Speech Intelligibility and Quality Prediction Toolbox

Modular software for evaluation of speech intelligibility and sound quality

With the “Speech Intelligibility and Quality Prediction Toolbox”, the Project Group Hearing, Speech and Audio Technology at the Fraunhofer IDMT has integrated a wide selection of current, model-based evaluation methods into a unique, intuitive user interface. The modular software can be easily adapted to individual requirements.

Fast comparison of suitable evaluation methods

The SIP-Toolbox is available with modules for speech intelligibility, speech quality, psychoacoustics and room acoustics. In addition to standardized measures of speech intelligibility such as the articulation index, the speech intelligibility index or the speech transmission index, the toolbox also contains extended models for binaural hearing and hearing impairment. The available methods for assessing sound quality extend from standard technical measurements such as the signal-to-noise ratio through to psychoacoustically motivated models such as PEMO-Q. The SIP-Toolbox offers a quick and easy prediction of the main factors affecting speech quality for different situations. It can be used to easily compare the different models and thereby assist users in selecting the most suitable models for their application.

Application areas

- Evaluation of speech intelligibility in communication systems
- Evaluation of speech intelligibility in vehicle interiors
- Evaluation of algorithms for enhancement of speech signals
- Evaluation of room acoustics
- Quality assurance of product sounds, control and operating noise

Speech intelligibility depends very much on specific ambient conditions. The SIP-Toolbox provides quick and easy modeling of speech intelligibility for different situations.

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Als innovatives, mittelständisches Unternehmen profitieren wir von der Zusammenarbeit mit dem Fraunhofer IDMT – von der wissenschaftlichen Expertise bis zur konkreten Umsetzung der akustischen Erkennersysteme auf eingebetteten Systemen.«

Bernd Ilper, Geschäftsführer ILPER-Elektronik GmbH & Co. KG

The SIP-Toolbox offers a wide selection of current, model-based evaluation methods for speech intelligibility and sound quality.

Graphical user interface

For arbitrary speech and noise signals, all models can be quickly compared in a concise graphical interface. The user can easily control all important parameters such as level or signal-to-noise ratio. An option for batch processing allows a convenient processing of large amounts of data.

Available modules

- **Module Speech Intelligibility** (AI, SII, STI, RASTI, STITEL, STIPA, BSIM,...)
- **Module Speech Quality** (PEMO-Q, SNR, LLR, ISD, LAR, WSS,...)
- **Module Psychoacoustics** (loudness (z.B. DIN45631/A1), roughness, sharpness (z.B. DIN45692), tonality, …)
- **Module Room Acoustics** (T60, D50, C50, C80, CT, DRR, …)

Representation of signals

The SIP-Toolbox offers a visual and acoustical representation of the signals providing for example a direct impression of the effect of reverberation. Arbitrary acoustic situations can be integrated into the SIP-Toolbox by means of their impulse responses, which allows simulations of the influence of a transmission system or reverberation on speech quality.

Demo-Version

If you are interested in a free demo-version of the SIP-Toolbox, we kindly ask you to contact us.

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Photo:
Screenshot of the full version SIP-Toolbox containing modules »Speech Intelligibility«, »Speech Quality«, »Psychoacoustics« and »Room Acoustics«.