



# Speech and Audio Processing: A MATLAB-based Approach

By Ian Vince McLoughlin

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With this comprehensive and accessible introduction to the field, you will gain all the skills and knowledge needed to work with current and future audio, speech, and hearing processing technologies. Topics covered include mobile telephony, human-computer interfacing through speech, medical applications of speech and hearing technology, electronic music, audio compression and reproduction, big data audio systems and the analysis of sounds in the environment. All of this is supported by numerous practical illustrations, exercises, and hands-on MATLAB examples on topics as diverse as psychoacoustics (including some auditory illusions), voice changers, speech compression, signal analysis and visualisation, stereo processing, low-frequency ultrasonic scanning, and machine learning techniques for big data. With its pragmatic and application driven focus, and concise explanations, this is an essential resource for anyone who wants to rapidly gain a practical understanding of speech and audio processing and technology.

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### **Editorial Review**

#### **Review**

"Professor Ian McLoughlin, a researcher and an educator, has produced a comprehensive and a complete book on speech and audio signal processing that includes many examples and exercises. This is an authoritative book that covers both basic principles and a wealth of advanced and emerging topics ... The concepts are clearly explained and the chapters are organized well with introductions that lead to deeper analysis of topics covered in those chapters."

Benjamin Premkumar, University of Malaya, Malaysia

"Professor McLoughlin has condensed the very broad research and subject area of speech and audio processing into a highly readable book - it provides new students to the field with a very quick and practical overview of the subject."

Chng Eng Siong, Nanyang Technological University, Singapore

#### **About the Author**

Ian Vince McLoughlin has worked with speech and audio for almost three decades in both industry and academia, creating signal processing systems for speech compression, enhancement and analysis, authoring over 200 publications in this domain. Professor McLoughlin pioneered Bionic Voice research, invented super-audible silent speech technology and was the first to apply the power of deep neural networks to machine hearing, endowing computers with the ability to comprehend a diverse range of sounds.

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