FA07

Signal Processing I

09:00-11:00 **Chair1 : Kimio Sasaki (University of Tsukuba, Japan)**
Room : 1st Floor-Seefeld **Chair2 :**

09:00 – 09:20 **FA07-1**

Analog Multiplier Using Translinear Current Conveyor

Amphawan Chaikla, Anucha Kaewpoonsuk, Chaleompun Wangwiwattana, Vanchai Riewruja, Anuchit Jaruvanawat(KMITL, THAILAND)

In this article, an alternative analog multiplier circuit, using the translinear second-generation current conveyors with the external resistors. The realization method makes use of the inherited translinear loop of the current conveyor offering the positive-supply current that provides in the quarter-square algebraic identity. The proposed circuit operates in voltage mode and it achieves a high accuracy. The PSPICE simulation results confirm that the performances of the proposed multiplier circuit, such as dynamic range and accuracy, are agreed with the theoretical results.

09:20 – 09:40 **FA07-2**

Development of Sound Source Localization System using Explicit Adaptive Time Delay Estimation

Doh-Hyoung Kim, Youngjin Park(KAIST, KOREA)

The problem of sound source localization is to determine the position of sound sources using the measurement of the acoustic signals received by microphones. To develop a good sound source localization system which is applicable to a mobile platform such as robots, a time delay estimator with low computational complexity and robustness to background noise or reverberations is necessary. In this paper, an explicit adaptive time delay estimation method for a sound source localization system is proposed. Proposed explicit adaptive time estimation algorithm employs direct adaptation of the delay parameter using a transform-based optimization technique, rather than ...

09:40 – 10:00 **FA07-3**

Novel Active High Pass Filter with Notch Characteristic using Uniformly Distributed RC Line

Janchitrapongvej Kanok, Tangtisanon Prakit, Janin Chainarong, Panyanouvong Nouanchanh, Saetia Sorapong (KMITL, THAILAND)

- Janchitrapongvej Kanok(KMITL),
- Tangtisanon Prakit(KMITL),
- Janin Chainarong(KMITL),
- Panyanouvong Nouanchanh(KMITL),
- Saetia Sorapong(KMITL)

10:00 – 10:20 **FA07-4**

A Flexible Precise 2D-Image Reconstruction in X-Ray Computed Tomography for Soft Tissues Based On Non-Uniform Sampling Theorem

Kimio Sasaki(Univ. of Tsukuba. JAPAN), Hirokazu Okaniwa(Toshiba Information Systems Tech. Inc. JAPAN)

Performance of the previously proposed 2D-image reconstruction method for soft tissues in x-ray computed tomography is evaluated thoroughly through numerical experiments with 4 assumed absorption rates of different symmetries under practical conditions, and the following special features are made clear: It is quite precise, especially at points where the object taking larger values; about two orders less magnitude errors than the conventional most precise method when no noise existing, without any 1D- or 2D-interpolation. In spite of its high sensitivity to the noises, it is even more precise by about 8dB than the latter, to relative pojection data noise power of 5%.

10:20 – 10:40 **FA07-5**

Fault detection for Energy Network by use of Prural M-sequences

Eiji NISHIYAMA, Kosuke OWAKI, Kenshi KUWANAMI(Tech. Kumamoto Nat'l College, JAPAN)

Monitoring a power transmission line is significant for power electric companies. In this paper, we propose a new method for detecting an fault point of power transmission line by use of M-sequence correlation technique. In this method, detecting signal is used as plural M-sequences (same characteristic polynomial, including normal and reverse mark, synchronized). In receiving point, we make same sequence with the input one and take crosscorrelation function between M-sequence and the received signal. We can see transfer fanctions of plural paths between inputs and a output taps separated from different of delay times on the crosscorrelation function, and from these transfer fanction...

10:40 – 11:00 **FA07-6**

Wide Swing CMOS Current Follower Circuit

Parnklang Jirawath, Manasphrum Ampaul , Pinamorn Nipath(KMITL, THAILAND)