Psychoacoustic Basis Of Sound Quality Evaluation And Sound

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Audio Watermark - Yiqing Lin 2014-09-22
This book illustrates the commonly used and novel approaches of audio watermarking for copyrights protection. The author examines the theoretical and practical step by step guide to the topic of data hiding in audio signal such as music, speech, broadcast. The book covers new techniques developed by the authors are fully explained and MATLAB programs, for audio watermarking and audio quality assessments and also discusses methods for objectively predicting the perceptual quality of the watermarked audio signals. Explains the theoretical basics of the commonly used audio watermarking techniques Discusses the methods used to objectively and subjectively assess the quality of the audio signals Provides a comprehensive well tested MATLAB programs that can be used efficiently to watermark any audio media

Neural Information Processing - Tingwen Huang 2012-11-05
The five volume set LNCS 7663, LNCS 7664, LNCS 7665, LNCS 7666 and LNCS 7667 constitutes the proceedings of the 19th International Conference on Neural Information Processing, ICONIP 2012, held in Doha, Qatar, in November 2012. The 423 regular session papers presented were carefully reviewed and selected from numerous submissions. These papers cover all major topics of theoretical research, empirical study and applications of neural information processing research. The 5 volumes represent 5 topical sections containing articles on theoretical analysis, neural modeling, algorithms, applications, as well as simulation and synthesis.

Psychology of Technology - V.K. Kool 2016-12-23
This unique treatise expands on the philosophy of technology to argue for a psychology of technology based on the complex relationships between psychology, biology and technology, especially in the light of our relationships with our digital devices, our online lives, and our human experience. Drawing from disciplines ranging from philosophy and evolution to cognition and neuroscience, it examines myriad aspects of the brain's creative development: the cognitive, sensory, and motor processes that enable technological progress and its resulting efficiencies and deficiencies along with our discomforts and pleasures. These experiences are key to behavioral and affective processes in technology, manifest in

such diverse phenomena as multitasking, the shift in tech design from ergonomics to hedonomics, and the many types of online problem behaviors. Through these rich pages, readers can understand more deeply the history and future of human adjustment and adaptation in an environment intertwined with technology—and, with the ascendance of video games and virtual reality, new conceptions of the human self. Among the topics covered: Could we have remained a tech-devoid society? Technology, ergonomics and the non-executive functions of our body. New directions in brain-computer interface. From avatars and agents to virtual reality technology.“br> On measuring affective responses to objects. Psychology, technology, ethics, and culture. A timely lens on a field that will grow in importance as it shapes our existence, Psychology of Technology will be read and discussed by not only psychologists, social scientists, and behavioral scientists, but also by technology designers and developers and those in biotechnology.

Communication Acoustics - Jens Blauert 2005-05-20

- Speech Generation: Acoustics, Models and Applications (Arild Lacroix). - The Evolution of Digital Audio Technology (John Mourjopoulos). - Audio-Visual Interaction (Armin Kohlrausch) . - Speech and Audio Coding (Ulrich Heute) . - Binaural Technique (Dorte Hammerhoei, Henrik Moeller). - Auditory Virtual Environment (Pedro Novo). - Evolutionary Adaptions for Auditory Communication (Georg Klump). - A Functional View on the Human Hearing Organ (Herbert Hudde). - Modeling of Binaural Hearing (Jonas Braasch). - Psychoacoustics and Sound Quality (Hugo Fastl). - Semiotics for Engineers (Ute Jekosch). - Quality of Transmitted Speech for Humans and Machines (Sebastian Möller).

Handbook for Sound Engineers - Glen Ballou 2015-03-05

Handbook for Sound Engineers is the most comprehensive reference available for audio engineers, and is a must read for all who work in audio. With contributions from many of the top professionals in the field, including Glen Ballou on interpretation systems, intercoms, assistive listening, and fundamentals and units of measurement, David Miles Huber on MIDI, Bill Whitlock on audio transformers and preamplifiers, Steve Dove on consoles, DAWs, and computers, Pat Brown on fundamentals, gain structures, and test and measurement, Ray Rayburn on virtual systems, digital interfacing, and preamplifiers, Ken Pohlmann on compact discs, and Dr. Wolfgang Ahnert on computer-aided sound system design and room-acoustical fundamentals for auditoriums and concert halls, the Handbook for Sound Engineers is a must for serious audio and acoustic engineers. The fifth edition has been updated to reflect changes in the industry, including added emphasis on increasingly prevalent technologies such as software-based recording systems, digital recording using MP3, WAV files, and mobile devices. New chapters, such as Ken Pohlmann’s Subjective Methods for Evaluating Sound Quality, S. Benjamin Kanters’s Hearing Physiology—Disorders—Conservation, Steve Barbar’s Surround Sound for Cinema, Doug Jones’s Worship Styles in the Christian Church, sit aside completely revamped staples like Ron Baker and Jack Wrightson’s Stadiums and Outdoor Venues, Pat Brown’s Sound System Design, Bob Cordell’s Amplifier Design, Hardy Martin’s Voice Evacuation/Mass Notification Systems, and Tom Danley and Doug Jones’s Loudspeakers. This edition has been honed to bring you the most up-to-date information in the many aspects of audio engineering.

Spatial Audio Reproduction with Primary Ambient Extraction - JianJun He 2016-07-25

This book first introduces the background of spatial audio reproduction, with different types of audio content and for different types of playback systems. A literature study on the classical and emerging Primary Ambient Extraction (PAE) techniques is presented. The emerging techniques aim to

improve the extraction performance and also enhance the robustness of PAE approaches in dealing with more complex signals encountered in practice. The in-depth theoretical study helps readers to understand the rationales behind these approaches. Extensive objective and subjective experiments validate the feasibility of applying PAE in spatial audio reproduction systems. These experimental results, together with some representative audio examples and MATLAB codes of the key algorithms, illustrate clearly the differences among various approaches and also help readers gain insights on selecting different approaches for different applications.

Noise and Vibration Control in Automotive Bodies - Jian Pang 2018-10-05

A comprehensive and versatile treatment of an important and complex topic in vehicle design Written by an expert in the field with over 30 years of NVH experience, Noise and Vibration Control of Automotive Body offers nine informative chapters on all of the core knowledge required for noise, vibration, and harshness engineers to do their job properly. It starts with an introduction to noise and vibration problems; transfer of structural-borne noise and airborne noise to interior body; key techniques for body noise and vibration control; and noise and vibration control during vehicle development. The book then goes on to cover all the noise and vibration issues relating to the automotive body, including: overall body structure; local body structure; sound package; excitations exerted on the body and transfer functions; wind noise; body sound quality; body squeak and rattle; and the vehicle development process for an automotive body. Vehicle noise and vibration is one of the most important attributes for modern vehicles, and it is extremely important to understand and solve NVH problems. Noise and Vibration Control of Automotive Body offers comprehensive coverage of automotive body noise and vibration analysis and control, making it an excellent guide for body design engineers and testing engineers. Covers all the noise and vibration issues relating to the automotive body Features a thorough set of tables, illustrations, photographs, and examples Introduces automotive body structure and noise and vibration problems Pulls together the diverse topics of body structure, sound package, sound quality, squeak and rattle, and target setting Noise and Vibration Control of Automotive Body is a valuable reference for engineers, designers, researchers, and graduate students in the fields of automotive body design and NVH.

Evaluation Of Product Sound Design Within The Context Of Emotion Design And Emotional Branding - Gürer Piker 2005

The main purpose of this thesis is to set out the relationships between the work of product designers and the perceptions of costumers regarding the acceptability of product sounds. Product design that provides aesthetic appeal, pleasure and satisfaction can greatly influence success of a product. Sound as a cognitive artifact, plays a significant role in the cognition of product interaction and in shaping its identity. This thesis will review emotion theories end their application to sound design and sound quality modeling, the measurement of emotional responses to sound, and the relationship between psycho-acoustical sound descriptions and emotions. In addition to that, affects of sounds to emotionally significant brands will be evaluated so as to examine marketing values. One of the main purposes of chapter 2 is to prove knowledge about psychoacoustics; as product sound quality is a basic understanding of the underlying psychoacoustics phenomena. Perception; particularly sound perception and its elements are described during chapter 2. Starting with the description of sound wave and how our hear works, sound perception and auditory sensation is reviewed in continuation. In chapter 3, product sound quality concept and its evaluation principles are reviewed. Thus, in order to understand the coupling between the acoustic perception and the product design; knowledge of general principles for product sound

quality are required. Chapter 4 can be considered as two main sections. .How does emotion act as a delighter in product design?. is examined to better understand customer and user experiences impacting pleasure-ability in first section. In the second section, emotion is evaluated through sound design. A qualitative evaluation is done so as to examine cognition and emotion in sound perception. Chapter 5 leads subject through emotional branding. Sounds that carry the brand.s identity are evaluated within. Sound design is re-evaluated as marketing strategy and examined with several instances. Keywords: Product sound design, psychoacoustics, product sound quality, emotion design, emotional branding.

Digital Audio Watermarking - Yong Xiang 2017-03-16

This book offers comprehensive coverage on the most important aspects of audio watermarking, from classic techniques to the latest advances, from commonly investigated topics to emerging research subdomains, and from the research and development achievements to date, to current limitations, challenges, and future directions. It also addresses key topics such as reversible audio watermarking, audio watermarking with encryption, and imperceptibility control methods. The book sets itself apart from the existing literature in three main ways. Firstly, it not only reviews classical categories of audio watermarking techniques, but also provides detailed descriptions, analysis and experimental results of the latest work in each category. Secondly, it highlights the emerging research topic of reversible audio watermarking, including recent research trends, unique features, and the potentials of this subdomain. Lastly, the joint consideration of audio watermarking and encryption is also reviewed. With the help of this concept, more secure audio watermarking systems can be developed, which meet the requirements for security and privacy in cloud-based networks and systems. Accordingly, the book serves as a tutorial suitable for readers with a general knowledge of audio signal processing as well as experts in related areas, helping these readers understand the basic principles and the latest advances, concepts and applications of audio watermarking.

Psychoacoustics - Hugo Fastl 2007-06-30

Psychoacoustics offers a unique, comprehensive summary of information describing the processing of sound by the human hearing system. The third edition includes an additional chapter on audio-visual interactions and applications, plus more on applications throughout.

Vehicle Interior Sound Quality - Yansong Wang 2022-09-07

Sound quality research is an emerging field of acoustics, and it has broad application prospects in the field of vibration and noise control of machinery and automobiles. With the development of new energy vehicles in recent years, the technology demand for interior sound quality evaluation and control has increased rapidly. This book comprehensively introduces the basic concepts, theories, methods and the latest research progress in evaluating and controlling vehicle interior sound quality. The contents include the generation mechanism of the sound field in the vehicle, the evaluation index of the sound quality, the subjective and objective evaluation method, the neural network evaluation model, the data pre-processing, the active and passive control method, the vibration control method based on the piezoelectric effect, the hybrid vibro-acoustics active control method for interior sound quality and the system of sound quality evaluation and control, etc. It contains an introduction to basic knowledge and theoretical models and a detailed description of the research background, the algorithms implementation methods and the technical status of specific issues. By reading this book, readers can fully understand the current research status and development trend of vehicle interior sound quality evaluation and control and comprehend basic concepts, related theories and implementation

methods.

Neuroscience of Preference and Choice - Raymond J. Dolan 2012

One of the most pressing questions in neuroscience, psychology and economics today is how does the brain generate preferences and make choices? With a unique interdisciplinary approach, this volume is among the first to explore the cognitive and neural mechanisms mediating the generation of the preferences that guide choice. From preferences determining mundane purchases, to social preferences influencing mating choice, through to moral decisions, the authors adopt diverse approaches to answer the question. Chapters explore the instability of preferences and the common neural processes that occur across preferences. Edited by one of the world's most renowned cognitive neuroscientists, each chapter is authored by an expert in the field, with a host of international contributors. Emphasis on common process underlying preference generation makes material applicable to a variety of disciplines - neuroscience, psychology, economics, law, philosophy, etc. Offers specific focus on how preferences are generated to guide decision making, carefully examining one aspect of the broad field of neuroeconomics and complementing existing volumes Features outstanding, international scholarship, with chapters written by an expert in the topic area

Integral and Diagnostic Intrusive Prediction of Speech Quality - Nicolas Côté 2011-05-06

This work deals with the instrumental measurement methods for the perceived quality of transmitted speech. These measures simulate the speech perception process employed by human subjects during auditory experiments. The measure standardized by the International Telecommunication Union (ITU), called "Wideband-Perceptual Speech Quality Evaluation (WB-PESQ)", is not able to quantify all these perceived characteristics on a unidimensional quality scale, the Mean Opinion Score (MOS) scale. Recent experimental studies showed that subjects make use of several perceptual dimensions to judge about the quality of speech signals. In order to represent the signal at a higher stage of perception, a new model, called "Diagnostic Instrumental Assessment of Listening quality (DIAL)", has been developed. It includes a perceptual and a cognitive model which simulate the whole quality judgment process. Except for strong discontinuities, DIAL predicts very well speech quality of different speech processing and transmission systems, and it outperforms the WB-PESQ.

Communication Acoustics - Ville Pulkki 2015-04-30

In communication acoustics, the communication channel consists of a sound source, a channel (acoustic and/or electric) and finally the receiver: the human auditory system, a complex and intricate system that shapes the way sound is heard. Thus, when developing techniques in communication acoustics, such as in speech, audio and aided hearing, it is important to understand the time–frequency–space resolution of hearing. This book facilitates the reader's understanding and development of speech and audio techniques based on our knowledge of the auditory perceptual mechanisms by introducing the physical, signal-processing and psychophysical background to communication acoustics. It then provides a detailed explanation of sound technologies where a human listener is involved, including audio and speech techniques, sound quality measurement, hearing aids and audiology. Key features: Explains perceptually-based audio: the authors take a detailed but accessible engineering perspective on sound and hearing with a focus on the human place in the audio communications signal chain, from psychoacoustics and audiology to optimizing digital signal processing for human listening. Presents a wide overview of speech, from the human production of speech sounds and basics of phonetics to major speech technologies, recognition and synthesis of speech and methods for speech quality evaluation. Includes MATLAB examples that serve

as an excellent basis for the reader's own investigations into communication acoustics interaction schemes which intuitively combine touch, vision and voice for lifelike interactions.

Noise, Vibration and Harshness of Electric and Hybrid Vehicles - Lijun Zhang 2020-12-29

The noise, vibration, and harshness (NVH), also known as noise and vibration (N&V), is a critical feature for customers to assess the performance and quality of vehicles. NVH characteristics are higher among factors that customers use to judge the vehicle's quality.This book sets out to introduce the basic concepts, principles, and applications of the NVH development and refi nement of Battery Electric Vehicles (BEV), Hybrid Electric Vehicles (HEV), and Fuel Cell Electric Vehicles. Each type comes with its own set of challenges.

Communication Acoustics - Jens Blauert 2005-12-05

Communication Acoustics deals with the fundamentals of those areas of acoustics which are related to modern communication technologies. Due to the advent of digital signal processing and recording in acoustics, these areas have enjoyed an enormous upswing during the last 4 decades. The book chapters represent review articles covering the most relevant areas of the field. They are written with the goal of providing students with comprehensive introductions. Further they offer a supply of numerous references to the relevant literature. Besides its usefulness as a textbook, this will make the book a source of valuable information for those who want to improve or refresh their knowledge in the field of communication acoustics – and to work their way deeper into it. Due to its interdisciplinary character Communication Acoustics is bound to attract readers from many different areas, such as: acoustics, cognitive science, speech science, and communication technology.

Environmental Indicators - Robert H. Armon 2015-01-05

Environmental indicators are the first line of warning against hazards caused by humans or nature catastrophes to prevent diseases and death of living organisms. The present book covers a large variety of environmental indicators from physical-chemistry through economical, bioinformatics, electromagnetic irradiation and health aspects, all dealing with environmental pollution. This volume has been intended to environmentalists, engineers, scientists and policy makers as well to anybody interested in the latest development in the indicator field.

Psychoacoustic Music Sound Field Synthesis - Tim Ziemer 2019-08-06

This book provides a broad overview of spaciousness in music theory, from mixing and performance practice, to room acoustics, psychoacoustics and audio engineering, and presents the derivation, implementation and experimental validation of a novel type of spatial audio system. Discussing the physics of musical instruments and the nature of auditory perception, the book enables readers to precisely localize synthesized musical instruments while experiencing their timbral variance and spatial breadth. Offering interdisciplinary insights for novice music enthusiasts and experts in the field of spatial audio, this book is suitable for anyone interested in the study of music and musicology and the application of spatial audio mixing, or those seeking an overview of the state of the art in applied psychoacoustics for spatial audio.

Product Experience - Hendrik N. J. Schifferstein 2011-04-28

Product Experience brings together research that investigates how people experience products: durable, non-durable, or virtual. In contrast to other books, the present book takes a very broad, possibly all-inclusive perspective, on how people experience products. It thereby bridges gaps between several areas within psychology (e.g. perception, cognition, emotion) and links these areas to more applied areas of science, such as product design, human-computer interaction and marketing. The field of product experience research will include some of the research from four areas: Arts, Ergonomics, Technology, and Marketing. Traditionally, each of

these four fields seems to have a natural emphasis on the human (ergonomics and marketing), the product (technology) or the experience (arts). However, to fully understand human product experience, we need to use different approaches and we need to build bridges between these various fields of expertise. Most comprehensive collection of psychological research behind product design and usability Consistenly addresses the 3 components of human-product experience: the human, the product, and the experience International contributions from experts in the field

Soundscape and the Built Environment - Jian Kang 2018-10-09

Soundscape Basics and Practical Implications Soundscape research represents a paradigm shift, as it involves human and social sciences and physical measurements to account for the diversity of soundscapes across countries and cultures. Moreover, it treats environmental sounds as a resource rather than a waste. Soundscape and the Built Environment is the first book to systematically discuss soundscape in the built environment. It begins with a presentation of theory and basic background, answering questions such as: what is soundscape, how is it important, and how does it affect people in terms of their health and perception on the acoustic environment. The book then sets out tools for implementing a soundscape approach, with measurement techniques, mapping, and good soundscape practices. It also delivers a series of examples of the application of the soundscape approach in planning, design, and assessment. Discusses soundscape and environmental noise Explores cultural variations and the way they influence soundscape Introduces binaural measurement technology and psychoacoustics Examines the physical, psychological, and physiological restorative mechanism of high-quality acoustic environments Presents soundscape mapping based on human perception of sound sources Includes real-world examples and case studies highlighting the key issues in soundscape intervention Soundscape and the Built Environment is written by a group of leading international figures and derives from a four-year EU COST project on Soundscapes of European Cities and Landscapes. It presents a consensus on the current state of the art and is not merely a collection of different views. It is written for acoustic consultants, urban planners, designers and policy makers, as well as for graduate students and researchers.

Loudness - Mary Florentine 2010-11-04

Loudness is the primary psychological correlate of intensity. When the intensity of a sound increases, loudness increases. However, there exists no simple one-to-one correspondence between loudness and intensity; loudness can be changed by modifying the frequency or the duration of the sound, or by adding background sounds. Loudness also changes with the listener's cognitive state. Loudness provides a basic reference for graduate students, consultants, clinicians, and researchers with a focus on recent discoveries. The book begins with an overview of the conceptual thinking related to the study of loudness, addresses issues related to its measurement, and later discusses the physiological effects of loud sounds, reaction times and electrophysiological measures that correlate with loudness. Loudness in the laboratory, loudness of steady-state sounds and the loudness of time-varying sounds are also covered, as are hearing loss and models.

Intelligent Systems in Production Engineering and Maintenance – ISPEM 2017 - Anna Burduk 2017-08-16

The volume presents a collection of 44 peer-reviewed articles from the First International Conference on Intelligent Systems in Production Engineering and Maintenance (ISPEM 2017). ISPEM 2017 was organized by the Faculty of Mechanical Engineering, Wrocław University of Science and Technology and was held in Wrocław (Poland) on 28–29 September 2017. The main topics of the conference included the possibility of using

widely understood intelligent methods in production engineering. New solutions for innovative plants, research results and case studies taking into account advances in production and maintenance from the point of view of Industry 4.0 were presented and discussed—with special attention paid to applications of intelligent systems, methods and tools in production engineering, maintenance, logistics, quality management, information systems, and product development. The volume is divided into two parts: 1. Intelligent Systems in Production Engineering 2. Intelligent Systems in Maintenance This book is an excellent reference resource for scientists in the field of manufacturing engineering and for top managers in production enterprises.

Geographies of Urban Sound - Torsten Wissmann 2016-04-22

Traffic, music, language and nature help to create unique soundscapes that are essential to the place-based character of each city. Taking into account both the urban soundscape and the impacts of sound on the urban dweller, this book examines sound not as a by-product of urban life, but as a fundamental part of the urban experience that is crucial to understanding the city´s sense of place. Illustrated by case studies from Europe and North America, these range from on-site measurements to the construction of audio tours for local tourism, from media analysis of popular culture audio drama to sound-identity and city branding, and from the classification of noise in city planning to a consideration of the complex relationship between sacred sound and the creation of a sense of place. Taking a social geographic perspective, the book focuses on the effects of sounds on the individual and how they influence the ways s/he engages the city as place, especially in their daily routines. In doing so, it uncovers the socio-scientific potential of sound in the urban environment, based on the understanding that sound cannot and must not be seen as detached from the urban landscape, but rather as a constituting element. Sound exists not only 'within the city': it 'is' the city.

Communication Acoustics - Ville Pulkki 2015-01-27

In communication acoustics, the communication channel consists of a sound source, a channel (acoustic and/or electric) and finally the receiver: the human auditory system, a complex and intricate system that shapes the way sound is heard. Thus, when developing techniques in communication acoustics, such as in speech, audio and aided hearing, it is important to understand the time–frequency–space resolution of hearing. This book facilitates the reader's understanding and development of speech and audio techniques based on our knowledge of the auditory perceptual mechanisms by introducing the physical, signal-processing and psychophysical background to communication acoustics. It then provides a detailed explanation of sound technologies where a human listener is involved, including audio and speech techniques, sound quality measurement, hearing aids and audiology. Key features: Explains perceptually-based audio: the authors take a detailed but accessible engineering perspective on sound and hearing with a focus on the human place in the audio communications signal chain, from psychoacoustics and audiology to optimizing digital signal processing for human listening. Presents a wide overview of speech, from the human production of speech sounds and basics of phonetics to major speech technologies, recognition and synthesis of speech and methods for speech quality evaluation. Includes MATLAB examples that serve as an excellent basis for the reader's own investigations into communication acoustics interaction schemes which intuitively combine touch, vision and voice for lifelike interactions.

Signal Compression - N. Jayant 1997-05

The topic of the proposed book is signal compression. The compression (or low bit rate coding) of speech, audio, image and video signals is a key technology for rapidly emerging opportunities in multimedia products and services.The book contains chapters dedicated to the subtopics of data,

speech, audio and visual signal coding, together with an introductory overview chapter on signal compression. The overview article summarizes current capabilities and future trends. The signal-specific chapters that follow focus on the latest technologies and coding standards, while including self-contained introductions to the respective signal domains. The authors of the book chapters are recognized experts in the field of signal processing, compression in particular.Signal compression dealing with both audio and visual signals technology has progressed very rapidly. The proposed book fills a clear void, and should prove to be a valuable reference, both to the practicing professional and to the relatively uninitiated student.

Neurally Based Measurement and Evaluation of Environmental Noise - Yoshiharu Soeta 2015-05-04

This book deals with methods of measurement and evaluation of environmental noise based on an auditory neural and brain-oriented model. The model consists of the autocorrelation function (ACF) and the interaural cross-correlation function (IACF) mechanisms for signals arriving at the two ear entrances. Even when the sound pressure level of a noise is only about 35 dBA, people may feel annoyed due to the aspects of sound quality. These aspects can be formulated by the factors extracted from the ACF and IACF. Several examples of measuring environmental noise—from outdoor noise such as that of aircraft, traffic, and trains, and indoor noise such as caused by floor impact, toilets, and air-conditioning—are demonstrated. According to the noise measurement and evaluation, applications for sound design are discussed. This book provides an excellent resource for students, researchers, and practitioners in a wide range of fields, such as the automotive, railway, and electronics industries, and soundscape, architecture, and acoustics.

Automotive Software Engineering - Thomas Zurawka 2016-09-18

Since the early seventies, the development of the automobile has been characterized by a steady increase in the deploymnet of onboard electronics systems and software. This trend continues unabated and is driven by rising end-user demands and increasingly stringent environmental requirements. Today, almost every function onboard the modern vehicle is electronically controlled or monitored. The software-based implementation of vehicle functions provides for unparalleled freedoms of concept and design. However, automobile development calls for the accommodation of contrasting prerequisites – such as higher demands on safety and reliability vs. lower cost ceilings, longer product life cycles vs. shorter development times – along with growing proliferation of model variants. Automotive Software Engineering has established its position at the center of these seemingly conflicting opposites. This book provides background basics as well as numerous suggestions, rare insights, and cases in point concerning those processes, methods, and tools that contribute to the surefooted mastery of the use of electronic systems and software in the contemporary automobile.

Engineering Acoustics - Malcolm J. Crocker 2021-01-11

ENGINEERING ACOUSTICS NOISE AND VIBRATION CONTROL A masterful introduction to the theory of acoustics along with methods for the control of noise and vibration In Engineering Acoustics: Noise and Vibration Control, two experts in the field review the fundamentals of acoustics, noise, and vibration. The authors show how this theoretical work can be applied to real-world problems such as the control of noise and vibration in aircraft, automobiles and trucks, machinery, and road and rail vehicles. Engineering Acoustics: Noise and Vibration Control covers a wide range of topics. The sixteen chapters include the following: Human hearing and individual and community response to noise and vibration Noise and vibration instrumentation and measurements Interior and exterior noise of aircraft as well as road and rail vehicles Methods for the control of noise and

vibration in industrial equipment and machinery Use of theoretical models in absorptive and reactive muffler and silencer designs Practical applications of finite element, boundary element and statistical energy analysis Sound intensity theory, measurements, and applications Noise and vibration control in buildings How to design air-conditioning systems to minimize noise and vibration Readers, whether students, professional engineers, or community planners, will find numerous worked examples throughout the book, and useful references at the end of each chapter to support supplemental reading on specific topics. There is a detailed index and a glossary of terms in acoustics, noise, and vibration.

Subjective And Objective Evaluation Of Sound - International Symposium - Ozimek E 1990-09-28

Sensory Evaluation of Sound - Nick Zacharov 2018-12-07

Sensory Evaluation of Sound provides a detailed review of the latest sensory evaluation techniques, specifically applied to the evaluation of sound and audio. This three-part book commences with an introduction to the fundamental role of sound and hearing, which is followed by an overview of sensory evaluation methods and associated univariate and multivariate statistical analysis techniques. The final part of the book provides several chapters with concrete real-world applications of sensory evaluation ranging from telecommunications, hearing aids design and binaural sound, via the latest research in concert hall acoustics through to audio-visual interaction. Aimed at the engineer, researcher, university student or manager the book gives insight into the advanced methods for the sensory evaluation with many application examples. Introduces the fundamental of hearing and the value of sound Provides a firm theoretical basis for advanced techniques in sensory evaluation of sound that are then illustrated with concrete examples from university research through to industrial product development Includes chapters on sensory evaluation practices and methods as well as univariate and multivariate statistical analysis Six application chapters covering a wide range of concrete sensory evaluation study examples including insight into audio-visual assessment Includes data analysis with several associated downloadable datasets Provides extensive references to the existing research literature, text books and standards

Sound Reproduction - Floyd E. Toole 2017-07-28

Sound Reproduction: The Acoustics and Psychoacoustics of Loudspeakers and Rooms, Third Edition explains the physical and perceptual processes that are involved in sound reproduction and demonstrates how to use the processes to create high-quality listening experiences in stereo and multichannel formats. Understanding the principles of sound production is necessary to achieve the goals of sound reproduction in spaces ranging from recording control rooms and home listening rooms to large cinemas. This revision brings new science-based perspectives on the performance of loudspeakers, room acoustics, measurements and equalization, all of which need to be appropriately used to ensure the accurate delivery of music and movie sound tracks from creators to listeners. The robust website (www.routledge.com/cw/toole) is the perfect companion to this necessary resource.

Communication Acoustics - Ville Pulkki 2014-12-29

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Acoustics and Psychoacoustics - David M. Howard 2017-06-13

The acoustics of a space can have a real impact on the sounds you create and capture. Acoustics and Psychoacoustics, Fifth Edition provides supportive tools and exercises to help you understand how music sounds and behaves in different spaces, whether during a performance or a recording, when planning a control room or listening space, and how it is perceived by performers, listeners, and recording engineers. With their clear and simple style, Howard and Angus cover both theory and practice by addressing the science of sound engineering and music production, the acoustics of musical instruments, the ways in which we hear musical sounds, the underlying principles of sound processing, and the application of these concepts to music spaces to create professional sound. This new edition is fully revised to reflect new psychoacoustic information related to timbre and temporal perception, including an updated discussion of vocal fold vibration principles, samples of recent acoustic treatments, and a description of variable acoustics in spaces, as well as coverage of the environment's effect on production listening, sonification, and other topics. Devoted to the teaching of musical understanding, an accompanying website (www.routledge.com/cw/howard) features various audio clips, tutorial sheets, questions and answers, and trainings that will take your perception of sound to the next level. This book will help you: Gain a basic grounding in acoustics and psychoacoustics with respect to music audio technology systems Incorporate knowledge of psychoacoustics in future music technology system designs as appropriate Understand how we hear pitch, loudness, and timbre Learn to influence the acoustics of an enclosed space through designed physical modifications

Sound & Communications - 1992

Methodologies For The Conception, Design And Application Of Soft Computing - Proceedings Of The 5th International Conference On Soft Computing And Information/intelligent Systems (In 2 Volumes) - Matsumoto Gen 1998-08-25

Advanced Signal Processing Technology by Soft Computing - Charles Hsu 2001

This book presents worldwide outstanding research and recent progress in the applications of neural networks, fuzzy logic, chaos, independent component analysis, etc to fields related to speech recognition enhancement, supervised Fourier demixing noise elimination, acoustic databases, the human hearing system, cancer detection, image processing, and visual communications.

Acoustical Materials - Pranab Saha 2021-08-11

What is acoustics? What is noise? How is sound measured? How can the vehicle noise be reduced using sound package treatments? Pranab Saha answers these and more in Acoustical Materials. Acoustics is the science of sound, including its generation, propagation, and effect. Although the

propulsion sources of internal combustion engine (ICE) vehicles and electric motor-powered vehicles (EV) are different and therefore their propulsion noises are different, both types of vehicles have shared noise concerns: Tire and road noise Wind noise Vehicle noise and vibration issues have been there almost from the inception of vehicle manufacturing. The noise problem in a vehicle is very severe and is difficult to solve only by modifying the sources of noise and vibration. Sound package treatments address the noise and vibration issues along the path to reduce in-cabin noise. In Acoustical Materials, readers will grasp the science of reducing sound and vibration using sound absorbers, sound barriers, and vibration dampers. Sound provides information on the proper operation of the vehicle, but if unchecked, can detract from the consumer experience within the vehicle and create noise pollution outside the vehicle. Acoustical Materials provides essential information on the basics of sound, vehicle noise source, how these are measured, how vehicle owners perceive sound, and ultimately, how to solve noise problems in vehicles using sound package materials.

Applications of Digital Signal Processing to Audio and Acoustics - Mark Kahrs 2005-12-11

Karlheinz Brandenburg and Mark Kahrs With the advent of multimedia, digital signal processing (DSP) of sound has emerged from the shadow of bandwidth limited speech processing. Today, the main appli cations of audio DSP are high quality audio coding and the digital generation and manipulation of music signals. They share common research topics including percep tual measurement techniques and analysis/synthesis methods. Smaller but nonetheless very important topics are hearing aids using signal processing technology and hardware architectures for digital signal processing of audio. In all these areas the last decade has seen a significant amount of application oriented research. The topics covered here coincide with the topics covered in the biannual work shop on “Applications of Signal Processing to Audio and Acoustics”. This event is sponsored by the IEEE Signal Processing Society (Technical Committee on Audio and Electroacoustics) and takes place at Mohonk Mountain House in New Paltz, New York. A short overview of each chapter will illustrate the wide variety of technical material presented in the chapters of this book. John Beerends: Perceptual Measurement Techniques. The advent of perceptual measurement techniques is a byproduct of the advent of digital coding for both speech and high quality audio signals. Traditional measurement schemes are bad estimates for the subjective quality after digital coding/decoding. Listening tests are subject to sta tistical uncertainties and the basic question of repeatability in a different environment.

Networks - Daniel Hardy 2013-12-18

This handbook delivers a complete and practice-oriented overview of the fundamentals of today's telecommunications networks and the future prospects for next generation networks (NGN). The very clear and concise text is supplemented by many colour illustrations and embedded into a functional four-colour layout.

Perceptual Audio Evaluation - Theory, Method and Application - Søren Bech 2007-01-11

As audio and telecommunication technologies develop, there is an increasing need to evaluate the technical and perceptual performance of these innovations. A growing number of new technologies (e.g. low bit-rate coding) are based on specific properties of the auditory system, which are often highly non-linear. This means that the auditory quality of such systems cannot be measured by traditional physical measures (such as distortion, frequency response etc.), but only by perceptual evaluations in the form of listening tests. Perceptual Audio Evaluation provides a comprehensive guide to the many variables that need to be considered before, during and after experiments. Including the selection of the content of the programme material to be reproduced, technical aspects of the production of the programme material, the experimental set-up

including calibration, and the statistical planning of the experiment and subsequent analysis of the data. Perceptual Audio Evaluation: Provides a complete and accessible guide to the motives, theory and practical application of perceptual evaluation of reproduced sound. Discusses all the variables of perceptual evaluation, their control and their possible influence on the results. Covers in detail all international standards on the topic. Is illustrated throughout with tables, figures and worked solutions. Perceptual Audio Evaluation will appeal to audio and speech engineers as well as researchers in audio and speech laboratories. Postgraduate students in engineering or acoustics and undergraduate students studying psychoacoustics, speech audio processing and signal processing will also find this an essential reference.