



Compackt

MELPe Vocoder - Software Suite for TI's TMS320c64x C64+, c674x, DSP, ARM, OMAP, L137, L138, etc..

Real-Time Implementation of the MELPe U.S. and NATO standard vocoder (MIL-STD-3005, NATO STANAG 4591)



Compackt's MELPe suite is a multi-channel multi-thread real-time implementation of the 2400/1200/600 bps MELPe vocoder, U.S. and NATO standard vocoder (MIL-STD-3005, STANAG 4591), running on Texas Instruments' TMS320c64xx c64+, c674x, ARM, DSP, or OMAP, etc.. The suite is versatile, easy and convenient to operate and integrate. Compackt MELPe suite provides complete state-of-the art low-rate voice communications.

Background

MELPe- Enhance Mixed-Excitation Linear Predictive (MELP) vocoder, known as military standard MIL-STD-3005 and NATO STANAG 4591, is a triple-rate low rate coder that operates at rates of 600, 1200 and 2400 bps. At 2400 bps, its quality surpasses that of the old MELP vocoder. The Compackt's MELPe vocoder suite includes also compressed bit-stream transcoding between the two rates, and optional Noise Pre-Processor (NPP).

Operation

Compackt Inc. has participated in the research, development and

implementation of the Enhanced Mixed-Excitation Linear Predictive (MELPe) vocoder sponsored by NSA. Compackt provides support as well as software and hardware related to the MELPe vocoder. Compackt is the only company that both participated in the MELPe R&D, and also provides related products, services, and support.

Compackt has been supporting and improving the MELPe real-time implementation. Compackt has ported MELPe to various DSPs by Texas Instruments such as c674x, c64+, c55xx, c54xx, ARM , DSP, and OMAP.

Available features:

The MELPe software suite includes the following features:

- Multi-channel and multi-thread,
 - POSIX compliant,
 - C-callable functions
 - Optional components available (customer can select desired combination):
 - MELPe at 2400 bps - high rate encoder and/or decoder
 - MELPe at 1200 bps - low rate encoder and/or decoder
 - MELPe at 600 bps - very low rate encoder and/or decoder
 - compressed bit-stream transcoding between the rates
 - noise pre-processor - for reducing background noise
 - postfilter - for quality enhancement of the reproduced speech
- Example of main C program that initializes and runs the MELPe vocoder functions
 - "Packetized-Network-Ready" - to maintain high quality even in severe FER conditions
 - Operation mode can be switched on the fly (no need to reload the program to the DSP)
 - Channels and threads can be switched on the fly (no need to reload the program to the DSP)
 - Easy and fast Test Vectors running and verification setup
 - Comprehensive and detailed documentation that allows for smooth and easy integration
 - Compackt support and service
 - Very low-cost (\$400-\$500) complete DSP development board and tools (CCS) on which Compackt's MELPe may run.
 - Comprehensive and spectacular Real-Time demo, using DIP-switch control and LEDs indicators

Please note: Compackt owns **intellectual property** (IP) in the official (standard) MELPe implementation, and any of its derivatives. Any party intending to develop commercial products based on MELPe should contact Compackt as well as other IP holders regarding licensing.

- *TMS320c54xx, TMS320c55xx, TMS320c64xx , OMAP and Code Composer Studio (CCS) are trademarks of Texas Instruments, Inc*

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