



**SIGNALS** IEEE Signal Processing Society Bangalore Chapter Newsletter

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**FROM THE EDITORIAL TEAM**

It is that time of the year when you again start hearing oft repeated comparisons of day temperatures in Bangalore, and how it is getting worse year after year. It is also the time when deadlines arrive for submissions to IEEE conferences in the latter half of the year. We do hope that many of us are participating in IEEE conferences and sharing knowledge.

Being the first quarter of the new year, we have new office bearers for 2006. Do have a look at the SP chapter webpage for details.

Our chapter has started a new initiative, forming Special Interest Groups (SIGs) focused on specific areas. Please have a look at the SIG section of announcements for more information. We will also have a IEEE Distinguished Lecturer visiting the chapter soon. More details will be announced later.

In this edition, we have the usual sections, plus a review of recent DSP related announcements in the market place. In this edition, we look at Riya.

That's it for now, lets meet in the next edition. In the mean time, do keep those comments coming in !! - *The editorial team*



## Announcements

### 1. EURASIP JOURNAL ON AUDIO, SPEECH, AND MUSIC PROCESSING - Special Issue on Adaptive Partial-Update and Sparse System Identification

#### Call for Papers

This special issue aims to draw together work on sparse system identification and partial-update adaptive filters. These research problems can be considered as exploiting sparseness in different “domains”, namely, adaptive filter coefficient vector and update regressor vector. This special issue will further develop the positive outcomes of the EUSIPCO 2005 special session on sparse system identification and partial update adaptive algorithms.

This special issue will focus on recent developments in this key research area. Topics of interest include (but are not limited to):

- Adaptive filters employing partial-update methods,
- Time-domain and transform-domain implementations of partial-update adaptive filters,
- Convergence and complexity analysis of partial update schemes,
- Single and multichannel algorithms employing partial updates,
- Adaptive algorithms for sparse system identification,
- Applications of partial-update adaptive filters and sparse system identification in echo/noise cancellation, acoustics, and telecommunications,
- Partial-update filters for sparse system identification.

Authors should follow the EURASIP JASP manuscript format described at <http://www.hindawi.com/journals/asmp/>

Prospective authors should submit an electronic copy of their complete manuscripts through the EURASIP JASP manuscript tracking system at

<http://www.mstracking.com/mts>

according to the following timetable:

Manuscript Due May 1, 2006

Acceptance Notification September 1, 2006

Final Manuscript Due December 1, 2006

Publication Date 1st Quarter, 2007

## 2. ISCA Tutorial and Research Workshop on Statistical And Perceptual Audition SAPA2006

Paper submission now open at SAPA 2006

16 September 2006, Pittsburgh PA

<http://www.sapa2006.org>

Papers are solicited for the 2006 Workshop on Statistical and Perceptual Audition (SAPA2006), to be held in Pittsburgh PA as a satellite to [ICSLP 2006](#). Papers may be submitted via the "submit" link at [www.sapa2006.org](http://www.sapa2006.org).

Following on from the successful [SAPA2004 workshop](#) (in Jeju, Korea), the objective of the SAPA2006 workshop is to bring together researchers considering perceptually-motivated problems in sound and speech analysis and understanding, employing statistical and machine learning tools.

There is a wide area of overlap between more heuristic models of human auditory function and purely pattern recognition approaches that are independent of human audition; SAPA aims to be the forum for presentation and discussion of this promising and expanding field.

This will be a one-day workshop with a limited number of oral presentations, chosen for breadth and provocation, and an informal atmosphere to promote discussion. We hope that the participants in the workshop will be exposed to a broader perspective, and that this will help foster new research and interesting variants on current approaches.

Papers describing relevant research and new concepts are solicited on, but not limited to, the following topics:

- Generalized audio analysis
- Speech analysis
- Music analysis
- Audio classification
- Scene analysis
- Signal separation
- Speech recognition
- Multi-channel analysis

In all cases, preference will be given to papers that clearly involve both perceptually-defined or perceptually-related problems, and statistical or machine-learning based solutions.

Manuscripts must be between 4 and 6 pages long, in standard ICSLP double-column format. Accepted papers will be published in the workshop proceedings.

Papers must be received by 21 April 2006 (two weeks after the ICSLP deadline). The results of the paper review will be posted by 9 June 2006 (same as ICSLP).

Additional information may be obtained from <http://www.sapa2006.org>

### 3. Upcoming IEEE conferences

[ICASSP 2006 - 2006 IEEE International Conference on Acoustics, Speech and Signal Processing](#)

[14 May - 19 May 2006](#)

[2006 IEEE International Workshop on Genomic Signal Processing and Statistics \(GENSIPS\)](#)

[28 May - 30 May 2006](#)

[2006 International Symposium ELMAR focused on Multimedia Signal Processing and Communications](#)

[07 Jun - 10 Jun 2006](#)

[2006 IEEE Odyssey "The Speaker and Language Recognition Workshop"](#)

[28 Jun - 30 Jun 2006](#)

[2006 IEEE 7th Workshop on Signal Processing Advances in Wireless Communications \(SPAWC 2006\)](#)

[02 Jul - 05 Jul 2006](#)

[2006 IEEE International Conference on Multimedia and Expo \(ICME\)](#)

[09 Jul - 12 Jul 2006](#)

[2006 IEEE Sensor Array and Multichannel Signal Processing Workshop \(SAM\)](#)

[12 Jul - 14 Jul 2006](#)

## 4. Special Interest Groups

The IEEE SP Bangalore Chapter, invites Signal Processing technologists, academics & professionals focused on specific application areas and interests to join IEEE Bangalore SP Society special interest groups (SIGs) in the following areas:

1. Speech Processing & Recognition
2. Networking
3. Wireless Communications
4. Image/Video Processing
5. Multimedia Compression
6. Pattern Recognition & Vision
7. Medical Imaging & Electronics
8. Signal Processing Education
9. DSP Architectures
10. Software Implementations of Signal Processing Algorithms

Each SIG will focus on furthering the technical activity in the specific area through a national/international conference / workshop or tutorial in Bangalore. In addition to the above areas, if you are interested in forming SIGs in other areas, do make a suggestion and include other folks in academia, industry or research who share your passion.

The IEEE SP Society will provide financial support to SIGs interested in organizing a conference, workshop or tutorial in the area.

If interested, please reply before 30th April 2006, to

[V.Ramasubramanian@siemens.com](mailto:V.Ramasubramanian@siemens.com)

In the mail, please mention

- *The SIG topic that you are interested in,*
- *Your IEEE membership number if available,*
- *Your current affiliation.*

## 5. EDN-Asia Embedded Systems & Software Seminar

April 19<sup>th</sup>, 2006, Bangalore

For registration and more information

<http://www.ednasia.com/ess-bangalore/index.htm>



## The SP world

The last quarter saw the announcement of the Beta rollout of the much anticipated web-based photo organizer, Riya ([www.riya.com](http://www.riya.com)). This tool essentially allows us to better manage the myriad contents that our digital cameras spew out every day, by identifying the contents of the photo as you, me and them (or whatever name you tag them as). So, are we then in Signal Processing utopia, where the transform transforms our lives into a click-a-picture-and-forget mode ? No, I realized, as Riya began to tag noses as faces (and asked what name should it assign to !). There is still some way to go therefore, before we let computers take over what we do for granted. Recognising emotions for instance. Recognising important scenes for instance. Keep thinking ! We will address these in a later issue of the SP newsletter.

## Main Course

### Parametric Multi-Channel Audio coding

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#### Introduction

Humans perceive an auditory spatial image in a very similar manner to visual image perception. The different objects which are parts of the auditory spatial image are denoted by auditory events. Location and extent characterizes an auditory event. Multi-Channel Audio processing involves capturing of the auditory image, encoding it efficiently and effectively reproducing it at a different location. Recording of the audio image occurs in various environments. It could be in a location like studio, a concert hall or a meeting room. A number of microphones are used for the recording and they are mixed to produce a limited number of audio channels which are decided by the playback format. Stereo recording, 5.1 channel system and 7.1 channel system are the popular ones. The recorded channel data is to be encoded efficiently for transmission and storage. Each channel is considered as an independent audio channels and is encoded using any of the mono audio coders like MP3 or AAC Plus. In this case the data rate will be  $C \times B$  bits/sec where  $C$  is the number of channels and  $B$  is the rate of the individual channel. The data rate for such a scheme is very high for Internet streaming and digital audio broadcast applications. One approach to reduce the bit-rate is to exploit the inter channel redundancies. But the bit rate reduction achieved through such schemes is marginal. Larger bit rate reduction may be achieved using the Model based approach, where a perceptual model for spatialization is used to extract the parameters of the audio image. In this scheme, parameters for the perceptual model are extracted from the multi-channel signal. A single audio channel is generated by summing individual channels followed by an energy equalization. Quantized parameters and compressed sum channel signal which represents the multi-channel audio will have bit rate slightly more than mono audio. Using this data, multi-channel audio with non-transparent quality is synthesized at the decoder.

Please refer to the following link for the complete article.

[http://www.ewh.ieee.org/r10/bangalore/sps/download/pmccac\\_suresh\\_apr06\\_ieee\\_newsleter.pdf](http://www.ewh.ieee.org/r10/bangalore/sps/download/pmccac_suresh_apr06_ieee_newsleter.pdf)

## Getting Connected

### *Mailing list for IEEE SP Bangalore chapter*

As part of our initiative to facilitate better information spread across the wide spectrum of members and volunteers of the SP Bangalore chapter, a LISTSERV list has been setup.

- To email all of the list's subscribers (please use this responsibly), send your mail to [IEEESP-BLR@LISTSERV.IEEE.ORG](mailto:IEEESP-BLR@LISTSERV.IEEE.ORG)
- Creating a new subscription is now easy. If you want to subscribe a member to the list, send a mail from your email to [LISTSERV@LISTSERV.IEEE.ORG](mailto:LISTSERV@LISTSERV.IEEE.ORG) and type "subscribe ieesp-blr" without quotes in the body of the message. Leave the subject line blank. More information on using LISTSERV is available at <http://listserv.ieee.org/>

### *Links*

This link contains information related to IEEE SP conferences  
<http://www.ieee.org/organizations/society/sp/SPSConf.html>

IEEE SP Bangalore Chapter Homepage  
<http://ewh.ieee.org/r10/bangalore/sps/>

## **Editorial board**

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## **Office bearers of the SP society, Bangalore chapter for 2006**

### **Chair**

Ajit Rao, Texas Instruments

### **Secretary**

Prabindh Sundareson, Texas Instruments

### **Treasurer**

Krishna AG, Flextronics

### **Chair, Workshops and Conferences**

Ramasubramanian V, Siemens