



1st ed. 2018, X, 422 p. 81 illus., 54 illus. in color.

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Tuomas Virtanen, Mark D. Plumbley, Dan Ellis (Eds.)

Computational Analysis of Sound Scenes and Events

- Gives an overview of methods for computational analysis of sounds scenes and events, allowing those new to the field to become fully informed
- Covers all the aspects of the machine learning approach to computational analysis of sound scenes and events, ranging from data capture and labeling process to development of algorithms
- Includes descriptions of algorithms accompanied by a website from which software implementations can be downloaded, facilitating practical interaction with the techniques

This book presents computational methods for extracting the useful information from audio signals, collecting the state of the art in the field of sound event and scene analysis. The authors cover the entire procedure for developing such methods, ranging from data acquisition and labeling, through the design of taxonomies used in the systems, to signal processing methods for feature extraction and machine learning methods for sound recognition. The book also covers advanced techniques for dealing with environmental variation and multiple overlapping sound sources, and taking advantage of multiple microphones or other modalities. The book gives examples of usage scenarios in large media databases, acoustic monitoring, bioacoustics, and context-aware devices. Graphical illustrations of sound signals and their spectrographic representations are presented, as well as block diagrams and pseudocode of algorithms.

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