



Encore's Selectable Mode Vocoder (SMV)

Technology

The Selectable Mode Vocoder (SMV) for Wideband CDMA is based on 4 codecs: full rate at 8.5 kbps, half rate at 4 kbps, quarter rate at 2 kbps, and eighth rate at 800 bps. The full rate and half rate are based on the eXtended CELP (eX-CELP) algorithm that is based on a combined closed-loop-open-loop-analysis (COLA). In eX-CELP the signal frames are first classified as: silence/background noise, non-stationary unvoiced, stationary unvoiced, onset, non-stationary voiced, stationary voiced. The algorithm includes voice activity detection (VAD) followed by an elaborate frame classification scheme. Silence/background noise and stationary unvoiced frames are represented by spectrum modulated noise and coded at 1/4 or 1/8 rate. The SMV uses 4 subframes for full rate and three subframes for half rate. The stochastic (fixed) codebook structure is also elaborate and uses sub-codebooks each tuned for a particular type of speech. The sub-codebooks have different degrees of pulse sparseness (more sparse for noise like excitation). SMV scores a high of 4.1 MOS at full rate with clean speech.

The coder works on a frame of 160 speech samples (20 msec) and requires a look ahead of 80 samples (10 msec) if noise-suppression option B is used. An additional 24 samples of look ahead is required if noise-suppression option A is used. So the total algorithmic delay for the coder is 30 msec with noise-suppression option B enabled and 33 msec with noise-suppression option A enabled.

Features

- Fully compatible with the following 3GPP2 standard
C.S0030-0_v2.0 Selectable Mode Vocoder Service Option for Wideband Spread Spectrum Communication Systems, December 2001.
- TTY/TDD & DTMF support.
- Bit-Exact with version 3.9 of fixed point 'C' code.
- Supports VAD_A, VAD_B, NS_A, NS_B Options.
- Selection of VAD options (VAD_A or VAD_B) at the time of initialization.
- Selection of Noise Suppression options (NS_A,or NS_B) at the time of initialization.
- Full duplex multi-channel capability.
- Flexible interface with 'C' callability, with a single archive file for all functions.
- Built-in scratch memory management to avoid run-time overloading of system stack memory.
- Relocatable program and data spaces. Static (state),Scratch data and Table spaces are dynamically relocatable. Program space can be fragmented.
- The code is interruptible and frame re-entrant. It can be used in systems with multi threaded software architecture.
- Available in Little endian and Big Endian formats.
- Works for both default frame size and 10 msec framesize's.

Platforms

- TMS320C64X

Performance Numbers

Platform	Program Memory (KBytes)	Data Memory (KBytes)			MIPS
		Static/Channel	Scratch	Tables	
TMS320C64X	376.32	9.71	14.34	24.47	24.31

Availability

Now

For further information please visit our web site, <http://www.ncoretech.com> or email to: jp@ncoretech.com

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