Active Noise Control Systems: Algorithms and DSP Implementations (Wiley Series in Telecommunications and Signal Processing)

Sen M. Kuo, Dennis R. Morgan

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Active noise control (ANC) is rapidly becoming the most effective way to reduce noises that can otherwise be very difficult and expensive to control. ANC is achieved by introducing a canceling "anti-noise" wave through an appropriate array of secondary sources. When applied accurately, ANC can provide effective solutions to noise-related problems in a broad range of areas, including manufacturing and industrial operations as well as consumer products. Consequently, ANC research and development has become an important focus of both industrial applications and engineering research.

Active Noise Control Systems: Algorithms and DSP Implementations introduces the basic concepts of ANC with an emphasis on digital signal processing (DSP) hardware and adaptive signal processing algorithms, both of which have come into prominence within the last decade. The authors emphasize the practical aspects of ANC systems by combining the principles of adaptive signal processing with both experimental results and practical implementation. Applications are cited in many fields and encompass all types of noise media, including air-acoustic, hydroacoustic, vibrations, and others. The specific implementation stressed is based on the TMS320 family of signal processors from Texas Instruments, which are the most widely used worldwide.

Coverage of theory includes concise derivations and analyses of commonly used adaptive structures and algorithms for active noise control applications, which are enhanced by the inclusion of a floppy disk featuring C and assembly programs for implementing many ANC systems. Mathematical representations are employed and the source code included on the disk is in a form that is easily accessible to anyone using the book.

For practicing engineers, researchers, and advanced students in signal processing, Active Noise Control Systems: Algorithms and DSP Implementations will serve as a comprehensive, state-of-the-art text/reference on this important and rapidly developing field.

The recent development of digital signal processing (DSP) hardware and adaptive signal processing algorithms has resulted in a dynamic new way of achieving active noise control (ANC). To meet the need for a definitive text on both the basic theory and practical applications of these new ANC techniques, Sen M. Kuo and Dennis R. Morgan have written an invaluable, highly accessible book for researchers, engineers, and advanced students in signal processing.

A state-of-the-art presentation of ANC from innovators in the field

Thorough coverage of the theoretical principles behind ANC techniques with rational and consistent notation

Numerous illustrations for easy interpretation of complex algorithms

Unique emphasis on the practical applications of ANC systems from the viewpoint of signal processing and

DSP implementation within the framework of ANC systems

Accompanying software that can be used to implement many ANC systems discussed in the text

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