IEEE Signal Processing Magazine

Archived Past Issues

Inside Signal Processing E-Newsletter

November-December 2008

Highlights

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- Society News: IEEE Member Login Now Active on SPS Website

- Conference News: GENSIPS coming to Minneapolis; Call-for-papers for numerous 2009 events

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- SP Resources: DSP Tips on resampling and variable-Q filter design

- New PhD Theses, New Books, and Scholarship/Post-doc Opportunities

PDF Version

From the E-Newsletter Team:

Seasons Greetings from the E-Newsletter Team! We thank all readers for their contribution 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>.

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1. Society News

34 SPS Members Elevated to IEEE Fellow

The IEEE Signal Processing Society congratulates the following 34 SPS members who were recognized with the grade of Fellow as of 1 January 2009:

Yuri Abramovich, Tulay Adali, Helmut Boelcskei, Michael Brandstein, Sheng Chen, Michelle Effros, Brian Evans, Gerhard Fettweis, William Freeman, Yuqing Gao, Sheila Hemami, King Choi (Dominic) Ho, Xiaoping Hu, Ron Kimmel, Ralph Kohler, Hui Liu, Konstantin Lukin, Jiebo Luo, Shrikanth Narayanan, Hayder Radha, Raghuveer Rao, Eve Riskin, Kensuke Sekihara, Nicholas Sidiropoulos, Eero Simoncelli, Iickho Song, Allen Tannenbaum, Jayaram Udupa, Sabine Van Huffel, Peter Vary, Susie Wee, Xiang-Gen Xia, Felix Yanovsky, and Steve Young.

Each year, the IEEE Board of Directors confers the grade of Fellow on up to one-tenth percent of the members. To qualify for consideration, an individual must have been a Member, normally for five years or more, and a Senior Member at the time for nomination to Fellow. The grade of Fellow recognizes unusual distinction in IEEE's designated fields. Visit this SPS webpage for full citations of these new fellows and more information about the Fellow program. Nominations are now being accepted till March 1, 2009, for the IEEE Fellow Class of 2010.

IEEE Member Login Now Active on SPS Website

The member login system for the IEEE Signal Processing Society (SPS) website is now operational. Please login today using your IEEE member username and password to activate your account in the system at the SPS webpage. The login link is located in the blue bar at the top right of the page.

There are benefits offered to you as an IEEE Signal Processing Society member once you login to the system. You will be able to take advantage of the IEEE Signal Processing Society's community features. Once you are logged in, under the "Community" tab at the top menu, you will see useful applications such as File Manager, Voting, Meeting Manager, and Help Videos. The Forum and Connexions pages can be viewed without logging in. Please check back regularly for additional member features.

2. Conference News

GENSIPS Coming to Minneapolis, Minnesota - May 17 –21, 2009

Recent advances in genomic studies have stimulated synergistic research in many cross-disciplinary areas. Genomic data presents enormous challenges for signal processing and statistics, which has led to the development of the new field of Genomic Signal Processing (GSP). The seventh IEEE International Workshop on Genomic Signal Processing and Statistics will provide an international scientific forum devoted to the area of GSP and its applications in system biology and medicine. The aim of the workshop is to address the emerging need for discovery in genomic research by interdisciplinary collaboration among researchers from a wide array of disciplines including signal processing, computer science, statistics, biology and medicine.

GENSIPS 2009 will be held at the Radisson University Hotel in Minneapolis, Minnesota, which is located in the heart of the University of Minnesota campus, less than one mile from downtown Minneapolis and the Metrodome and nine miles from downtown St. Paul.

Four-page papers are due on **January 30, 2009**. Visit the workshop website for more information.

Signal Proc. Conferences: Call for Papers	Location	Date	Tutorial/Special Session	Submission Deadline
2nd International Conference on Immersive Telecommunications (IMMERCOM'09)	Berkeley, CA	May 27-29, 2009	Feb. 1, 2009 (demo/panel)	
6th IEEE International Symposium on Biomedical Imaging (ISBI'09)	Boston, MA	June 28-July 1, 2009		January 19, 2009
IEEE International Conference on Multimedia and Expo (ICME'09)	Cancún, Mexico	June 28-July 3, 2009	Jan. 31, 2009 (tutorial)	December 31, 2008
IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS'09)	Minneapolis, Minnesota	May 17-21, 2009		January 30, 2009
10th IEEE International Workshop on Signal Processing Advances for Wireless Communications (SPAWC'09)	Perugia, Italy	June 21-24, 2009		January 30, 2009
IEEE International Conference on Image Processing (ICIP'09)	Cairo, Egypt	Nov. 7-11, 2009	Dec. 15, 2009 (special session) Jan. 9, 2009 (tutorial)	January 30, 2009
IEEE International Conference on Ultra-Wideband (ICUWB'09)	Vancouver, CA	Sep. 9-11, 2009		February 23, 2009
IEEE Workshop on Signal Processing Systems (SiPS'09)	Tampere, Finland	Oct. 7-9, 2009		April 1, 2009
IEEE International Workshop on Machine Learning for Signal Processing (MLSP'09)	Grenoble, France	Sep. 2-4, 2009		April 3, 2009
IEEE Workshop on Statistical Signal Processing (SSP'09)	Cardiff, UK	Aug. 31 - Sep. 3, 2009	February 9, 2009	April 14, 2009

IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA'09)	New Paltz, NY	Oct. 18-21, 2009		April 15, 2009
IEEE International Workshop on Multimedia Signal Processing (MMSP'09)	Rio de Janeiro, Brazil	Oct. 5-7, 2009	March 9, 2009	April 17, 2009
IEEE Workshop on Automatic Speech Recognition and Understanding (ASRU'09)	Merano, Italy	Dec. 13-17, 2009		July 15, 2009

Upcoming Signal Processing Conferences	Location	Advanced Registration	Conference Dates
8th IEEE International Symposium on Signal Processing and Information Technology (ISSPIT 2008)	Sarajevo, Bosnia and Herzegovina	Nov. 1, 2008	Dec. 16-19, 2008
13th IEEE Digital Signal Processing Workshop (DSP'09) and 5th IEEE Workshop on Signal Processing Education (SPE'09)	Marco Island, FL		Jan. 4-7, 2009
IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP'09)	Taipei, Taiwan	TBA	April 19-24, 2009
27th Picture Coding Symposium (PCS'09)	Chicago, IL		May 6-8, 2009

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3. Publication News

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

- Columns/Forums rolling submission deadlines

- Proposals invited for special issues and feature articles (details)

- Special Issue on Signal Processing on Platforms with Multiple Cores - Whitepaper Due 15 December 2008

- Special Issue on Signal Processing for Astronomy and Cosmology - Whitepaper Due 15 January 2009

Special Issue Deadlines

Journal of Selected Topics in Signal Processing (website)

- MIMO Radar and its Applications - Deadline: 20 January 2009
- Compressive Sensing - Deadline: 20 February 2009
- Model Order Selection in Signal Processing Systems – Deadline: 20 April 2009

IEEE Transactions on Audio, Speech, and Language Processing (website)

- Signal Models and Representations of Musical and Environmental Sounds - Deadline: 15 December 2008
- Virtual Analog Audio Effects and Musical Instruments – Deadline: 15 March 2009
- Voice Transformation - Deadline: 1 April 2009

IEEE Transactions on Information Forensics and Security ([website](#))

- [Electronic Voting](#) - Deadline: 15 February 2009

IEEE MultiMedia Magazine ([website](#))

- [Multimedia-Metadata and Semantic Management](#) - Deadline: 15 January 2009

Recent Issues of SPS Sponsored and Co-sponsored Publications

Journal Title	Latest Issue	Contents (in PDF)	Xplore Link
IEEE Signal Processing Magazine - Feature Articles on - Discriminative Learning in Sequential Pattern Recognition - Single-Carrier Frequency Domain Equalization - Finite-State Markov Modeling of Fading Channels - Distributed Synchronization in Wireless Networks	vol. 25, no. 5	PDF	Html
IEEE Transactions on Audio, Speech, and Language Processing	vol. 16, no. 8	PDF	Html
IEEE Transactions on Image Processing	vol. 17, no. 12	PDF	Html
IEEE Transactions on Information Forensics and Security	vol. 3, no. 4	PDF	Html
IEEE Transactions on Signal Processing	vol. 56, no. 12	PDF	Html
IEEE Signal Processing Letters	vol. 15	Recent Articles Html, PDF	Html
IEEE Journal of Selected Topics in Signal Processing - Distributed Processing in Vision Networks	vol. 2, no. 4	PDF	Html
Journal Title	Latest Issue	Contents (in PDF)	Xplore Link
IEEE Transactions on Medical Imaging	vol. 27, no. 12	PDF	Html
IEEE Transactions on Mobile Computing	vol. 7, no. 12	PDF	Html
IEEE Transactions on Multimedia	vol. 10, no. 7	PDF	Html
IEEE Sensors Journal	vol. 8, no. 12	PDF	Html
IEEE Transactions on Wireless Communications	vol. 7, no. 11	Part-1 Part-2	Html
Computing in Science & Engineering Magazine	vol. 10, no. 6	PDF	Html
IEEE MultiMedia	vol. 15, no. 3	PDF	Html

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4. TC News

News from the Multimedia Signal Processing Technical Committee (MMSP TC)

The MMSP TC is pleased to announce that the 2010 MMSP Workshop will be held in Saint Malo, France. It will be hosted by Telecom-ParisTech and INRIA-Rennes. As announced earlier, the 2009 MMSP Workshop will be held in Rio de Janeiro, Brazil, in October 2009, marking a milestone for the first time one of the major IEEE Signal Processing Society events to be held in Latin America. Details on call for paper submissions and special session proposals can be found at the MMSP'09 website.

The TC has elected Phil Chou (Microsoft Research, USA) to serve as MMSP TC chair for a two-year term 2010-2011. He will begin duties as Vice Chair in January 2009.

Also in January 2009, eight newly elected members will start their four-year terms. They are: Oscar Au, Francesco G.B. De Natale, Chia-Wen Lin, Jiebo Luo, Petros Maragos, Marco Tagliasacchi, Dapeng Oliver Wu, and Jian Zhang. The TC thanks the following members with terms expiring this year for their services: Ingemar J. Cox (Past Chair), Li Deng, Jean-Luc Dugelay, Ling Guan, Christine Guillemot, Yun He, Nasir Memon, Shrikanth Narayanan, Fred Stentiford, and Stefano Tubaro. Visit the MMSP TC website for more information about the TC activities and opportunities to be involved in.

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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
Toronto, Canada	3-Nov-2008	**Prof. Walter Kellermann** (University of Erlangen-Nuremberg, Germany): "Acoustic Signal Processing for Next-Generation Multichannel Human/Machine Interfaces." See detailed announcement for more information.
Serbia and Montenegro	5 and 7-Nov-2008	**Prof. Petar M. Djuric** (SUNY Stony Brook). Contact Chapter Chair Dr. Reljin Branimir [reljinb AT etf.bg.ac.yu] for more information.
Western Puerto Rico	6-Nov-2008	**Dr. Amy Reibman** (AT&T Labs-Research). Contact Chapter Chair Rogelio Palomera-Garcia [palomera AT ece.uprm.edu] for more information.
Chicago	7-Nov-2008	**Prof. Nikos Sidiropoulos** (University of Crete, Greece): "Analyzing Data 'Boxes': Multi-way Linear Algebra and its Applications in Signal Processing and Communications." See detailed announcement for more information.
Chapter	Dates	Other Chapter Events
Toronto, Canada	3-Nov-2008	**Dr. Ali Khademhosseini** (Harvard Medical School): "Microengineered hydrogels for stem cell bioengineering and tissue regeneration." See detailed announcement for more information.
Santa Clara Valley	3-Nov-2008	**Prof. S. S. Jamuar** (University Putra, Malaysia): "Design Techniques and CMOS Implementation of Low Noise Amplifier (LNA)." See chapter web site for more information.
Santa Clara Valley	8-Dec-2008	**Drs. Ernest Tsui and Xiaoshu Qian** (Intel), "Exploiting Real World Channels for Increased Capacity". See chapter web site for more information.
Northern Virginia	10-Dec-2008	**Dr. John Delaney** (National Gallery of Art), "Visible and Infrared Imaging Spectroscopy of Paintings". See chapter web site 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

Smart Sensors and Bioprostheses Applications of Auxetic Materials

BBC News Online recently reported the creation of a smart curtain that can provide a new type of protection from explosions. The curtain is built using materials that are referred to as auxetic materials. The name comes from Greek and suggests that these materials can expand in all directions when stretched along one direction. The interesting properties of these materials have already been known in the biomedical field, and are leading to emerging applications in smart sensors and bioprostheses. The same properties of auxetic materials that make them interesting also pose challenges in terms of signal processing, such as at the level of signal interpretation and signal control units. Learn more about the auxetic materials, their biomedical applications, and the signal processing challenges from the In the Spotlight article by F. Scarpa in the September 2008 issue of the IEEE Signal Processing Magazine.

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7. SP Education and Resources

DSP Tips and Tricks featured in the IEEE Signal Processing Magazine

- "Efficient Resampling Implementations" by D.W. Barker (July 2008)

- "Precise Variable-Q Filter Design" by S. Engelberg (September 2008)

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8. New Ph.D. Theses

Hyunggon Park (University of California, Los Angeles):
"**Distributed and Dynamic Resource Management Strategies for Multimedia Networks using Cooperative Game Theoretic Approaches**," November 2008.
Advised by Prof. Mihaela van der Schaar.

This thesis proposes a distributed and dynamic multi-user resource management framework, which enables heterogeneous multimedia users that repeatedly interact in a dynamically varying network environment to strategically maximize their own utilities, given their private information. For this, we rely on cooperative game-theoretic concepts. For instance, we model the bilateral interactions among users as resource reciprocation games. Using our formulation, the resource reciprocation among the various peers in a peer-to-peer network is modeled as a stochastic game. Within this game, the peers can autonomously determine their optimal strategies for resource reciprocation using a Markov Decision Process (MDP) formulation.

Unlike existing myopic solutions for resource reciprocation such as Tit-For-Tat, the optimal strategies determined based on MDP enable the peers to make foresighted decisions about resource reciprocation, such that they can explicitly consider both their immediate and future expected utilities. In the resource reciprocation games, the participating users need to mutually agree on a particular resource division. For this, we propose a methodology for designing utility-aware resource division solutions which are able to fulfill desired fairness axioms in terms of multimedia performance. We also show how the proposed resource management framework can be successfully deployed in cognitive radio networks, wireless multimedia broadcasting, and distributed stream mining systems.

Click here to access the thesis or or contact the author for more information.

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.

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9. New Books

Books Featured in Previous Issues [details]

Resource Allocation for Wireless Networks: Basics, Techniques, and Applications,
by Zhu Han and K.J. Ray Liu, Cambridge University Press, 2008.

Ultra Wideband Signals and Systems in Communication Engineering,
by Mohammad Ghavami, Lachlan Michael, and Ryuji Kohno, Wiley, 2nd edition, 2007.

Mathematics of Digital Images: Creation, Compression, Restoration, Recognition,
by S.G. Hoggar, Cambridge University Press, 2006.

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10. Research Opportunities

**Postdoctoral Research Fellow for Statistical Signal Processing - Synthetic Aperture Sonar
at TU Darmstadt, Germany**

The Signal Processing Research Group at Technical University Darmstadt invites outstanding candidates to apply for a postdoctoral fellow position on statistical signal processing. The postdoctoral fellow will work on externally funded projects, one of which is on Synthetic Aperture Sonar (SAS).

The position is initially for one year, and may be renewable. Candidates must satisfy the following criteria: a) A PhD in statistical signal processing; b) Profound knowledge in array processing, signal detection and parameter estimation; c) Experience with image analysis is desirable; d) Strong record of journal

publications in the above areas. Application is via email to Prof. Abdelhak Zoubir at [zoubir AT spg.tu-darmstadt.de]. The application should be accompanied by Ph.D. transcripts, a list of publications, a list of supervised students if any, and residency status in Germany.

Postdoctoral Positions on MIMO Radar and Sensor Networks for Detection/Estimation at Lehigh University, USA

The Signal Processing and Communication Research Lab at Lehigh University invites application for postdoctoral researcher positions. One research area of interests is on Sensor Networking, with an emphasis on networks focusing on Signal Detection and Estimation with complex sensors such as radar sensors. And another research area of interests is on MIMO radar.

Candidates are expected to have outstanding research records as shown in Ph.D. dissertations and publications in related areas; theoretical research leading to journal papers is desired. Interested candidates should send a resume with references, a list of publications (include copy of a few relevant ones if available), a letter explaining how your background fits this project, and a transcript from your PhD school to: Prof. R. S. Blum, ECE Department - Lehigh University, 19 Memorial Drive West, Bethlehem, PA. 18015. Please indicate in the address field the applicable postdoc position (Postdoc in Sensor Networks Radar or in MIMO Radar). For more information contact Prof. Blum at [rblum AT Lehigh.EDU], or visit the group website.

EPSRC Industrial CASE PhD Studentship in Statistical Signal Processing at Heriot-Watt University, UK

A fully funded EPSRC CASE PhD studentship in statistical signal processing is available to a UK student in the School of Engineering & Physical Sciences at Heriot-Watt University in collaboration with SELEX Galileo. EU students who have been resident in the UK for over 3 years may also be eligible. The studentship will cover the fees and provide a tax-free stipend of around 13,900 pounds a year for three and a half years of PhD study. This project will involve the investigation of sensor fusion techniques to detect, identify and track formations (collectives) of targets to provide predictions of future formation behavior in complex sensor environments.

The student should have a minimum of a 2.1 in mathematics, statistics, physics, computer science or electrical engineering and have some experience of programming. Background in statistical signal processing, probability theory and Bayesian inference will be useful. Further information on the research field can be found here. Inquiries can be addressed to Dr. Daniel Clark at [D.E.Clark AT hw.ac.uk]

Research Position Featured in Previous Issue [details]

- PhD Position on Secure Identification and Authentication Codes at the University of Geneva, Switzerland

- PhD Scholarship in Cochlear Signal Detection and Modelling at Victoria University of Wellington, New Zealand

- Three-Year PhD Studentship on Variational Bayesian Filtering for Telecommunications at Trinity College Dublin, Ireland

- Postdoctoral Researcher Position on Video Event Detection and Retrieval at Columbia University, USA

- Postdoctoral and Ph.D. Researcher Positions on Multi-sensor Signal Processing at Darmstadt University of Technology, Germany

- Ph.D. Research Assistantship to Explore the Potential of DSP for Digital Terrain Elevation Data at the Netherlands Defense Academy and Delft University of Technology

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.

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 next issue is due January 5, 2009

Visit the web submission site to provide your input. Make sure that you include your name, affiliation, email and phone contact information. Contributions submitted by **January 5, 2009** 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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* Please replace "AT" in the email addresses with @ .

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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