SPEECH ENHANCEMENT

Multi-microphone solution

Overview

Multi-microphone solution (MMS) of speech enhancement can be effectively used when noise from many different sources needs to be canceled.

MMS can be used as for separation of speech signal, so and for non-speech signals.

MMS is recommended to use if it is known beforehand that an amount of hindrances and sources of the noises is limited. And they can be presented in the manner of "point" sources of radiation, for instance, noise of car engine, noise of ventilator, enclosed radio or music of TV.

In its simplest form the technique uses 2 microphones. Speaker is recorded synchronous with the source of hindrance (noise). The first microphone bases near by speaker, but the second one bases near by source of hindrance or noise.

Thereby, the first microphone records signal "hindrances+ speech" and signals "hindrances" are recorded in all following microphones. Then filter MMS is automatically adapted and selects refined speech signal.

Sometimes single-microphone solution (SMS) and MMS are used together. At first MMS solution is used for completely suppress of hindrances and noises "point" sources. Then in addition it is used SMS solution to suppress all absent-minded hindrances and all remainder of "point" hindrances, which were not be able to suppress of MMS solution completely.

Multi-microphone solution can be effectively used:

- Wireless telephony systems;
- Mobile phones or without "hands free" system.

Features

- High quality of speech enhancement;
- Low level of speech distortion;
- Fast adaptation to changing of external noises;
- Controlled level of noise suppression in speech;
- Easy integration with target applications.

Signal requirement

- Signal format: PCM 16-bits;
- 8 kHz, ..., 32 kHz sampling rate.

Availability

- Float-point C++ source code;
- DLL libraries for MS Windows;
- PC demo for MS Windows is available on request;
- Portability to any DSP, ARM or RISC platform.

GritTec laboratory specializes on research and development of the unique algorithms and technologies in the field of digital signal processing (DSP). GritTec's research is focused on speech enhancement & concealment, speech recognition, voice biometric, methods of adaptive filtration and other speech & audio technologies. All available off-the-shelf our DSP products and solutions can be plugged into the customer system.

Contacts

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