Preface

The diagnosis and monitoring of many common neurological conditions routinely involve acoustic analysis of the subject's speech by an expert clinician. There are two significant problems with this: one is that the analysis is time-consuming, hence expensive, and therefore often performed too infrequently, and the other is that the results of the analysis are inconsistent, depending both on the subjective opinions of the clinician and the emotional and physical state of the subject at the time the speech is sampled.

The potential advantages offered by automatic and semi-automatic speech analysis methods have been widely recognized for many years, but more recently, devices with the ability to record and process high quality audio data have become commonplace (laptop and tablet computers, smart-phones, etc.). Such devices make it even easier than before to perform frequent and informal recordings, along with at least some of the subsequent signal analysis, without any direct involvement by a speech and language therapist.

In this book, we draw on a wide range of research from laboratories around the World, and discuss the environments in which the research is performed and the apparent significance of their results. The nature of the tasks being attempted, the availability of appropriate data (both for development purposes and for evaluation), and the details of the evaluation methodology and criteria can all have a significant effect on published results. These issues are discussed and suggestions are made regarding future developments which need to be addressed to facilitate progress in the fields of automatic diagnosis and telemonitoring of disordered speech.

Despite having been an active area of research for many years, there are still many signal processing and pattern recognition techniques which have not yet been applied to disordered speech (a preliminary experiment using one such technique is described here). It seems more than likely that one or more of these could provide additional cues which are not exploited in current systems. It is hoped that the comments and discussions in this book will help to guide researchers in the development of new methods and thus improve the quality and effectiveness of diagnosis and treatment of speech-related disorders.

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