

Preface

The telephony network broadly changed during the last decades with the intensive introduction of Voice over Internet Protocol (VoIP) technology and third generation mobile networks. These networks enable new transmission paradigms that affect the perceived quality of speech signals. The perceived characteristics of a speech signal transmitted by a VoIP network differ from the characteristics of a speech signal transmitted by a traditional analog telephony network: new impairments are introduced (e.g. packet losses), or traditional ones are exacerbated (e.g. echo). However, enhancements have been also introduced in VoIP and new mobile networks. For instance, WideBand (WB) and Super-WideBand (S-WB) transmissions both significantly improve speech quality.

In this book, instrumental measurement methods for the perceived quality of transmitted speech are described. Such methods simulate the speech perception process employed by human subjects during auditory experiments. The measure standardized by the International Telecommunication Union (ITU), called “Wideband-Perceptual Evaluation of Speech Quality” or WB-PESQ, is not able to quantify all of these perceived characteristics on a unidimensional quality scale, the Mean Opinion Score (MOS) scale. Recent experimental studies have shown that subjects make use of several perceptual dimensions to judge on the quality of speech signals. In order to represent the signal at a higher stage of perception, a new model, called “Diagnostic Instrumental Assessment of Listening quality (DIAL)”, has been developed. It includes a perceptual and a judgment model, which simulates the whole quality judgment process. Except for strong discontinuities, DIAL predicts very well the speech quality of different speech processing and transmission systems, and it outperforms the Wideband-Perceptual Evaluation of Speech Quality (WB-PESQ).

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To all students who try to get a doctoral degree; don't drop out, you will pass!

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Nicolas Côté

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