across the world focused on automotive fields for in-vehicle signal processing and safety. These include cutting-edge studies on safety, driver behavior, infrastructure, and human-to-vehicle interfaces. Vehicle Systems, Driver Modeling and Safety is appropriate for researchers, engineers, and professionals working in signal processing for vehicle systems, next generation system design from driver-assisted through fully autonomous vehicles.
Smart Cities, Green Technologies and Intelligent Transport Systems - Brian Donnellan 2019-07-29
This book constitutes the thoroughly refereed post-conference proceedings of the 7th International Conference on Smart Cities and Green ICT Systems, SMARTGREENS 2018, and the 4th International Conference on Vehicle Technology and Intelligent Transport Systems, VEHITS 2018, held in Funchal-Madeira, Portugal in March 2018. The 18 full papers presented during SMARTGREENS 2018 and VEHITS 2018 were carefully reviewed and selected from numerous submissions. The papers reflect topics such as smart cities and green ICT systems; vehicle technology and intelligent transport systems.
Accelerated Reliability and Durability Testing Technology - Lev M. Klyatis 2012-01-11
Learn how ART and ADT can reduce cost, time, product recalls, and customer complaints This book provides engineers with the techniques and tools they need to use accelerated reliability testing (ART) and accelerated durability testing (ADT) as key factors to accurately predict a product's quality, reliability, durability, and maintainability during a given time, such as service life or warranty period. It covers new ideas and offers a unique approach to accurate simulation and integration of field inputs, safety, and human factors, as well as accelerated product development, as components of interdisciplinary systems engineering. Beginning with a comprehensive introduction to the subject of ART and ADT, the book covers: ART and ADT as components of an interdisciplinary systems of systems approach Methodology of ART and ADT performance Equipment for ART and ADT technology ART and ADT as sources of initial information for accurate quality, reliability, maintainability, and durability prediction and product accelerated development The economical results of the usage of ART and ADT ART and ADT standardization The book covers the newest techniques in the field and provides many case studies that illuminate how the implementation of ART and ADT can solve previously inaccessible problems in the field of engineering, such as reducing product recalls, cost, and time during design, manufacture, and usage. Professionals will find the answers to how one can carry out ART and ADT technology in a practical manner. Accelerated Reliability and Durability Testing Technology is indispensable reading for engineers, researchers in industry, usage, and academia who are involved in the design of experiments, field simulations, maintenance, reliabilty, durabilty, accurate prediction, and product development, and graduate students in related courses.
Information Extraction and Object Tracking in Digital Video - 2022-08-17
The research on computer vision systems has been increasing every day and has led to the design of multiple types of these systems with innumerous applications in our daily life. The recent advances in artificial intelligence, together with the huge amount of digital visual data now available, have boosted vision system performance in several ways. Information extraction and visual object tracking are essential tasks in the field of computer vision with a huge number of real-world applications.This book is a result of research done by several researchers and professionals who have highly contributed to the field of image processing. It contains eight chapters divided into three sections. Section 1 consists of four chapters focusing on the problem of visual tracking. Section 2 includes three chapters focusing on information extraction

from images. Finally, Section 3 includes one chapter that presents new advances in image sensors.

Information Systems and Technologies - Álvaro Rocha 2022
This book covers the following main topics: A) information and knowledge management; B) organizational models and information systems; C) software and systems modeling; D) software systems, architectures, applications and tools; E) multimedia systems and applications; F) computer networks, mobility and pervasive systems; G) intelligent and decision support systems; H) big data analytics and applications; I) human-computer interaction; J) ethics, computers and security; K) health informatics; L) information technologies in education; M) information technologies in radio communications; N) technologies for biomedical applications. This book is composed by a selection of articles from The 2022 World Conference on Information Systems and Technologies (WorldCIST'22), held between April 12 and 14, in Budva, Montenegro. WorldCIST is a global forum for researchers and practitioners to present and discuss recent results and innovations, current trends, professional experiences, and challenges of modern information systems and technologies research, together with their technological development and applications.

New Advances in Information Systems and Technologies - Álvaro Rocha 2016-03-15
This book contains a selection of articles from The 2016 World Conference on Information Systems and Technologies (WorldCIST'16), held between the 22nd and 24th of March at Recife, Pernambuco, Brazil. WorldCIST is a global forum for researchers and practitioners to present and discuss recent results and innovations, current trends, professional experiences and challenges of modern Information Systems and Technologies research, together with their technological development and applications. The main topics covered are: Information and Knowledge Management; Organizational Models and Information Systems; Software and Systems Modeling; Software Systems, Architectures, Applications and Tools; Multimedia Systems and Applications; Computer Networks, Mobility and Pervasive Systems; Intelligent and Decision Support Systems; Big Data Analytics and Applications; Human-Computer Interaction; Health Informatics; Information Technologies in Education; Information Technologies in Radiocommunications.

Product Performance Evaluation using CAD/CAE - Kuang-Hua Chang 2013-02-03
This is one book of a four-part series, which aims to integrate discussion of modern engineering design principles, advanced design tools, and industrial design practices throughout the design process. Through this series, the reader will: Understand basic design principles and modern engineering design paradigms. Understand CAD/CAE/CAM tools available for various design related tasks. Understand how to put an integrated system together to conduct product design using the paradigms and tools. Understand industrial practices in employing virtual engineering design and tools for product development. Provides a comprehensive and thorough coverage on essential elements for product performance evaluation using the virtual engineering paradigms Covers CAD/CAE in Structural Analysis using FEM, Motion Analysis of Mechanical Systems, Fatigue and Fracture Analysis Each chapter includes both analytical methods and computer-aided design methods, reflecting the use of modern computational tools in engineering design and practice A case study and tutorial example at the end of each chapter provide hands-on practice in implementing off-the-shelf computer design tools Provides two projects at the end of the book showing the use of Pro/ENGINEER® and SolidWorks ® to implement concepts discussed in the book

Sensor Systems Simulations - Willem Dirk van Driel 2019-06-18
This book describes for readers various technical outcomes from the EU-project IoSense. The authors discuss sensor integration, including LEDs, dust sensors, LIDAR for automotive driving and 8 more, demonstrating their use in simulations for the design and fabrication of sensor systems. Readers will benefit from the coverage of topics such as sensor technologies for both discrete and integrated innovative sensor devices, suitable for high volume production, electrical, mechanical, security and software resources for integration of sensor system components into IoT systems and IoT-enabling systems, and IoT sensor system reliability. Describes from component to system level simulation, how to use the available simulation techniques for reaching a proper design with good performance; Explains how to use simulation techniques such as Finite Elements, Multi-body, Dynamic, stochastics and many more in the virtual design of sensor systems; Demonstrates the integration of several sensor

solutions (thermal, dust, occupancy, distance, awareness and more) into large-scale system solutions in several industrial domains (Lighting, automotive, transport and more); Includes state-of-the-art simulation techniques, both multi-scale and multi-physics, for use in the electronic industry.

Mechanical and Electronics Engineering III - Han Zhao 2011-10-27
Volume is indexed by Thomson Reuters CPCI-S (WoS). These peer-reviewed proceedings comprise the papers presented at a conference whose main theme was Mechanical and Electronics Engineering. The main goal of the event was to provide an international scientific forum for the exchange of new ideas in a number of fields and for in-depth interaction via discussions with peers from around the world. Core areas of Information and Network Technology, plus multidisciplinary, interdisciplinary and applied aspects were covered.

Handbook of Teen and Novice Drivers - Donald L Fisher 2016-09-19
Despite a growing body of research and targeted remediation, teenage and novice drivers continue to be six to nine times more likely to die in a crash than they are when they are just a few years older. The World Health Organization reports that road traffic injuries are the leading cause of death globally among 15 to 19 year olds. In light of these crash statistics, understanding the teen driver problem remains of paramount public health importance around the world. The Handbook of Teen and Novice Drivers: Research, Practice, Policy, and Directions provides critical knowledge for a broad range of potential readers, including students, teachers, researchers in academics, industry and the federal government, public policy makers at all levels, insurance companies and automobile manufacturers, driving instructors, and parents and their teens.

Advances in Dynamics of Vehicles on Roads and Tracks - Matthijs Klomp 2020-02-14
This book gathers together papers presented at the 26th IAVSD Symposium on Dynamics of Vehicles on Roads and Tracks, held on August 12 – 16, 2019, at the Lindholmen Conference Centre in Gothenburg, Sweden. It covers cutting-edge issues related to vehicle systems, including vehicle design, condition monitoring, wheel and rail contact, automated driving systems, suspension and ride analysis, and many more topics. Written by researchers and practitioners, the book offers a timely reference guide to the field of vehicle systems dynamics, and a source of inspiration for future research and collaborations.

2014 International Conference on Mechanical Engineering and Automation (ICMEA2014) - 2014-02-13
The ICMEA2014 will provide an excellent international academic forum for sharing knowledge and results in theory, methodology and applications of Mechanical Engineering and Automation. The ICMEA2014 is organized by Advanced Information Science Research Center (AISRC) and is co-sponsored by Chongqing University, Changsha University of Science & Technology, Huazong University of Science and Technology and China Three Gorges University. This ICMEA2014 proceedings tends to collect the up-to-date, comprehensive and worldwide state-of-art knowledge on mechanical engineering and automation, including control theory and application, mechanic manufacturing system and automation, and Computer Science and applications. All of accepted papers were subjected to strict peer-reviewing by 2-4 expert referees. The papers have been selected for this volume because of quality and the relevance to the conference. We hope this book will not only provide the readers a broad overview of the latest research results, but also provide the readers a valuable summary and reference in these fields. ICMEA2014 organizing committee would like to express our sincere appreciations to all authors for their contributions to this book. We would like to extend our thanks to all the referees for their constructive comments on all papers; especially, we would like to thank to organizing committee for their hard working.

Vehicle and Automotive Engineering 2 - Károly Jármai 2018-05-09
This book presents the proceedings of the second Vehicle Engineering and Vehicle Industry conference, reflecting the outcomes of theoretical and practical studies and outlining future development trends in a broad field of automotive research. The conference's main themes included design, manufacturing, economic and educational topics.

Proceedings of Innovative Research and Industrial Dialogue 2016 - 2017-06-07
The Innovative Research and Industrial Dialogue 2016 (IRID'16) organized by Advanced Manufacturing Centre (AMC) of the Faculty of Manufacturing Engineering of UTeM which is held in Main Campus, Universiti Teknikal Malaysia Melaka on 20 December 2016. The open access e-proceeding contains a compilation of 96 selected manuscripts

from this Research event.

Modeling and Dynamics Control for Distributed Drive Electric Vehicles - Xudong Zhang 2021-01-08

Due to the improvements on electric motors and motor control technology, alternative vehicle power system layouts have been considered. One of the latest is known as distributed drive electric vehicles (DDEVs), which consist of four motors that are integrated into each drive and can be independently controllable. Such an innovative design provides packaging advantages, including short transmission chain, fast and accurate torque response, and so on. Based on these advantages and features, this book takes stability and energy-saving as cut-in points, and conducts investigations from the aspects of Vehicle State Estimation, Direct Yaw Moment Control (DYC), Control Allocation (CA). Moreover, lots of advanced algorithms, such as general regression neural network, adaptive sliding mode control-based optimization, as well as genetic algorithms, are applied for a better control performance.

7th RILEM International Conference on Cracking in Pavements - A. Scarpas 2012-08-30

In the recent past, new materials, laboratory and in-situ testing methods and construction techniques have been introduced. In addition, modern computational techniques such as the finite element method enable the utilization of sophisticated constitutive models for realistic model-based predictions of the response of pavements. The 7th RILEM International Conference on Cracking of Pavements provided an international forum for the exchange of ideas, information and knowledge amongst experts involved in computational analysis, material production, experimental characterization, design and construction of pavements. All submitted contributions were subjected to an exhaustive refereed peer review procedure by the Scientific Committee, the Editors and a large group of international experts in the topic. On the basis of their recommendations, 129 contributions which best suited the goals and the objectives of the Conference were chosen for presentation and inclusion in the Proceedings. The strong message that emanates from the accepted contributions is that, by accounting for the idiosyncrasies of the response of pavement engineering materials, modern sophisticated constitutive models in combination with new experimental material characterization and construction techniques provide a powerful arsenal for understanding and designing against the mechanisms and the processes causing cracking and pavement response deterioration. As such they enable the adoption of truly "mechanistic" design methodologies. The papers represent the following topics: Laboratory evaluation of asphalt concrete cracking potential; Pavement cracking detection; Field investigation of pavement cracking; Pavement cracking modeling response, crack analysis and damage prediction; Performance of concrete pavements and white toppings; Fatigue cracking and damage characterization of asphalt concrete; Evaluation of the effectiveness of asphalt concrete modification; Crack growth parameters and mechanisms; Evaluation, quantification and modeling of asphalt healing properties; Reinforcement and interlayer systems for crack mitigation; Thermal and low temperature cracking of pavements; and Cracking propensity of WMA and recycled asphalts.

Recent Advances in Information Systems and Technologies - Álvaro Rocha 2017-03-27

This book presents a selection of papers from the 2017 World Conference on Information Systems and Technologies (WorldCIST'17), held between the 11st and 13th of April 2017 at Porto Santo Island, Madeira, Portugal. WorldCIST is a global forum for researchers and practitioners to present and discuss recent results and innovations, current trends, professional experiences and challenges involved in modern Information Systems and Technologies research, together with technological developments and applications. The main topics covered are: Information and Knowledge Management; Organizational Models and Information Systems; Software and Systems Modeling; Software Systems, Architectures, Applications and Tools; Multimedia Systems and Applications; Computer Networks, Mobility and Pervasive Systems; Intelligent and Decision Support Systems; Big Data Analytics and Applications; Human–Computer Interaction; Ethics, Computers & Security; Health Informatics; Information Technologies in Education; and Information Technologies in Radiocommunications.

Vehicle Dynamics - Basilio Lenzo 2021-12-15

This book examines the fundamentals of vehicle dynamics, as well as the recent trends in the field, such as torque vectoring control, vehicle state estimation, and autonomous vehicles. It investigates the most pressing problems that vehicle dynamics engineers have been facing nowadays, and the challenges of autonomous vehicles in terms of perception, path

planning, and analysis of the road environment. The book will serve as a useful tool for graduate students and researchers in vehicle dynamics and control.

Advances in Structural and Multidisciplinary Optimization - Axel Schumacher 2017-12-04

The volume includes papers from the WSCMO conference in Braunschweig 2017 presenting research of all aspects of the optimal design of structures as well as multidisciplinary design optimization where the involved disciplines deal with the analysis of solids, fluids or other field problems. Also presented are practical applications of optimization methods and the corresponding software development in all branches of technology.

Automotive Applications of Hardware-in-the-Loop (HIL) Simulation - Adit Joshi 2019-08-13

Automotive Applications of Hardware-in-the-Loop (HIL) Simulation shines a light on HIL simulation testing methodology commonly used in the automotive industry for conventional, electrification and autonomy applications and can serve as an introductory resource for college students looking to join the automotive industry or experienced technical professionals who need a deeper understanding on what is HIL simulation, what are its benefits and how can it be used in their respective organizations.

Analysis Techniques for Racecar Data Acquisition - Jorge Segers 2008-05-25

Data acquisition has become an invaluable tool for establishing racecar - and car/driver - performance. Now that the ability exists to analyze each and every performance parameter for car and driver, accurate use of this data can provide a key advantage on the racetrack. This book provides a thorough overview of the varied methods for analyzing racecar data acquisition system outputs, with a focus on vehicle dynamics.

The Dynamics of Vehicles on Roads and on Tracks Supplement to Vehicle System Dynamics - Masato Abe 2005-02-10

The 18th Symposium of the International Association for Vehicle System Dynamics was held at Kanagawa Institute of Technology, Atsugi, Kanagawa, Japan. The symposium was hosted by KAIT as one of the memorial events of the 40th anniversary of KAIT. Though overwhelming numbers of high quality papers were applied in response to the call for papers for the presentation at the symposium, the Scientific Committee accepted 89 papers for the oral presentation and 38 for the poster presentation. Finally, 82 papers were presented at the oral sessions and 29 papers at the poster sessions in the symposium. There were five States-of-the-Arts papers presented at the plenary sessions in the symposium.

State Estimation and Coordinated Control for Distributed Electric Vehicles - Wenbo Chu 2015-10-26

This book tackles some of the most challenging problems in state estimation and traction coordinated control systems to improve the dynamic control performance of Distributed Electric Vehicles. The developed methods make it possible to gain more accurate information regarding the vehicle states, ensure more desirable vehicle motions and better robustness in unforeseeable driving environments. Given the impressive features of Distributed Electric Vehicles, including their simple and compact structure, short transmission chains, fast and accurate control response, modular drivetrain design etc., it is widely recognized that they represent an important future development direction and attract many of the brightest engineers and scientists. This book makes a significant contribution to the design of safer and more efficient vehicles.

Safe, Autonomous and Intelligent Vehicles - Huafeng Yu 2018-11-14

This book covers the start-of-the-art research and development for the emerging area of autonomous and intelligent systems. In particular, the authors emphasize design and validation methodologies to address the grand challenges related to safety. This book offers a holistic view of a broad range of technical aspects (including perception, localization and navigation, motion control, etc.) and application domains (including automobile, aerospace, etc.), presents major challenges and discusses possible solutions.

Man-Machine-Environment System Engineering - Shengzhao Long 2022-08-20

Man-Machine-Environment System Engineering: Proceedings of the 22nd Conference on MMESE are an academic showcase of the best papers selected from more than 500 submissions, introducing readers to the top research topics and the latest developmental trends in the theory and application of MMESE. This proceedings are interdisciplinary studies on the concepts and methods of physiology, psychology, system

engineering, computer science, environment science, management, education, and other related disciplines. Researchers and professionals who study an interdisciplinary subject crossing above disciplines or researchers on MMESE subject will be mainly benefited from this proceedings MMESE primarily focuses on the relationship between Man, Machine and Environment, studying the optimum combination of man-machine-environment systems. In this system, "Man" refers to working people as the subject in the workplace (e.g. operators, decision-makers); "Machine" is the general name for any object controlled by Man (including tools, machinery, computers, systems and technologies), and "Environment" describes the specific working conditions under which Man and Machine interact (e.g. temperature, noise, vibration, hazardous gases etc.). The three goals of optimization of the man-machine-environment systems are to ensure safety, efficiency and economy. The integrated and advanced science research topic Man-Machine-Environment System Engineering (MMESE) was first established in China by Professor Shengzhao Long in 1981, with direct support from one of the greatest modern Chinese scientists, Xuesen Qian. In a letter to Shengzhao Long from October 22nd, 1993, Xuesen Qian wrote: "You have created a very important modern science and technology in China!"

Dynamics of Vehicles on Roads and Tracks Vol 1 - Maksym Spiryagin 2017-12-06

The International Symposium on Dynamics of Vehicles on Roads and Tracks is the leading international gathering of scientists and engineers from academia and industry in the field of ground vehicle dynamics to present and exchange their latest innovations and breakthroughs. Established in Vienna in 1977, the International Association of Vehicle System Dynamics (IAVSD) has since held its biennial symposia throughout Europe and in the USA, Canada, Japan, South Africa and China. The main objectives of IAVSD are to promote the development of the science of vehicle dynamics and to encourage engineering applications of this field of science, to inform scientists and engineers on the current state-of-the-art in the field of vehicle dynamics and to broaden contacts among persons and organisations of the various countries engaged in scientific research and development in the field of vehicle dynamics and related areas. IAVSD 2017, the 25th Symposium of the International Association of Vehicle System Dynamics was hosted by the Centre for Railway Engineering at Central Queensland University, Rockhampton, Australia in August 2017. The symposium focused on the following topics related to road and rail vehicles and trains: dynamics and stability; vibration and comfort; suspension; steering; traction and braking; active safety systems; advanced driver assistance systems; autonomous road and rail vehicles; adhesion and friction; wheel-rail contact; tyre-road interaction; aerodynamics and crosswind; pantograph-catenary dynamics; modelling and simulation; driver-vehicle interaction; field and laboratory testing; vehicle control and mechatronics; performance and optimization; instrumentation and condition monitoring; and environmental considerations. Providing a comprehensive review of the latest innovative developments and practical applications in road and rail vehicle dynamics, the 213 papers now published in these proceedings will contribute greatly to a better understanding of related problems and will serve as a reference for researchers and engineers active in this specialised field. Volume 1 contains 78 papers under the subject heading Road.

Command-control for Real-time Systems - Mohammed Chadli 2013-04-25

A real-time system is a complex system which is an integral part of an industrial or experimental system, a vehicle or a construction machine. The peculiarity of these systems is that they are driven by real-time targets in distributed environments. Command-control for Real-time Systems presents the calculation of correction for industrial systems of different physical natures, their implementation on real-time target industrial systems (PLC-SCADA, embedded systems with distributed networks, Networked Control Systems) and their validation by simulation. It optimizes industrial processes by the use of automatic tools, industrial computing and communications networks and aims to successively integrate new control laws (linear, nonlinear and fuzzy controllers) so that users can leverage the power of engineering science as an automatic service process optimization while maintaining their high maintainability facilities. Contents 1. Introduction. 2. Modeling Tools, Sébastien Cabaret and Mohammed Chadli. 3. Control Tools, Mohammed Chadli and Hervé Coppier. 4. Application to Cryogenic Systems, Marco Pezzetti, Hervé Coppier and Mohammed Chadli. 5. Applications to a Thermal System and to Gas Systems, Sébastien Cabaret and Hervé Coppier. 6. Application to Vehicles, Elie Kafrouni and

Mohammed Chadli. 7. Real-time Implementation, Marco Pezzetti and Hervé Coppier. About the Authors Mohamed Chadli is a senior lecturer and research supervisor at the University of Picardie Jules Verne (UPJV) in France. His main research interests lie in robust control, the diagnosis and fault tolerant control of polytopic systems and applications for automobiles. He is a senior member of the IEEE, and Vice President of the AAI Club as part of SEE-France. He is the author/co-author of 3 books, book chapters and more than 100 articles published in international journals and conferences. Hervé Coppier is a lecturing researcher at ESIEE-Amiens in France. He has collaborated with industrialists in the field of automation and industrial computing, particularly with CERN, and has spearheaded various international European projects.

Vehicle Systems and Driver Modelling - Huseyin Abut 2017-09-11

World-class experts from academia and industry assembled at the sixth Biennial Workshop on Digital Signal Processing (DSP) for In-Vehicle Systems at Korea University, Seoul, Korea in 2013. The Workshop covered a wide spectrum of automotive fields, including in-vehicle signal processing and cutting-edge studies on safety, driver behavior, infrastructure, in-vehicle technologies. Contributors to this volume have expanded their contributions to the Workshop into full chapters with related works, methodology, experiments, and the analysis of the findings. Topics in this volume include: DSP technologies for in-vehicle systems Driver status and behavior monitoring In-Vehicle dialogue systems and human machine interfaces In-vehicle video and applications for safety Passive and active driver assistance technologies Ideas and systems for autonomous driving Transportation infrastructure

Design of Racing and High-Performance Engines 2004-2013 - Douglas Fehan 2013-02-12

This compendium is an update to two best-selling editions published by SAE International in 1995 and 2003. Editor Doug Fehan has assembled a collection of technical papers from the SAE archive that will inspire readers to use race engine development as an important tool in the future of transportation. He focuses on several topics that are important to future race engine design: electrification, materials and processes, and improved technology. Today's electric hybrid vehicles and kinetic energy recovery systems embody what inventors envisioned in the early 1900s. First employed in trams and trains of that era, the technology was almost forgotten until racers resurrected their version in 2009 F-1 racing. The automotive industry has long admired the aircraft industry's use of lightweight metals, advanced finishing processes, and composites. The use of these materials and processes has helped reduce overall mass and, in turn, improved speed, performance, and reliability of race engines. Their initial high cost was a limiting factor for integrating them into mass-produced vehicles. With racing leading the way, those limitations were overcome and vehicles today feature some amazing adaptations of those processes and materials. Engine power, efficiency, durability, reliability, and, more recently, emissions have always been of primary importance to the automotive world. The expanding use of electrification, biofuels, CNG, high-pressure fuel delivery systems, combustion air management, turbocharging, supercharging, and low-viscosity lubricants have been the focus of race engine development and are now turning up in dealer showrooms. The papers in this publication were selected for two reasons: they demonstrate the leadership that racing plays in the future of automotive engineering and design as it relates to engines; and they will be interesting to everyone who may be in racing and to those who may want to be in racing.

Measuring, modelling and minimizing perceived motion incongruence for vehicle motion simulation - Diane Cleij 2020-01-28

Humans always wanted to go faster and higher than their own legs could carry them. This led them to invent numerous types of vehicles to move fast over land, water and air. As training how to handle such vehicles and testing new developments can be dangerous and costly, vehicle motion simulators were invented. Motion-based simulators in particular, combine visual and physical motion cues to provide occupants with a feeling of being in the real vehicle. While visual cues are generally not limited in amplitude, physical cues certainly are, due to the limited simulator motion space. A motion cueing algorithm (MCA) is used to map the vehicle motions onto the simulator motion space. This mapping inherently creates mismatches between the visual and physical motion cues. Due to imperfections in the human perceptual system, not all visual/physical cueing mismatches are perceived. However, if a mismatch is perceived, it can impair the simulation realism and even cause simulator sickness. For MCA design, a good understanding of when mismatches are perceived, and ways to prevent these from occurring,

are therefore essential. In this thesis a data-driven approach, using continuous subjective measures of the time-varying Perceived Motion Incongruence (PMI), is adopted. PMI in this case refers to the effect that perceived mismatches between visual and physical motion cues have on the resulting simulator realism. The main goal of this thesis was to develop an MCA-independent off-line prediction method for time-varying PMI during vehicle motion simulation, with the aim of improving motion cueing quality. To this end, a complete roadmap, describing how to measure and model PMI and how to apply such models to predict and minimize PMI in motion simulations is presented. Results from several human-in-the-loop experiments are used to demonstrate the potential of this novel approach.

Tribology and Dynamics of Engine and Powertrain - Homer Rahnejat 2010-09-30
Tribology, the science of friction, wear and lubrication, is one of the cornerstones of engineering's quest for efficiency and conservation of resources. Tribology and dynamics of engine and powertrain: fundamentals, applications and future trends provides an authoritative and comprehensive overview of the disciplines of dynamics and tribology using a multi-physics and multi-scale approach to improve automotive engine and powertrain technology. Part one reviews the fundamental aspects of the physics of motion, particularly the multi-body approach to multi-physics, multi-scale problem solving in tribology. Fundamental issues in tribology are then described in detail,from surface phenomena in thin-film tribology, to impact dynamics, fluid film and elastohydrodynamic lubrication means of measurement and evaluation. These chapters provide an understanding of the theoretical foundation for Part II which includes many aspects of the physics of motion at a multitude of interaction scales from large displacement dynamics to noise and vibration tribology, all of which affect engines and powertrains. Many chapters are contributed by well-established practitioners disseminating their valuable knowledge and expertise on specific engine and powertrain sub-systems. These include overviews of engine and powertrain issues, engine bearings, piston systems, valve trains, transmission and many aspects of drivetrain systems. The final part of the book considers the emerging areas of microengines and gears as well as nano-scale surface engineering. With its distinguished editor and international team of academic and industry contributors, Tribology and dynamics of engine and powertrain is a standard work for automotive engineers and all those researching NVH and tribological issues in engineering. Reviews fundamental aspects of physics in motion, specifically the multi-body approach to multi physics Describes essential issues in tribology from surface phenomena in thin film tribology to impact dynamics Examines specific engine and powertrain sub-systems including engine bearings, piston systems and value trains

New Trends in Mechanism Science - Doina Pisla 2010-08-12
After two succesful conferences held in Innsbruck (Prof. Manfred Husty) in 2006 and Cassino in 2008 (Prof Marco Ceccarelli) with the participation of the most important well-known scientists from the European Mechanism Science Community, a further conference was held in Cluj Napoca, Romania, in 2010 (Prof. Doina Pisla) to discuss new developments in the field. This book presents the most recent research advances in Mechanism Science with different applications. Amongst the topics treated are papers on Theoretical kinematics, Computational kinematics, Mechanism design, Mechanical transmissions, Linkages and manipulators, Mechanisms for biomechanics, Micro-mechanisms, Experimental mechanics, Mechanics of robots, Dynamics of multi-body systems, Dynamics of machinery, Control issues of mechanical systems, Novel designs, History of mechanism science etc.

Risk Analysis XII - S. Syngellakis 2020-08-19
Current events help to emphasise the importance of the analysis and management of risk to planners and researchers around the world. Natural hazards such as floods, earthquakes, landslides, fires and others have always affected human societies. The more recent emergence of the importance of man-made hazards is a consequence of the rapid technological advances made in the last few centuries. The interaction of natural and anthropogenic risks adds to the complexity of the problems. Presented at the 12th International Conference on Risk Analysis and Hazard Mitigation, the included research works cover a variety of topics related to risk analysis and hazard mitigation, associated with both natural and anthropogenic hazards.

Dynamics of Vehicles on Roads and Tracks - Maksym Spiryagin 2021-03-19
The International Symposium on Dynamics of Vehicles on Roads and Tracks is the leading international gathering of scientists and engineers

from academia and industry in the field of ground vehicle dynamics to present and exchange their latest innovations and breakthroughs. Established in Vienna in 1977, the International Association of Vehicle System Dynamics (IAVSD) has since held its biennial symposia throughout Europe and in the USA, Canada, Japan, South Africa and China. The main objectives of IAVSD are to promote the development of the science of vehicle dynamics and to encourage engineering applications of this field of science, to inform scientists and engineers on the current state-of-the-art in the field of vehicle dynamics and to broaden contacts among persons and organisations of the various countries engaged in scientific research and development in the field of vehicle dynamics and related areas. IAVSD 2017, the 25th Symposium of the International Association of Vehicle System Dynamics was hosted by the Centre for Railway Engineering at Central Queensland University, Rockhampton, Australia in August 2017. The symposium focused on the following topics related to road and rail vehicles and trains: dynamics and stability; vibration and comfort; suspension; steering; traction and braking; active safety systems; advanced driver assistance systems; autonomous road and rail vehicles; adhesion and friction; wheel-rail contact; tyre-road interaction; aerodynamics and crosswind; pantograph-catenary dynamics; modelling and simulation; driver-vehicle interaction; field and laboratory testing; vehicle control and mechatronics; performance and optimization; instrumentation and condition monitoring; and environmental considerations. Providing a comprehensive review of the latest innovative developments and practical applications in road and rail vehicle dynamics, the 213 papers now published in these proceedings will contribute greatly to a better understanding of related problems and will serve as a reference for researchers and engineers active in this specialised field.

Autonomous Road Vehicle Path Planning and Tracking Control - Levent Guvenc 2021-12-06
Discover the latest research in path planning and robust path tracking control In Autonomous Road Vehicle Path Planning and Tracking Control, a team of distinguished researchers delivers a practical and insightful exploration of how to design robust path tracking control. The authors include easy to understand concepts that are immediately applicable to the work of practicing control engineers and graduate students working in autonomous driving applications. Controller parameters are presented graphically, and regions of guaranteed performance are simple to visualize and understand. The book discusses the limits of performance, as well as hardware-in-the-loop simulation and experimental results that are implementable in real-time. Concepts of collision and avoidance are explained within the same framework and a strong focus on the robustness of the introduced tracking controllers is maintained throughout. In addition to a continuous treatment of complex planning and control in one relevant application, the Autonomous Road Vehicle Path Planning and Tracking Control includes: A thorough introduction to path planning and robust path tracking control for autonomous road vehicles, as well as a literature review with key papers and recent developments in the area Comprehensive explorations of vehicle, path, and path tracking models, model-in-the-loop simulation models, and hardware-in-the-loop models Practical discussions of path generation and path modeling available in current literature In-depth examinations of collision free path planning and collision avoidance Perfect for advanced undergraduate and graduate students with an interest in autonomous vehicles, Autonomous Road Vehicle Path Planning and Tracking Control is also an indispensable reference for practicing engineers working in autonomous driving technologies and the mobility groups and sections of automotive OEMs.

New Trends on System Science and Engineering - H. Fujita 2015-06-23
System science and engineering is a field that covers a wide spectrum of modern technology. A system can be seen as a collection of entities and their interrelationships, which forms a whole greater than the sum of the entities and interacts with people, organisations, cultures and activities and the interrelationships among them. Systems composed of autonomous subsystems are not new, but the increased complexity of modern technology demands ever more reliable, intelligent, robust and adaptable systems to meet evolving needs. This book presents papers delivered at the International Conference on System Science and Engineering (ICSSE2015), held in Morioka, Japan, in July 2015. Some of the topics covered here include: systems modeling, tools and simulation; cloud robotics and computing systems; systems safety and security; smart grid, human systems and industrial organization and management; and novel applications of systems engineering and systems architecture. Capturing as it does the latest state-of-the-art and challenges in system

sciences and its supporting technology, this book will be of interest to all those involved in developing and using system science methodology, tools and techniques

Intelligent Robotics and Applications - Chun-Yi Su 2012-09-28
The three volume set LNAI 7506, LNAI 7507 and LNAI 7508 constitutes the refereed proceedings of the 5th International Conference on Intelligent Robotics and Applications, ICIRA 2012, held in Montreal, Canada, in October 2012. The 197 revised full papers presented were thoroughly reviewed and selected from 271 submissions. They present the state-of-the-art developments in robotics, automation and mechatronics. This volume covers the topics of robot actuators and sensors; robot design, development and control; robot intelligence, learning and linguistics; robot mechanism and design; robot motion analysis and planning; robotic vision, recognition and reconstruction; and planning and navigation.