State of the Society

December 2013

K. J. Ray Liu, President

IEEE Signal Processing Society

IEEE Global Conference on Signal and Information Processing (GlobalSIP), 2013, Austin, TX
What’s New?  ... A lot!

- New Organizational Changes
- New Awards
- Membership Growth
- New Educational Activities
- New Conferences
- New Journals
- New Initiatives

... All bring New Challenges!
IEEE Signal Processing Society (SPS) Organizational View

SPS BoG

SPS ExCom

SPS Publications Board
  - EIC
  - EIC
  - EIC

SPS Conference Board
  - GC
  - GC
  - TDB

SPS Technical Directions Board
  - TCG
  - TCC
  - TCC

SPS Membership Board
  - RD
  - DMS
  - DIR

SPS Awards Board
Recent Organizational Changes

- **Separation of Membership and Award Boards**
  - New Vice President—Membership
  - New Award Board Chair: a non-voting BoG member

- **President-Elect will be Society Treasurer from 2015**
  - Will replace the position of Vice President-Finance

- **New election process for President-Elect:**
  - Presentation of candidates, discussion, and vote during annual BoG meeting at ICASSP
Newly Elected in Leadership

- President-Elect: Rabab K. Ward (Univ. of British Columbia)
- Vice President–Membership: Kostas Plataniotis (Univ. of Toronto)
- Award Board Chair: José M. F. Moura (Carnegie Mellon Univ.)
New Society Staff

- **Executive Director** - Rich Baseil
  30+ years industry experience in engineering and management at Bell Labs, Bellcore, Telcordia Technologies, Cisco, MITRE, RAND. Part-time teaching adjunct at NJIT.

- **Senior Manager, Conferences and Publications** - Denise Hurley
  17+ years with the IEEE. Worked within the Technical Activities Finance Group on the Society/Council budgets, finances and support for the TAB Finance Committee.
Awards Board: An Update

- Change of award nomination process
  - Accept nominations from all boards, committees, and individuals

- Change of award selection process – Awards Board will vet on all nominations

- No board/committee can nominate its own members in order to minimize potential conflict of interests ...
SPS Awards

- IEEE James A. Flanagan Speech and Audio Processing Technical Field Award (est. 2002)
- IEEE W.R.G. Baker Prize Paper Award (2011)
- IEEE Jean-Baptiste Fourier Technical Field Award for Signal Processing (newly approved)

- Society Award
- Technical Achievement Award
- Education Award
- Meritorious Service Award
- Best Paper Award
- Overview Paper Award (2013 submitted for approval)
- Signal Processing Letters Best Paper Award (newly approved)
- Signal Processing Magazine Best Paper Award
- Signal Processing Magazine Best Column Award
- Sustained Impact Paper Award (2013 submitted for approval)
- Young Author Best Paper Award
SPS Budget and Finance

('12 FM-13 per March 2013)
Note: Effective 2007, Society membership totals appear higher as a result of a change implemented in the way current memberships are counted. Memberships cancelled during renewal (Sept-Dec) for the following membership year are counted in current year end totals. In prior years, these non-renewing members were not included in totals. Effective 2008, Society membership totals reflect a decline of 9,405 memberships which included the cancellation of approx. 6,000 Engineering Management Society memberships due to the Society’s conversion to a Council. Decline also includes loss of 3,000 Computer Society affiliates.
Seasonal Schools (Carlo Regazzoni)

- **Main objective** of Seasonal Schools in Signal Processing (S3P) Program (established in 2010)
  - Membership development for students with interests in signal proc.  
    [www.signalprocessingsociety.org/community/seasonal-schools/](www.signalprocessingsociety.org/community/seasonal-schools/)

- **Completed Seasonal Schools:**

<table>
<thead>
<tr>
<th>Dates</th>
<th>Location</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 8-14, 2013</td>
<td>Croatia</td>
<td>“Biomedical Image Processing and Analysis”</td>
</tr>
<tr>
<td>Sept. 3-6, 2012</td>
<td>Turkey</td>
<td>“Game Audio”</td>
</tr>
<tr>
<td>Aug. 20-24, 2012</td>
<td>UK</td>
<td>&quot;High Performance DSP &amp; FPGA implementation of SP Systems&quot;</td>
</tr>
<tr>
<td>July 2-6, 2012</td>
<td>Australia</td>
<td>&quot;Social Media Processing&quot;</td>
</tr>
<tr>
<td>July 2-6, 2012</td>
<td>Taiwan</td>
<td>&quot;Compressive Sensing and MIMO Signal Proc. Systems&quot;</td>
</tr>
<tr>
<td>Jan. 16-20</td>
<td>Greece</td>
<td>&quot;Speech and Audio Processing for Immersive Environments and Future Interfaces&quot;</td>
</tr>
<tr>
<td>Sept. 3-7, 2011</td>
<td>Austria</td>
<td>&quot;Networked Embedded Systems&quot;</td>
</tr>
<tr>
<td>July 4-8, 2011</td>
<td>Taiwan</td>
<td>&quot;3D &amp; High Definition/High Contrast Video Proc. Systems&quot;</td>
</tr>
</tbody>
</table>
SigView (John McAllister)

- **SigView** ([www.sigview.org](http://www.sigview.org)) is an online video library, which is an open benefit for all SPS members, allowing you to create, host, link and distribute videos of talks, lectures, tutorials or any other media.

- It has been officially approved as a standalone SigView editorial board with Chief Editor John McAllister.

- Keeping up-to-date with social media
- @SPSotl
ChinaSIP (Min Wu)

- A new SPS regional conference in China as a unique outreach platform
  - Help colleagues in China engage with global community
  - Offer global colleagues opportunities to network and develop international collaborations

- **1st ChinaSIP** was launched in July 2013 in Beijing
  - Technical sessions, complemented by summer school, plenary & invited talks, professional development panels & industry panel

- **2nd ChinaSIP** will be held in Xi’an July 9-13, 2014

- ChinaSIP Technical Interest Groups
  - Provide review workforce and quality assurance for the conf.
  - Facilitate technical community building in China
SigPort  (Min Wu)

• “Signal/Info Processing Technical Report Repository”
  • An online archive of manuscripts, reports, student thesis and supporting materials.
  • Provide an early citable access to reports that users wish to share with time-stamp
    • Complement formal publication in conf./journals with EDICS
    • Authors retain copyright and free to submit for publication
    • Possibly serve as pre-submission to formal publications
    • Moderate fee to ensure sustainable archiving

• **Phase-1 Pilot** development plan is underway
  – It is to be approved as a standalone SigPort editorial board.
  • Expect to launch a trial in 2014
Student Services (Kenneth Lam)

Student Career Luncheon:
- A new activity organized for students and companies to meet
- Jointly work by the Student Services Committee and the Industrial Relations Committee as a regular feature at ICASSPs
- The first Luncheon was held at ICASSP 2013 on May 30
- 150 students/fresh graduates and about 50 people from 14 companies registered to attend the event

“Signal Processing Cup” Competition for Students
- Opportunity for grad & undergrad students to form teams and work together to solve a challenging and interesting real-world problem using signal processing techniques and methods.
- Sponsored by MathWorks with cash and softwares!

IEEE SPS Travel Grants: The committee is responsible for selecting travel grantees to attend ICASSP and ICIP.

http://www.signalprocessingsociety.org/membership/sps-travel-grants/
Industrial Relations (Mazin Gilbert)

- **Ambassador Program**
  - identifying ambassadors representing each company
  - to establish programs, courses, and events that are of value to the companies
  - started recently with a LinkedIn page and 25 ambassadors

- **Emerging Signal Processing Applications (ESPA) Conference**
  - Held in 2012
  - Consider to hold again in 2015
WIKI Project (Douglas Williams)

- Wikipedia has become one of the most widely-used resources on signal processing
  - Nyquist–Shannon sampling theorem page is viewed on average 1000x a day
  - Editing of a Wikipedia article can easily exceed the impact and visibility of writing a paper

Wikipedia Workshop at ICASSP

- Friday, May 31, immediately followed special session SS-L8, “Signal Processing Education in the Internet Age”
- Workshop offered a primer on how one can meaningfully contribute to improving SP articles on Wikipedia
  - Participants were ask to think of specific (types of) articles that may require improvement and articles they could help to improve
## The Big Five IEEE Societies

<table>
<thead>
<tr>
<th>Society</th>
<th>Members</th>
<th>Undergrad</th>
<th>All (with Affiliates)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer</td>
<td>50,481</td>
<td>4,258</td>
<td>67,848</td>
</tr>
<tr>
<td>ComSoc</td>
<td>44,305</td>
<td>5,298</td>
<td>50,702</td>
</tr>
<tr>
<td>Power</td>
<td>28,019</td>
<td>2,156</td>
<td>30,479</td>
</tr>
<tr>
<td>SPS</td>
<td>16,326</td>
<td>454</td>
<td>16,957</td>
</tr>
<tr>
<td>Microwave</td>
<td>11,537</td>
<td>355</td>
<td>11,939</td>
</tr>
</tbody>
</table>

- Reversed the downward trend and started to grow!
- SPS is the largest society without its own division!

(Dec 2012 data)
SPS Members by Region

- 4th largest technical society in the IEEE
- Approximately 17,000 members

**US (R1-6): 41%**

- 1 (Northeastern US) - 8%
- 2 (Mideastern US) - 8%
- 3 (Southeastern US) - 4%
- 4 (Midwestern US) - 4%
- 5 (Southwestern US) - 5%
- 6 (Western US) - 12%
- 7 (Canada) - 3%
- 8 (Europe/Midl.Est/N.Africa) - 30%
- 9 (Central/South America) - 3%
- 10 (Asia/Pacific Rim) - 23%

**R10: 23%**

**R8: 30%**

42% Last year!
# SPS Publications: Page Budgets

### Trans. on Audio ➔
- **Trans. Audio & Electroacoustics ➔ T-ASSP ➔ T-SP**

In total, over **19,423** pages published in 2012!

<table>
<thead>
<tr>
<th>Year</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1967</td>
<td>202</td>
</tr>
<tr>
<td>1970</td>
<td>527</td>
</tr>
<tr>
<td>1980</td>
<td>773</td>
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<td>1990</td>
<td>2,200</td>
</tr>
<tr>
<td>2000</td>
<td>3,652</td>
</tr>
<tr>
<td>2009</td>
<td>5,080</td>
</tr>
<tr>
<td>2012</td>
<td>6,804</td>
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</table>

**Other SPS Pubs in 2012**

<table>
<thead>
<tr>
<th>Publication</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trans. on Audio, Speech and Lang. Proc. (since 1993)</td>
<td>2,796</td>
</tr>
<tr>
<td>Trans. on Image Proc. (since 1992)</td>
<td>4,924</td>
</tr>
<tr>
<td>Trans. on Info. Forensics and Security (since 2006)</td>
<td>1,967</td>
</tr>
<tr>
<td>SP Letters (since 1994)</td>
<td>964</td>
</tr>
<tr>
<td>Journal of Selected Topics in SP (since 2007)</td>
<td>1,032</td>
</tr>
<tr>
<td>SP Magazine (since 1984)</td>
<td>936</td>
</tr>
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</table>
Published Pages (1994-2012)
## SPS Publications

<table>
<thead>
<tr>
<th>Journal</th>
<th>Impact factor</th>
<th>Year 2012 Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trans. on Medical Imaging</td>
<td>4.027</td>
<td>8</td>
</tr>
<tr>
<td>Signal Processing Magazine</td>
<td>3.368</td>
<td>15/242 in EE</td>
</tr>
<tr>
<td>Journal of Selected Topics on SP</td>
<td>3.297</td>
<td>16</td>
</tr>
<tr>
<td>Trans. on Image Processing</td>
<td>3.199</td>
<td>17</td>
</tr>
<tr>
<td>Trans. on Signal Processing</td>
<td>2.813</td>
<td>25</td>
</tr>
<tr>
<td>Trans. on Wireless Comm.</td>
<td>2.418</td>
<td>34</td>
</tr>
<tr>
<td>Trans. on Mobile Computing</td>
<td>2.395</td>
<td>14 (CS-Info Sys)</td>
</tr>
<tr>
<td>Trans. Info Forensics and Security</td>
<td>1.895</td>
<td>54</td>
</tr>
<tr>
<td>Trans. on Multimedia</td>
<td>1.754</td>
<td>15 (CS-Software Engr.)</td>
</tr>
<tr>
<td>Trans. on Audio/Speech/Lang.</td>
<td>1.675</td>
<td>71</td>
</tr>
<tr>
<td>Signal Processing Letters</td>
<td>1.674</td>
<td>72</td>
</tr>
</tbody>
</table>
New Journal Activities

Proposed new journals
- IEEE Trans. on Computational Imaging (Bouman)
- IEEE Trans. on Signal and Information Processing over Network Systems (Djuric)

Financial Co-Sponsored journals
- IEEE Trans. on Cognitive Communications and Networking (20%)
- IEEE Trans. on Big Data (7.5%)
- IEEE Journal on Biomedical and Health Informatics (15%)

Technical Co-Sponsored journals
- IEEE Internet of Things Journal
- IEEE Trans. on Cloud Computing
- IEEE Cloud Computing Magazine
- IEEE Trans. on Network Science & Engineering
- IEEE Trans. on Molecular, Biological, and Multi-Scale Communications
- IEEE Trans. on Computational Social Systems
- IEEE Life Science Letters

Existing Co-Sponsored Journals
- IEEE Trans. on Multimedia (25%->50%)
- IEEE Trans. Medical Imaging (15%->35%)
New Journal Activities

- **Merger with ACM**
  - The IEEE Transactions on Audio, Speech, and Language Processing and the ACM Transactions on Speech and Language Processing will be published jointly as the *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, starting January 2014

- **Signal Processing Letters**
  - The format for the IEEE Signal Processing Letters changed from four pages to *four pages, plus one page for references only*, following the change in the format for conference paper submissions.
SPS Conferences

IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP):

• Florence – 2014
• Brisbane – 2015
• Shanghai – 2016
• New Orleans, LA – 2017
• Seoul, South Korea – 2018

IEEE International Conference on Image Processing (ICIP):

• Paris – 2014
• Quebec City – 2015
• Phoenix – 2016
• Beijing, China - 2017
ICASSP and ICIP Attendance

<table>
<thead>
<tr>
<th>Year</th>
<th>ICASSP Locations</th>
<th>ICIP Locations</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>Istanbul, Turkey</td>
<td>Vancouver, Canada</td>
</tr>
<tr>
<td>2001</td>
<td>Salt Lake City, UT</td>
<td>Thessaloniki, Greece</td>
</tr>
<tr>
<td>2002</td>
<td>Orlando, FL</td>
<td>Rochester, NY</td>
</tr>
<tr>
<td>2003</td>
<td>Hong Kong</td>
<td>Barcelona, Spain</td>
</tr>
<tr>
<td>2004</td>
<td>Montreal, Canada</td>
<td>Singapore</td>
</tr>
<tr>
<td>2005</td>
<td>Philadelphia, PA</td>
<td>Genova, Italy</td>
</tr>
<tr>
<td>2006</td>
<td>Toulouse, France</td>
<td>Atlanta, GA</td>
</tr>
<tr>
<td>2007</td>
<td>Honolulu, Hawaii</td>
<td>San Antonio, TX</td>
</tr>
<tr>
<td>2008</td>
<td>Las Vegas, NV</td>
<td>San Deigo, CA</td>
</tr>
<tr>
<td>2009</td>
<td>Taipei, Taiwan</td>
<td>Cairo, Egypt</td>
</tr>
<tr>
<td>2010</td>
<td>Dallas, Texas</td>
<td>Hong Kong</td>
</tr>
<tr>
<td>2011</td>
<td>Prague, Czech Republic</td>
<td>Brussels</td>
</tr>
<tr>
<td>2012</td>
<td>Kyoto, Japan</td>
<td>Orlando, FL</td>
</tr>
<tr>
<td>2013</td>
<td>Vancouver, BC, Canada</td>
<td>Melbourne, Australia</td>
</tr>
</tbody>
</table>
GlobalSIP: A New Flagship (Ahmed Tewfik)

- **New symposia based conference**
  - Focused on current and emerging sig. proc. theoretical foundations and applications

- **Goals**: Emphasize interdisciplinary research with promising impact
  - Attract new audiences beyond ICASSP/ICIP/ISBI/ICME

- Launch: Austin, TX, 3-5 December 2013

- Next: Atlanta, GA, 1 December, 2014

- Eighteen symposia:
  - **Theoretical foundations**: graph signal processing, network sensing, low dimensional models, sensing and inference, network theory
  - **Applications**: bioinformatics, neural engineering, mobile imaging, cyber security, finance, cognitive radio, green communications, smart grid, millimeter wave imaging
New Conference Policies

- Papers submitted to the Society’s solely owned conferences and workshops can have 4 pages of text plus a 5th page for references.

- IEEE Signal Processing Letters published papers can be presented at ICASSP or ICIP.
Technical Committees: Then and Now

Year 1976
- Digital signal processing
- Digital measurement of noise
- Electroacoustic transducers
- Speech processing
- Underwater acoustics

Year 1987
- Audio and electroacoustics
- Digital signal processing
- Multidimensional signal processing
- Spectral estimation and modeling
- Speech processing
- Underwater acoustics
- VLSI for signal processing

⇒ Evolved and Broadened Scope of Signal Processing

Year 2013
- Audio and electroacoustics
- Bio imaging and signal processing
- Design and implementation of signal processing and systems
- Image, video, and multidimensional signal processing
- Information forensics and security
- Machine learning for SP
- Multimedia SP
- Sensor array and multichannel
- SP for communication and networking
- SP theory and methods
- Speech and language processing
- Industry DSP technology
- Signal processing education

⇒ Evolved and Broadened Scope of Signal Processing
Creation of Special Interest Group (SIG)

- Provisional groups that are created to quickly address emerging technical areas,
- With a life-span of up to three years.
- subject to a review by the TC Review Committee to determine to continue, become a TC, or be disbanded.
- The VP-Technical Directions shall identify emerging areas and create and receive proposals for Special Interest Groups, with approval by EXCOM.
## TCs and Affiliated Community

<table>
<thead>
<tr>
<th>TC</th>
<th>ICASSP 2013 Submissions</th>
<th>ICASSP % of Submissions</th>
<th>Affiliates</th>
<th>Affi (%)</th>
<th>Affi/Sub</th>
</tr>
</thead>
<tbody>
<tr>
<td>AASP</td>
<td>354</td>
<td>10.6%</td>
<td>72</td>
<td>7.2%</td>
<td>0.69</td>
</tr>
<tr>
<td>BISP</td>
<td>164</td>
<td>4.9%</td>
<td>36</td>
<td>3.6%</td>
<td>0.73</td>
</tr>
<tr>
<td>DISPS</td>
<td>100</td>
<td>3.0%</td>
<td>47</td>
<td>4.7%</td>
<td>1.57</td>
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<tr>
<td>IFS</td>
<td>93</td>
<td>2.8%</td>
<td>102</td>
<td>10.3%</td>
<td>3.68</td>
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<tr>
<td>IVMSP</td>
<td>479</td>
<td>14.3%</td>
<td>125</td>
<td>12.6%</td>
<td>0.88</td>
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<tr>
<td>IDSP</td>
<td>33</td>
<td>1%</td>
<td>8</td>
<td>0.8%</td>
<td>0.8</td>
</tr>
<tr>
<td>MMSP</td>
<td>74</td>
<td>2.2%</td>
<td>137</td>
<td>13.8%</td>
<td>6.27</td>
</tr>
<tr>
<td>MLSP</td>
<td>196</td>
<td>5.9%</td>
<td>77</td>
<td>7.8%</td>
<td>1.32</td>
</tr>
<tr>
<td>SAM</td>
<td>217</td>
<td>6.5%</td>
<td>86</td>
<td>8.7%</td>
<td>1.34</td>
</tr>
<tr>
<td>SL</td>
<td>764</td>
<td>22.8%</td>
<td>63</td>
<td>6.4%</td>
<td>0.28</td>
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<tr>
<td>SPCOM</td>
<td>387</td>
<td>11.6%</td>
<td>168</td>
<td>17.0%</td>
<td>1.47</td>
</tr>
<tr>
<td>SPTM</td>
<td>479</td>
<td>14.3%</td>
<td>70</td>
<td>7.0%</td>
<td>0.49</td>
</tr>
<tr>
<td>Total</td>
<td>3346</td>
<td></td>
<td>882</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Updated: 3/2012
SPS Chapters

There are about 135 SPS chapters worldwide.
Challenges Ahead

- **Publication**
  - Reducing revenues due to IEL distribution
  - Further improve quality, impact factors
  - TSP/TIP too thick? More new topical journals?

- **Membership**
  - Create more values and benefits
  - Outreach to emerging regions

- **Finance**
  - More services and programs – more expenses!
  - Create more new products and models?
Challenges Ahead

- **Conference:**
  - How to support regional activities?
  - Balance between US and international

- **Technical Activities:**
  - Build a strong sense of community in TCs
  - Timely embrace new emerging topics

- **Society:**
  - Awareness/Visibility in the public at large

Foresee the future and position ahead!
Awareness/Visibility ad hoc Committee

- EXCOM formed a SP Awareness Committee consists of EXCOM members and some invited guests, chaired by President.
- A content team was chaired by Fred Juang, and the other media team was chaired by Charlie Bouman.
- Conference calls on Sep 24 and Nov 12, and a face-to-face meeting on Dec 5.
- Developing objectives/goals, and actionable plans.
Volunteering Opportunities

- Review papers for journals/conferences
- Become part of the editorial boards
  (appointed by Journal’s editors-in-chief; vetted by Pub Bd)
- Organize conferences and seasonal schools
- Propose tutorials for online education program
- Get involved in technical committees
  - Practically any SPS member and even some non-members can become Affiliate Members (non-elected, non-voting members) of a particular TC
- Volunteer for elected leadership positions
- ...
Where to Find This Talk?

- Go to IEEE Signal Processing Society at http://www.signalprocessingsociety.org/
  - Under “About SPS”, see “State of the Society”
- SPS website is now faster...!
What Can We Do for You?

- **President**: K. J. Ray Liu
- **President-Elect**: Alex Acero
- **Vice President-Awards and Membership**: John Treichler
- **Vice President-Conferences**: Wan-Chi Siu
- **Vice President-Finance**: Alex Kot
- **Vice President-Publications**: Mari Ostendorf
- **Vice President-Technical Directions**: Charles Bouman