

# Real-Time Graphics Processing Unit Implementation of Whitening Filters for Audio Signals



**Abstract-** This work investigates a real-time implementation of autoregressive and pitch-prediction whitening filters for use in audio feedback suppression. The work begins by analyzing whitening filters performance for synthesized and recorded test audio signals. A MATLAB simulation of the adaptive feedback cancellation (AFC) algorithm shows pitch-prediction to be the most computationally intensive aspect of the feedback cancellation algorithm. A DSP processor implementation is demonstrated in which the autoregressive filter implementation outperforms MATLAB implementation computation time while the pitch-prediction implementation fails to meet real-time requirements. A successful real-time implementation of the pitch-prediction algorithm is demonstrated on NVIDIA graphics processing unit (GPU) with substantial speed gains compared to the MATLAB implementation.

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**AES Los Angeles 2014 Paper Session Details - Audio** Digital audio signals and digital video signals are commonly distributed by such broadcasts. .. An innovative course on real-time digital signal processing applications DSP synthesis with heterogeneous functional units using the MARS-II system High-speed VLSI implementation of FIR lattice filters.

**Real-Time Graphics Processing Unit Implementation of Whitening** It is shown empirically that implementing a simple reiterative processing technique, whereby the It is noted that cascaded cancellers lend themselves to practical real-time implementation as systolic processors due to their highly parallel / pipelined signal flow structure. Kalman filtering with partial observation losses. **Real-Time Graphics Processing Unit Implementation of Whitening** With multichannel techniques, it is possible to reproduce sound signals According to our measurements, the reverberation time in our virtual room is in the order of chose FIR filters of order 25 for practical implementation of spectral compensation. Mustajuuri -- is a generic plugin-based real-time signal processing tool. **More details - EVE:en**

Real-Time Graphics Processing Unit Implementation of Whitening Filters for Audio Signals [Omer A.S. Osman] on .  
\*FREE\* shipping on qualifying **Massively Parallel Signal Processing using the Graphics Processing** Pre-whitening techniques are employed in blind correlation detection of additive are selectively applied, based on short time spectral

characteristics of the audio signal. Published in: Signal Processing Conference, 2006 14th European. **M.E-Applied Electronics - Anna University** thesis system requires massive filter processing in real time. Graph- The proposed GPU implementation can run up to 1256 concurrent. IIR filters of order **ISO 8529-1:2001, Reference neutron radiations -- Part 1: - Library** Significant performance gains were obtained with GPU processing: the current processing paradigm in which the real-time signal processing . The implementation details for the spatial filter and power estimation follow, **Discretization issues for the design of optimal blind algorithms** By the method of statistical modeling its defined efficiency of censoring algorithm for signals, which are got in training sample, on which estimation of. **Block Adaptive Filtering with Applications to Real Time Broadband Real-Time Graphics Processing Unit Implementation of Whitening** Real-Time Graphics Processing Unit Implementation. of Whitening Filters for Audio Signals. by Omer A.S. Osman. B.S. in Electrical Engineering, May 2010, The **Patent US20110223997 - Method to detect and remove audio** Four all zero whitening filters, one-sided and two-sided Wiener and linear in: IEEE Transactions on Acoustics, Speech, and Signal Processing ( Volume: 34 **Multi-channel conversion of the National Weather Radar Testbed** Then, the noise disturbance of the audio signal is adjusted processing the audio signal through an inverse impulse response filter. 3. . ability for clear and effective player to player communication in real time. .. Additionally, graphics processing unit (GPU) 190 may be included in computing device 182. **Fast computational structures for an efficient implementation of the** The ability of a s.a.w. filter to match arbitrary frequency response is S.A.W. implementation of whitening filters for satellite digital communications Division Dispositifs de Traitement de Signal, Issy-les-Moulineaux, France **Robust H/spl infin/ filter design for uncertain linear systems with multiple time-varying state delays. S.A.W. implementation of whitening filters for satellite digital** As for example, a simpler whitening filter design which is needed for the time models with different complexities for the signal processing algorithms to follow. **EVE - Acoustics and Audio - TML Real-Time Graphics Processing Unit Implementation of Whitening Filters for Audio Signals.** This work investigates a real-time implementation of autoregressive **Multi-channel IIR filtering of audio signals using a GPU Real-Time Graphics Processing Unit Implementation of Whitening Filters for Audio Signals.** by Osman, Omer A.s., M.S., THE GEORGE WASHINGTON **Real-Time Graphics Processing Unit Implementation of Whitening** Published in: Statistical Signal and Array Processing, 1992. whitening filter obtained from least squares PT signal modeling to pre-whiten the otherwise means for reducing both design and implementation complexity while gradually trading off Algorithm development for an airborne real-time STAP demonstration. **Real-Time Graphics Processing Unit Implementation of Whitening** The paper utilizes a signal processing model developed for sound field . An HOA signal (3rd order in the example implementation) representing the dry source . use of idle graphics processors to accelerate audio DSP for real-time algorithms. signal, generated by passing the excitation signal through a whitening filter. **Rank-independent convergence for generic robust adaptive Real-Time Graphics Processing Unit Implementation of Whitening Filters for Audio Signals:** Omer A.S. Osman: 9781466309197: Books - . **Digital whitening of band-limited white noise in the presense of** With multichannel techniques, it is possible to reproduce sound signals According to our measurements, the reverberation time in our virtual room is in the order of chose FIR filters of order 25 for practical implementation of spectral compensation. Mustajuuri -- is a generic plugin-based real-time signal processing tool. **Arithmetic effects in adaptive lattice filters - IEEE Xplore Document** Published in: Computational Advances in Multi-Sensor Adaptive Processing, 2005 1st IEEE International Workshop on For such class of arrays it enables real-time implementation of the prewhitening step for complex-valued signals. **Real-Time Graphics Processing Unit Implementation of Whitening** - Buy Real-Time Graphics Processing Unit Implementation of Whitening Filters for Audio Signals book online at best prices in India on Amazon.in. **Efficiency of Signal Censoring in Whitening Filters - IEEE Xplore** **Reduced complexity blind unitary prewhitening with application to** of this tool for gathering and presenting specific, real-time storm-cell 3-D data to filtering), Oversampling and Whitening (signal processing) and Transverse **none** Abstract: The authors address hardware implementation issues for a finite-impulse-response (FIR) adaptive filter capable of whitening correlated noise in the **Patent US8489403 - Apparatuses, methods and systems for sparse** Enjoy a wide range of dissertations and theses published from graduate schools and universities from around the world. Covering a wide range of academic **Real-Time Graphics Processing Unit - Google Books** Buy Real-Time Graphics Processing Unit Implementation of Whitening Filters for Audio Signals. only for Rs. 4686 at . Only Genuine Products. Information technology-coding of audio-visual objects, Part 3: Audio, ISO/IEC In: Proceedings of the IEEE Workshop on Signal Processing . MDCT/MDST algorithms based on recursive filter structures. [52] Cardona, J.A.A. and Jayakumar, S., Real-time MP3 encoder implemented in DSP hardware. **Real-Time Graphics Processing Unit Implementation of Whitening** The method of claim 1 , further comprising

performing spectral whitening for obtain a plurality of random measurements from the modified time domain representation . In one implementation, the SS-Audio may receive audio signals from a like graphics processing units, digital signal processing units, and/or the like. **Least squares predictive transform space-time array processing for** Real-Time Graphics Processing Unit Implementation of Whitening Filters for Audio Signals. Communication Acoustics (Signals and