Foreword

Speech is no doubt the most essential medium of human interaction.

By means of modern digital signal processing, we can interact, not only with others, but also with machines. The importance of speech/audio signal processing lies in preserving and improving the quality of speech/audio signals. These signals are treated in a digital representation where various advanced digital-signal-processing schemes can be carried out adaptively to enhance the quality.

Here, special care should be paid to defining the goal of “quality.” In its simplest form, signal quality can be measured in terms of signal distortion (distance between signals). However, more sophisticated measures such as perceptual quality (the distance between human perceptual representations), or even service quality (the distance between human user experiences), should be carefully chosen and utilized according to applications, the environment, and user preferences. Only with proper measures can we extract the best performance from signal processing.

Thanks to recent advances in signal processing theory, together with advances in signal processing devices, the applications of audio/speech signal processing have become ubiquitous over the last decade. This book covers various aspects of recent advances in speech/audio signal processing technologies, such as audio signal enhancement, speech and speaker recognition, adaptive filters, active noise canceling, echo canceling, audio quality evaluation, audio and speech watermarking, digital filters for audio effects, and speech technologies for language therapy.

I am very pleased to have had the opportunity to write this foreword. I hope the appearance of this book stimulates the interest of future researchers in the area and brings about further progress in the field of audio/speech signal processing.

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Tomohiko Taniguchi (PhD) was born in Wakayama Japan on March 7, 1960. In 1982 he joined the Fujitsu Laboratories Ltd. where he has been engaged in the research and development of speech coding technologies. In 1988 he was a visiting scholar at the Information System Laboratory, Stanford University, CA, where he did research on speech signal processing. He is director of The Mobile Access Laboratory of Fujitsu Laboratories Ltd., Yokosuka, Japan. Dr. Taniguchi has made important contributions to the speech and audio processing field which are published in a large number of papers, international conference and patents. In 2006, Dr. Taniguchi became a fellow member of the IEEE in recognition for his contributions to speech coding technologies and development of digital signal processing- (DSP) based communication systems. Dr. Taniguchi is also a member of the IEICE of Japan.