

SPEECH ENHANCEMENT

GritTec's Dual Microphone Array solution

Overview

GritTec's Dual Microphone Array solution (Version 2.00) of speech enhancement is used for the suppression of external hindrances and surrounding noises in chosen direction source of the speech. The sources of external hindrances can be an external noise of car, speech of collocutor, music and any other sounds, coming from directions, different from direction of the chosen source of the speech. Suppression of external hindrances is descended by mean of the acoustical beam-forming - directed diagrams of directivity of microphone array. By using acoustical beam-forming techniques, the microphone array can "focus" on the speaker's position.

GritTec's DMA technology can be effectively applied for:

- suppression of street noises;
- suppression of office noises (fan noise, computer noise, background speech and so on);
- suppression of a various sort of mechanical noises, such as noises of avto-moto technics.

Applications

- Plane/Car audio garniture (CAR KITS);
- Hands-free speech communication systems;
- Web-cameras.

Features

- Support 2 microphones configurations;
- Noise suppression not less 15 db;
- Low level of speech distortion;
- Delay of the algorithm: 0 ms;
- Directional microphones: unidirectional configuration (omni-uni directional);
- Distance between microphones not less 0.025 meters;
- Distance to the speaker not less 0.2 meters (up to 5 meters);
- Choice of a direction of a speech source: hand control (Default: direct);
- Fast adaptation to changing of external noises;
- Controlled level of Sidelobe Canceller, up to 60 dB;
- Easy integration with target applications.

Signal requirement

- Signal format: 16-bits linear;
- Sampling rate: 8 kHz, 16 kHz and 32 kHz;
- Channels: 2 (stereo).

Resource Requirements

RESOURCES	GOAL	NOTES
RAM	~ 148.0 Kbytes	Pointer to the general structure.
ROM	~ 104.0 KBytes	Parameters of void and tempo procedures.
Resource/Source Ratio* (MIPS)	~ 2.45	For signal with sampling rate 8 kHz.
Resource/Source Ratio* (MIPS)	~ 5.20	For signal with sampling rate 16 kHz.
Resource/Source Ratio* (MIPS)	~ 10.30	For signal with sampling rate 32 kHz.

* - for Intel PIII 1,5 GHz.

Availability

- PC demo for MS Windows;
- SDK for x86, x64 platforms with object code or ANSI C/C++ float point code is available on request;
- Portability to any DSP platform.

GritTec Laboratory (GritTec Ltd.) specializes on research and development of algorithms and technologies in the field of speech and audio processing. GritTec's research is focused on speech enhancement, speech concealment, voice biometric, speech recognition, speech synthesis and other speech and audio technologies.

Contacts

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