

Integral and Diagnostic Speech-Quality Measurement: State of the Art, Problems, and New Approaches

U. Heute¹, S. Möller², A. Raake³, K. Scholz¹, M. Wältermann²

¹ Institute for Circuit and System Theory, Christian-Albrechts-University, Kaiserstr. 2, D-24143 Kiel, Germany, {uh,ks}@tf.uni-kiel.de

² Institute of Communication Acoustics, Ruhr-University, D-44780 Bochum, Germany, {sebastian.moeller,marcel.waeltermann}@rub.de

³ CNRS, Université de Paris-Sud, F-91403 Orsay, France, alexander.raake@lmsi.fr

ABSTRACT

The user's overall impression of a speech signal which has been influenced by some system can be described in terms of the integral quality. There are well-defined auditory methods to assess integral quality: Mostly, an absolute-category rating in a listening-only situation is used, resulting in the mean opinion score (MOS). For this integral quality index, proposals exist for instrumental measurements, yielding MOS estimates. Such estimates have problems with distortions not taken into account during the model development. Furthermore, they do not allow to characterize the quality of speech signals. A different approach, trying to overcome these problems, aims at quality attributes, concerning distinct distortions, thus allowing for a system diagnosis, and together forming an integral-quality-impression model also able to cope with future degradations. Earlier work into that direction had problems, too. Avoiding some weaknesses and re-defining more suitable attributes, the diagnostic approach is re-visited. First results are reported, and further work is outlined.