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June 2008

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PDF Version

From the E-News Team:

We thank all readers for their contributions and feedback in the past year and we look forward to your participation in the new year. Please share the Inside Signal Processing E-Newsletter with your colleagues by emailing and bookmarking <http://enews.ieee-spm.org> for current and archived issues. IEEE members may manage their subscription to email notification of the Inside Signal Processing E-Newsletter at <http://ewh.ieee.org/enotice/options.php?LN=SP001>.

1. Society News

Call for Nominations of 2009 IEEE Jack S. Kilby Signal Processing Medal

Nomination forms for the next year's IEEE Jack S. Kilby Signal Processing Medal are now available and due on **1 July 2008**. The IEEE Jack S. Kilby Signal Processing Medal was established in 1995 and may be presented "for outstanding achievements in signal processing." The achievement may be theoretical, technological or commercial. The Medal is named in honor of Jack S. Kilby. His innovation was a monumental precursor to the development of the signal processor and digital signal processing. Check online for more information.

Other IEEE medals, including the IEEE Medal of Honor, are also calling for nomination by **1 July 2008**. Check online for more information.

Nominations Open for 2008 Major SPS Awards

The SPS Awards Board is now accepting nominations for 2008 major SPS awards. Each year, SPS honors outstanding individuals who have made significant contributions related to signal processing through the Society Award, the Technical Achievement Award, the Education Award, and the Meritorious Service Award. The Society also recognizes outstanding publications in SPS journals and magazines through Best Paper Awards, Young Author Best Paper Awards, Signal Processing Magazine Best Paper Award and Best Column Award. The deadline for all awards is **1 October 2008**.

The award nominations, which are submitted to SPS Vice President-Awards and Membership, will be vetted by the appropriate technical committees. Prospective nominators are encouraged to submit nominations well in advance of the deadlines. Detailed information and nomination forms of SPS awards can be found online.

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2. Conference News

Signal Proc. Conferences: Call for Papers	Location	Date	Tutorial/Special Session	Submission Deadline

9th International Conference on Signal Processing (ICSP'08)	Beijing, China	Oct. 26-29, 2008		June 15, 2008
13th IEEE Digital Signal Processing Workshop (DSP'09) and 5th IEEE Workshop on Signal Processing Education (SPE'09)	Marco Island, FL	January 4-7, 2009		August 1, 2008
NEW! IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP'09)	Taipei, Taiwan	April 19-24, 2009	August 4, 2008	Sept. 29, 2008

Upcoming Signal Processing Conferences	Location	Advanced Registration	Conference Dates
IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS'08)	Phoenix, Arizona		June 8-10, 2008
1st International Workshop on Cognitive Information Processing	Santorini, Greece		June 9-10, 2008, 2008
IEEE International Conference on Multimedia & Expo (ICME'08)	Hanover, Germany		June 23-26, 2008
IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC'08)	Receife, Brazil		July 6-9, 2008
International Conference on Audio, Language and Image Processing (ICALIP'08)	Shanghai, China		July 7-9, 2008
International Symposium on Image/Video Communications (ISIVC'08)	Bilbao, Spain	**July 5, 2008**	July 9-11, 2008
Fifth IEEE Workshop on Sensor Array and Multi-Channel Signal Processing (SAM'08)	Darmstadt, Germany	**June 20, 2008**	July 21-23, 2008
International Workshop on Multimedia Security in Communication (MUSIC'08) in conjunction with CHINACOM 2008	Hangzhou, China	TBA	Aug. 25-27, 2008
2nd International Symposium on Microwaves, Radar and Remote Sensing (MRRS'08)	Kiev, Ukraine	**June 30, 2008**	Sept. 22-24, 2008
10th International Workshop on Signal Processing for Space Communications (SPSC'08)	Rhodes Island, Greece	**June 29, 2008**	Oct. 6-8, 2008
IEEE Workshop on Multimedia Signal Processing (MMSP'08)	Cairns, Australia	TBA	Oct. 8-10, 2008
IEEE Workshop on Signal Processing Systems (SIPS'08)	Washington, DC	July 31, 2008	Oct. 8-10, 2008
IEEE International Conference on Image Processing (ICIP'08)	San Diego, CA	TBA	Oct. 12-15, 2008
IEEE Workshops on Machine Learning for Signal Processing (MLSP'08)	Cancún, Mexico	TBA	Oct. 16-19, 2008
IEEE International Conference on Natural Language Processing and Knowledge Engineering (NLP-KE'08)	Beijing, China	Sept. 1, 2008	Oct. 19-22, 2008
IEEE Conference on Sensors (SENSORS 2008)	Lecce, Italy	July 31, 2008	Oct. 26-29, 2008

3. Publication News

Upcoming Deadlines for **Signal Processing Magazine**: http://www.ieee-spm.org/?i=cfp

- Columns/Forums rolling submission deadlines

Special Issue Deadlines of SPS Publications

Journal of Selected Topics in Signal Processing

- Advanced Signal Processing for GNSS and Robust Navigation - Deadline: **1 July 2008**

- Managing Complexity in Multiuser MIMO Systems - Deadline: **1 September 2008**

Recent Issues of SPS Sponsored and Co-sponsored Publications

Journal Title	Latest Issue	Contents (in PDF)	Xplore Link
IEEE Signal Processing Magazine • Special Section on Spoken Language Technology • Feature Article on Auditory Perception and Cognition	vol. 25, no. 3	PDF	Html
IEEE Transactions on Audio, Speech, and Language Processing	vol. 16, no. 4	PDF	Html
IEEE Transactions on Image Processing	vol. 17, no. 6	PDF	Html
IEEE Transactions on Information Forensics and Security	vol. 3, no. 2	PDF	Html
IEEE Transactions on Signal Processing	vol. 56, no. 6	PDF	Html
IEEE Signal Processing Letters	vol. 15		Html
IEEE Journal of Selected Topics in Signal Processing • MIMO-Optimized Transmission Systems for Delivering Data and Rich Content	vol. 2, no. 2	PDF	Html

Journal Title	Latest Issue	Contents (in PDF)	Xplore Link
IEEE Transactions on Medical Imaging	vol. 27, no. 6	PDF	Html
IEEE Transactions on Mobile Computing	vol. 7, no. 7	PDF	Html
IEEE Transactions on Multimedia	vol. 10, no. 4	PDF	Html
IEEE Sensors Journal	vol. 8, no. 6	PDF	Html
IEEE Transactions on Wireless Communications	vol. 7, no. 5	Part-1 Part-2	Html
Computing in Science & Engineering Magazine	vol. 10, no. 3	PDF	Html
IEEE MultiMedia	vol. 15, no. 1	PDF	Html

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4. TC News

Signal Processing Education Technical Committee

The Signal Processing Education Technical Committee operates at the intersection of a rapidly evolving, industry-driven technical field and the very dynamic, human-centered profession of education. The committee focuses on improving the quality and effectiveness of signal processing education, for students as well as the public at large. The committee emphasizes a systematic approach to educational research instead of the use of isolated examples and anecdotal data. This includes publicizing best teaching practices, encouraging pedagogical innovation, and exploring new vehicles for delivering educational content. One example of this is participation on the Lensing Oversight Committee for the Connexions project. The committee also works to educate decision makers about the importance and pervasiveness of signal processing in modern technology, and its impact on society. Committee members represent a broad range of signal processing research interests, and are typically active within both the SPS and the American Society for Engineering Education (ASEE) communities. This places the members at an ideal vantage point from which to educate the SPS membership about pressing needs in other fields and related research opportunities that can benefit from the applications of signal processing.

The committee serves as a liaison among SPS TCs for education issues, and is involved in conference organization (in particular for the biennial Signal Processing Education Workshop), providing conference reviewers, and recognizing excellence in DSP education through awards and distinguished lecturers. Further information can be found at the TC website.

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5. Chapter News and Distinguished Lectures

Do you know? IEEE SPS provides travel support for local chapters to invite **SPS Distinguished Lecturers**. See a list of SPS 2007 and 2008 Distinguished Lecturers, and check each issue of the E-News for upcoming SPS Distinguished Lectures near you.

Chapter	Dates	SPS Distinguished Lectures
Spain	13-June-2008	**Prof. Nikos Sidiropoulos** (Technical University of Crete, Greece): "Analyzing Data 'Boxes'". At 12:30pm, Room 4.3A05, Building 4 (Torres Quevedo), Universidad Carlos III de Madrid, Avda. Universidad 30, 28911 Leganés (Madrid).
Germany	24-25 July 2008	**Prof. Nikos Sidiropoulos** (Technical University of Crete): "Multicast beamforming and admission control for UMTS-LTE and 802.16e". Contact <udo.zoelzer AT hsu-hamburg.de> for more information.
Singapore	Late July 2008	**Prof. Petar M. Djuric** (SUNY Stony Brook). Details to be announced. Contact <EGBI AT ntu.edu.sg> for more information.
Malaysia	31-July-2008	**Prof. Petar M. Djuric** (SUNY Stony Brook). Details to be announced. Contact <faizal1 AT mmu.edu.my> for more information.
Chapter	Dates	Other Upcoming Events
Washington	2-June-2008	**Dr. Jin Li** (Microsoft), "Peer-Assisted Delivery: The Way to Scale IPTV to the World." See web announcement for more information.

Santa Clara Valley	2-June-2008	**Dr. Keigo Hirakawa** (Harvard University): "Enhancing Image Fidelity through Spatio-Spectral Design for Color Image Acquisition, Reconstruction, and Display." See chapter web site for more information.
Northern Virginia	12-June-2008	**Bruce Howard** (Lightglove Corporation), "Applications and Demonstration of Lightglove, a New User Interface." See web announcement for more information.

If you are interested in organizing a new SPS chapter, or participating in activities in a SPS local chapter near you, please check out **Local Chapter Resources**. Additional questions and comments can be addressed to the SPS Chapters Committee.

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6. New Initiatives and Trends

Signal and Image Processing with Graphical Models and Belief Propagation

Many practical signal processing applications, ranging from modern communication systems to 3-D scene reconstruction, involve large, complex collections of hidden variables and uncertain parameters. Probabilistic graphical models provide a general framework for designing systems of this kind. Graphs are used to decompose joint distributions into a set of local constraints and dependencies, and statistical learning and inference can then be applied to solve the problem.

The March 2008 issue of the IEEE Signal Processing Magazine featured an "**DSP Applications**" column article by E.B. Sudderth and W.T. Freeman to review an effective and widely adopted inference algorithm known as *Belief Propagation* (BP). Read more about BP algorithms and applications from this article.

Learn **Exploratory DSP** from the latest issue of the IEEE Signal Processing Magazine in May 2008 on **"Seeing Speech: Capturing Vocal Tract Shaping Using Real-Time Magnetic Resonance Imaging"** by E. Bresch, Y-C. Kim, K. Nayak, D. Byrd, and S. Narayanan.

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7. SP Education and Resources

Education advices on Effective Communication featured in the IEEE Signal Processing Magazine

- "Excellence in a Technical Presentation" by W.T. Padgett and M.A. Yoder (March 2008)

- **"**Tips on Technical Writing**"** by H.S. Malvar (May 2008)

DSP Tips and Tricks featured in the IEEE Signal Processing Magazine

- "DC Blocker Algorithms" by R. Yates and R. Lyons (March 2008)

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8. New Ph.D. Theses

Lino Coria Mendoza (University of British Columbia, Canada):
"**Low-complexity methods for image and video watermarking**," March 2008.
Advised by Prof. Rabab K. Ward and Dr. Panos Nasiopoulos.

Watermarking can be used to identify the owner of the media content. It can also provide information about the content's usage restrictions. Several applications are considered and three watermarking solutions are provided in this thesis. First, for applications such as proof of ownership and digital fingerprinting, a fast content-dependent image watermarking method is proposed. The method generates a set of evenly distributed codewords that are constructed via an iterative algorithm. Every message bit is represented by one of these codewords and is embedded in one of the image's blocks. Two watermarking schemes designed to prevent theatre camcorder piracy are also presented. In these methods, the video is watermarked so that its display is not permitted if a compliant video player detects the watermark. The proposed algorithms take advantage of the properties of the dual-tree complex wavelet transform. The schemes are simple to implement and the resultant watermarks are robust to geometric distortions and lossy compression.

Click here for more information of the thesis.

Interested in submitting or recommending a recent Ph.D. thesis?
Please prepare the following material and visit the web submission site to provide your input. Contact Associate Editor Prof. Alessandro Piva at <piva AT lci.det.unifi.it> if you have any questions.
(1) thesis author's information (full name, contact, current affiliation, URL if available), Ph.D. granting institution, thesis advisor's name and contact information;
(2) title, URL, and a short summary of the thesis (100-150 words); and
(3) an email from the thesis advisor to Associate Editor at <alessandro.piva AT unifi.it>, confirming that the author has already successfully defended the Ph.D. thesis and that a final version of the thesis has officially been submitted according to the Ph.D. degree requirements of the author's institution.

9. New Books

Nonlinear Digital Filters: Analysis and Applications, W. K. Ling, Elsevier, 2007.

Description from the publisher: This book provides an easy-to-understand overview of nonlinear behavior in digital filters, showing how it can be utilized or avoided when operating nonlinear digital filters. It gives techniques for analyzing discrete-time systems with discontinuous linearity, enabling the analysis of other nonlinear discrete-time systems, such as sigma delta modulators, digital phase lock loops, and turbo coders.

Visit the book's website for detailed Table of Contents and ordering information.

Wireless Sensor and Actuator Networks: Technologies, Analysis and Design,
R. Verdone, D. Dardari, G. Mazzini and A. Conti, Elsevier, 2008.

Description from the publisher: When choosing the technology options to develop a wireless sensor network (WSN), it is vital that their performance levels can be assessed for the type of application intended. This book describes the different technology options – MAC protocols, routing protocols, localization and data fusion techniques – and provides the means to numerically measure their performance, whether by

simulation, mathematical models or experimental test beds. Case studies, based on the authors' direct experience of implementing wireless sensor networks, describe the design methodology and the type of measurements used, together with samples of the performance measurements attained.

Visit the book's website for detailed Table of Contents and ordering information.

Books Featured in Previous Issues [details]

Data Compression: The Complete Reference, 4th Edition, edited by D. Salomon, Springer, 2007.

Automatic Speech Recognition on Mobile Devices and over Communication Networks,
edited by Z-H. Tan and B. Lindberg, Springer, 2008.

A Software-Defined GPS and Galileo Receiver: A Single-Frequency Approach,
by K. Borre, D.M. Akos, N. Bertelsen, P. Rinder, and S.H. Jensen, Birkhauser Publishing, 2007.

Medical Imaging: Signals and Systems,
by Jerry L. Prince and Jonathan M. Links, Prentice Hall, 2006.

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10. Research Opportunities

Ph.D. Research Assistantship in Statistical Signal Processing
Uppsala University, Sweden

The IT Department at Uppsala University (Sweden) invites applications for a Ph.D. Research Assistantship in the area of signal processing. The research will be supervised by Prof. Peter Stoica. The salary/stipend starts at USD $3500 per month, and then increases on a yearly basis. The facilities are among the best in the world.

As one of the oldest and most prestigious universities in Europe, Uppsala University has a highly selective admission process. Candidates are expected to have a strong academic record to be considered. EE students from internationally well known universities with top 5% record in their class are encouraged to apply. Candidates should send a resume to Prof. Stoica at <ps AT it.uu.se>.

More information about the Signal Processing Group at Uppsala University can be found at this link.

Research Associate in Systems and Control
Uppsala University, Sweden

The Department of Information Technology is inviting applications for a position as Research Associate in Systems and Control. The position is oriented towards research in either Automatic Control or Signal Processing. This is principally a research appointment but will also involve teaching at undergraduate and postgraduate level and supervision of students at postgraduate level. The teaching is mainly oriented towards courses in automatic control.

To qualify for appointment as Research Associate, candidates must have a Ph.D. Priority is given to applicants who have completed their Ph.D. within five years of the application deadline of 1 September 2008. According to Uppsala University's general employment regulations, it is also a requirement that teachers possess the necessary skills and qualifications to carry out their duties proficiently. Qualified candidates may also be considered for Assistant Professorship. More details about the position and how to apply can be found at this link.

The Division of Systems and Control has extensive research both in automatic control and in signal processing. Inquiries can be addressed to Prof. Hakan Lanshammar <hl@it.uu.se>.

Research Position Featured in Previous Issue [details]

- Postdoctoral Fellowship on Vision and Pattern Analysis at Sabanci University, Istanbul, Turkey

- Ph.D. Assistantship and Postdoctoral Position in Multimedia Indexing at Institut EURECOM, France

- PhD Scholarship on Medical Signal Processing at Victoria University of Wellington, New Zealand

Job Posting Portals

http://careers.ieee.org/
http://jobs.phds.org/jobs/engineering/
http://engineering.academickeys.com/seeker_job.php

Interested in advertising graduate scholarship, post-doc positions, or funding opportunities?

Please prepare a short text of the announcement (150-200 words) and visit the web submission site to enter your input. It is recommended to include the deadline or valid period of the announcement, and an URL for more information such as group/research description and detailed qualification expectation. Contact Associate Editor Prof. Alessandro Piva at <alessandro.piva AT unifi.it> if you have any questions. Note that advertisements on faculty and other full-time position are in the domain of IEEE job advertisement (http://careers.ieee.org/); the IEEE Signal Processing Magazine also provides opportunities for paid advertisement.

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About the Inside Signal Processing E-Newsletter

Since April 2007, the IEEE Signal Processing Magazine has introduced a new form of publication - the Inside Signal Processing E-Newsletter. This monthly electronic newsletter will complement the bi-monthly Magazine to serve the members in the IEEE Signal Processing Society (SPS). Through email notification and expanded coverage on its website, the E-Newsletter will provide members with timely updates on:

- society and technical committee news,

- conference and publication opportunities, new books, and Ph.D. theses,

- signal processing related research opportunities, and

- activities in industry consortiums, local chapters, and government programs.

The Inside Signal Processing E-Newsletter is a gateway to reach out to signal processing professionals around the world. We invite you to contribute and share your news with tens of thousands of SPS members through this monthly electronic publication with fast turn-around cycle. IEEE members may manage their subscription of the email notification of the E-Newsletter and related SPS announcements at this page. Please bookmark <http://enews.ieee-spm.org> for current and archived issues of the Inside Signal Processing E-Newsletter.

Submission Instructions - Contribution for the July '08 Issue Due June 20, 2008

Visit the web submission site to provide your input. Make sure that you include your name, affiliation, and email and phone contact information. Contributions submitted by **June 20, 2008** will be considered for inclusion in the **next issue** of the Inside Signal Processing E-Newsletter. Please contact the Associate Editors of the corresponding sections as listed below if you have questions. Your comments and suggestions on the new submission system are welcome.

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  News and activities of SPS Technical Committees, industry consortiums and international standards

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  News and activities in local chapters and research groups (including new Ph.D. theses & research opportunities)

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Shih-Fu Chang, *SPM Editor-in-Chief*, Columbia University, New York, USA (sfchang AT ee.columbia.edu)

* Please replace "AT" in the email addresses with @.

Archived Past Issues of E-Newsletter

IEEE Signal Processing Magazine 2008 - Hosted by the Digital Video and Multimedia Lab at Columbia University
Inside Signal Processing E-Newsletter Hosted by the Communications and Signal Processing Labs at University of Maryland