Applied Signal Processing: A MATLAB™-Based Proof of Concept (Signals and Communication Technology (Paperback))

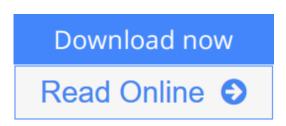*By Thierry Dutoit, Ferran Marques*

Applied Signal Processing: A MATLAB™-Based Proof of Concept (Signals and Communication Technology (Paperback)) By Thierry Dutoit, Ferran Marques

Applied Signal Processing: A MATLAB-Based Proof of Concept benefits readers by including the teaching background of experts in various applied signal processing fields and presenting them in a project-oriented framework. Unlike many other MATLAB-based textbooks which only use MATLAB to illustrate theoretical aspects, this book provides fully commented MATLAB code for working proofs-of-concept. The MATLAB code provided on the accompanying online files is the very heart of the material. In addition each chapter offers a functional introduction to the theory required to understand the code as well as a formatted presentation of the contents and outputs of the MATLAB code.

Each chapter exposes how digital signal processing is applied for solving a real engineering problem used in a consumer product. The chapters are organized with a description of the problem in its applicative context and a functional review of the theory related to its solution appearing first. Equations are only used for a precise description of the problem and its final solutions. Then a step-by-step MATLAB-based proof of concept, with full code, graphs, and comments follows. The solutions are simple enough for readers with general signal processing background to understand and they use state-of-the-art signal processing principles. *Applied Signal Processing: A MATLAB-Based Proof of Concept* is an ideal companion for most signal processing course books. It can be used for preparing student labs and projects.

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Editorial Review

Review

From the reviews:

"In this book, Dutoit … provide readers with practical application of the theory and working MATLAB code for the algorithms being presented, thus allowing them to actually learn the theory by experimenting with real data using the supplied code that is known to be correct and working. This mode of learning allows one to actually see the effects and transformation power of the algorithms … presented in the text. … Summing Up: Highly recommended. Upper-division undergraduate through professional collections." (J. Y. Cheung, Choice, Vol. 47 (2), October, 2009)

From the Back Cover

This is a project-oriented laboratory book with online supplementary files focused on digital signal processing (DSP) for students, instructors and professionals. The authors provide eleven large and detailed projects which take the reader through the essentials of signal processing applications. Included are MATLAB codes which are fully commented on for developing working proofs of concepts. The accompanying online material together with the text directly integrates theory into practice.

The eleven projects include speech coding for cell phones, understanding brain scan imaging, how MP3 players compress the data rate of audio CDs, embedding private information in music without detection, and much more.

Applied Signal Processing: A MATLAB™-Based Proof of Concept allows readers to benefit from the experience and expertise of professionals, researchers, and instructors in a variety of applied signal processing related fields, presented in a project framework. It is ideal for lecture and laboratory courses, and the subject matter is compatible for use along with most standard textbooks.

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