SIGNAL PROCESSING
The Science Behind our Digital Life

Ali H. Sayed, President
IEEE Signal Processing Society

Stay tuned...

We will announce the new Society LOGO at the end of this presentation.
ICASSP: A Journey around the World

2022 Singapore
2021 Toronto, Canada
2020 Barcelona, Spain
2019 Brighton, UK
2018 Calgary, Canada
2017 New Orleans, USA
2016 Shanghai, China
2015 Brisbane, Australia
2014 Florence, Italy
2013 Vancouver, Canada
2012 Kyoto, Japan
2011 Prague, Czech Rep.
2010 Texas, USA
2009 Taipei, Taiwan
Is this your first ICASSP?

1) YES
2) NO
Active Chapters

60 chapters in US
11 chapters in Canada

40 chapters in Europe, Africa, Middle East

80 chapters in Asia

23 chapters
Central/South America
Chapter Support

• Distinguished Lecturer Visits.
• Distinguished Industry Speakers. (both $3,500 per Chapter annually).

• Chapter Meeting Support – $500 support annually.
• Seasonal Schools, Forums, Regional Meetings ($5,000)
Engaging our Members

An Organization remains relevant as long as:

• Members see nontrivial value in its activities;
• The community sees nontrivial value in its methods.

We are continually seeking ways to engage:

• Our members;
• And the communities around us.
Some Goals for our Society

• Respect and value the diversity of our members.
• Embrace students more fully.
• Reach out to industry more vigorously.
• Expand educational services to members.
• Enrich our publication/conference experiences.
“We have no borders in our professional Society. Your science pushes you forward. Our activities serve as a melting pot where cultures converge; scientists of different races and ethnicities; of different cultural backgrounds and religions, all standing equal under science. Our diversity, life, and work experiences enrich our scientific debates.”
Diversity is a Strength

The society leadership has approved a statement that requires the society to be respectful and considerate of the diversity of its members (race, ethnicity, religion, gender, etc.) in all its activities.

Image from https://hechingerreport.org
Students are our Future…

We have put in place policies to make our Society more welcoming to students; especially from disadvantaged regions.
We have instituted an **annual $1** student membership policy in our Society.

Tell your students!
Tell your friends!
A Nominal Fee for Tutorials

We have also instituted a nominal fee for students attending tutorials at our meetings ($25).

Tell your students!
Tell your friends!
Advanced SPS Student Registrations: 354% increase in a single year!

<table>
<thead>
<tr>
<th>ICASSP 2019 (Brighton)</th>
<th>ICASSP 2018 (Calgary)</th>
</tr>
</thead>
<tbody>
<tr>
<td>453</td>
<td>128</td>
</tr>
</tbody>
</table>

I am told this number has risen to 750!
Significant increase in student membership, especially in regions 9 (Latin America), 10 (Asia & Pacific).

<table>
<thead>
<tr>
<th>Student Membership</th>
<th>Graduate Student Membership</th>
</tr>
</thead>
<tbody>
<tr>
<td>+84.3% (IEEE 1.8%)</td>
<td>+40.1% (IEEE 1.5%)</td>
</tr>
</tbody>
</table>

Overall society membership: +6% (IEEE -1.2%)
Students in the audience. Please select one:

1) I am a **new** IEEE SPS student member.
2) I am a **recurrent** IEEE SPS student member.
3) I am **not** a student member.
Recognizing Young Professionals

Established:

- Best Ph.D. Dissertation Award.  
  *(IEEE approval still pending)*

- Early Career Technical Achievement Award.
Recognizing Teachers...

Regional Distinguished Teacher Award

to recognize individuals who have excelled in the teaching of Signal Processing and the generation of educational material for students.
Young Professionals Development Workshops

Monday, May 13, 15:30-19:00 ($15/$25)

by Melissa Marshall

How to create engaging, dynamic presentations to communicate the impact of your work.
Young Professionals Reception

Tuesday, May 14, 18:00-20:00

Network with your peers and professionals from industry and academia in an informal atmosphere.
Student Career Luncheon

Thursday, May 16, 11:30-14:30 (Auditorium 2)

For students and companies to meet.

SPONSORS

[Logos of sponsors: Analog Devices, Apple, Google, Samsung R&D Institute UK, Microsoft, Bosch, NTT, Sonos, Pryon, SAL Silicon Austria Labs]
Executive Committee

Ali H. Sayed, President
Ahmed Tewfik, President-Elect
Tulay Adali, Vice President-Technical Directions
Fernando Pereira, Vice President-Conferences
Nikos Sidiropoulos, Vice President-Membership
Sergios Theodoridis, Vice President-Publications
Rich Baseil, Executive Director, non-voting
Many Boards and Committees...

Board of Governors
Awards Board
Conferences Board
Publications Board
Membership Board
Technical Directions Board
Fellow Evaluation Committee
Women in SP Committee
15 Technical Committees & Special Interest Groups...

many more volunteers...
Society Staff

Rich Baseil
Executive Director

William Colacchio
Senior Manager, Publications

- Adrienne Fisher, Publications Coordinator
- Rupal Bhatt, Web Administrator
- Kathy Jackson, Publications Coordinator
- Rebecca Wollman, Publications Administrator

Theresa Argiropoulos
Senior Manager, Operations

- Deborah Blazek, Admin, Committees & Governance
- George Olekson, Admin. Asst., Operations
- Jessica Perry, Member Comm. & Experience Specialist
- Jaqueline Rash, Membership Assistant

Caroline Johnson
Senior Manager, Conferences

- Nicole Allen, Conference Administrator
- Samantha Walter, Conference Coordinator
It is easy to get involved

Suggestions and feedback are always welcome.

>> Volunteers are needed <<

All our initiatives, including publications and conferences, are run by volunteers like you and me!

Write to society leaders or to sps-president@ieee.org
Today, we are the …

- **17K members**, including 2700 students and **200+ chapters** worldwide.

Former Society President **Jose Moura** (2008-2009) currently serving as IEEE President.
Membership Distribution (~17000)

Approximately:
- 6400 USA (R1-6)
- 5000 Asia (R10)
- 4600 Europe/Middle East/Africa (R8)
- 540 Canada (R7)
- 530 Central/South America (R9)
<table>
<thead>
<tr>
<th>Region</th>
<th>Population</th>
<th>Members</th>
<th>Members Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia (Region 10)</td>
<td>4.4B</td>
<td>5000</td>
<td>p</td>
</tr>
<tr>
<td>Central/South America (R9)</td>
<td>464M</td>
<td>530</td>
<td>p</td>
</tr>
<tr>
<td>Europe/Middle East/Africa (Region 8)</td>
<td>2B (Europe: 741M, Africa: 1.2B, Middle East: 218M)</td>
<td>4600</td>
<td>2p</td>
</tr>
<tr>
<td>Canada (Region 7)</td>
<td>36M</td>
<td>530</td>
<td>14p</td>
</tr>
<tr>
<td>USA (Regions 1-6)</td>
<td>325M</td>
<td>6400</td>
<td>20p</td>
</tr>
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<td>Members</td>
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- Membership up 10% in R9 and R10.
- Student membership up 60% in R10.
- Student membership up 37% in R9.
- Overall society membership up 4%.
- $1 annual policy for students
- $25 tutorial policy for students.
Participation in Society Elections

Participation in Elections

- Voting: 18%
- Non-voting: 82%

Origin of Votes

- US: 28%
- Asia: 27%
- Europe, Africa, Middle East: 36%
- Central/South America: 6%
- Canada: 3%
Level of Engagement in Elections

Percentage of Members Participating in Voting from each Region

- US: 12%
- Canada: 15%
- Europe, Africa, Middle: 21%
- South/Central America: 30%
- Asia: 16%
Election of Society President

Effective this election cycle, the Society President will be elected **directly by our members**:

1. The Board of Governors forwards two finalist candidates to members.

2. Members select the President-Elect by direct vote.
Gender Distribution (~17000)

STEM: Science, Technology, Engineering, Mathematics.

USA: 17% are women in Electrical Engineering, 25% in STEM fields.
Dynamite, Electricity, and Nobel’s World

Table 1. Gender statistics for the Nobel Prizes.

<table>
<thead>
<tr>
<th>Nobel Prize</th>
<th>Number of Prizes</th>
<th>Number of Laureates</th>
<th>Female Laureates</th>
<th>Women (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics</td>
<td>112</td>
<td>210</td>
<td>3</td>
<td>1.4</td>
</tr>
<tr>
<td>Chemistry</td>
<td>110</td>
<td>181</td>
<td>5</td>
<td>2.8</td>
</tr>
<tr>
<td>Medicine</td>
<td>109</td>
<td>216</td>
<td>12</td>
<td>5.6</td>
</tr>
<tr>
<td>Literature</td>
<td>110</td>
<td>114</td>
<td>14</td>
<td>12.3</td>
</tr>
<tr>
<td>Peace</td>
<td>99</td>
<td>107</td>
<td>17</td>
<td>15.9</td>
</tr>
<tr>
<td>Economy</td>
<td>50</td>
<td>81</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td>Total</td>
<td>590</td>
<td>909</td>
<td>52</td>
<td>5.7</td>
</tr>
</tbody>
</table>

Only 5.7%!
Women Leader Volunteers

Rabab Ward, Chair, Awards Board (and Past President)
Isabel Trancoso, Chair, Fellow Evaluation Committee
Tulay Adali, Vice President-Technical Directions
Ana Perez-Neira, Board of Governors, Member-at-Large
Zhi Tian, Board of Governors, Member-at-Large
Athina Petropulu, Board of Governors, Member-at-Large
Beatrice Pesquet-Popescu, Board of Governors, Member-at-Large
Abeer Alwan, Board of Governors, Member-at-Large
Bhuvana Ramabhadran, Regional Director-at-Large
Lina Karam, Editor-in-Chief, IEEE J. of Selected Topics in SP
Maria Greco, Editor-in-Chief, Resource Center
Mari Ostendorf, Nominations and Appointments Committee
Women in Signal Processing Luncheon

Wednesday, May 15, 12:00-14:00 (Auditorium 2)

Panel discussion: Grad-School to IEEE Fellow and Beyond.

Networking opportunities; Exchange ideas and experiences from academia & industry.
Katie Bouman: The woman behind the first black hole image

By Brie Stimson | Fox News

Katie Bouman, the scientist whose graduate school work helped lead to the first image of a black hole, is getting her due.
Industry Membership

World Distribution

Academia 54%

Industry 46%

US Distribution

[CATEGORY NAME] [PERCENTAGE]

[CATEGORY NAME] [PERCENTAGE]
You are:

1) Faculty.
2) Student.
3) Industry professional.
4) Other.
Value for our Members

More than one type of member:
- Young professionals (YP).
- Women (W).
- Academics (A).
- Industry professionals (IP)

Important to reach out to many regions:
Africa, India, Southeast Asia, Central/South America, Middle East, China, Japan, Korea, Singapore,…
Initiatives in Motion...

- Interactive App for Society Resources (N. Sidiropoulos)
- IEEE Open Journal of Signal Processing (S. Theodoridis)
- Disruptive Innovations Conference (A. Tewfik)
- Recorded Short Courses (A. Majumdar)
- Resources Center (M. Greco)
- Vice President-Education: continuing education, certifications, short courses, webinars, tutorials, etc.
2016-2018 Sponsored Events
Going Global…

The Society launched an initiative to allow members to organize society-sponsored events at the local level:

Educational Objective: Schools, webinars.
Networking Objective: Forums.
Technical Objective: Regional meetings.

Up to $5K support available per event.
Regional Events

**SEASONAL SCHOOLS**
Summer or winter schools.

*Purpose:* educational opportunities to students & practitioners.

**FORUMS**
Panel sessions & presentations by industry experts.

*Purpose:* aimed at networking.

**REGIONAL MEETINGS**
Local technical events.

*Purpose:* serve a local/regional community.
We serve you in (many) other ways...
<table>
<thead>
<tr>
<th>JOURNAL</th>
<th>IMPACT FACTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEEE Signal Processing Magazine</td>
<td>7.45</td>
</tr>
<tr>
<td>IEEE Trans. Information Forensics &amp; Security</td>
<td>5.82</td>
</tr>
<tr>
<td>IEEE Trans. Image Processing</td>
<td>5.07</td>
</tr>
<tr>
<td>IEEE J. Selected Topics Signal Processing</td>
<td>4.36</td>
</tr>
<tr>
<td>IEEE Trans. Signal Processing</td>
<td>4.2</td>
</tr>
<tr>
<td>IEEE Trans. Audio/Speech/Language</td>
<td>2.95</td>
</tr>
<tr>
<td>IEEE Signal Processing Letters</td>
<td>2.8</td>
</tr>
</tbody>
</table>
Gold Open Access Journal

In the process of launching

IEEE Open Journal of Signal Processing

with

- multimedia capabilities
- reproducible research options
Should we make reproducible research the default for our Publications?

1) YES.

2) NO.
The Future is Today

Current research trends are ambitious and complex. The value of SP needs to be highlighted.

Brain sciences, social sciences, data-driven sciences, smart manufacturing, personalized health, intelligent systems.
Data Science Initiative

Launched the first IEEE Data Science Workshop, held in June 2018 in Lausanne, Switzerland.

Second event is being held in Minneapolis, MN, June 2019.
A New Reality… for IEEE too…
Resource Center

- Repository for SP preprints, slides, data, code, etc.
- Repository for course material, lectures, videos, etc.
- Seamless integration of online resources.

**Single Point of Entry.**
Resource Center

- Continuing education.
- Short courses, certifications.
- Video competitions.
- History corner.
- Interviews.

> Volunteers needed <

Maria Greco
Editor-in-Chief
Integrated Experience

We are also developing an app to tie together all Society resources:

Publications, conferences, events, education, videos, blogs, webinars, lectures, tutorials, your manuscripts, your reviews, etc. into an integrated experience.
If you are an SPS member, what do you value **MOST** about your membership:

1) Free access to Society periodicals.
2) Ability to network with other professionals.
3) Discounts on conference fees and other resources.
4) Access to newsletters, webinars, tutorials, educational material,…
5) All
Naming our Society Awards

Carl Friedrich Gauss **Education Award**.  
(1777-1855)

Norbert Wiener **Society Award**.  
(1894-1964)

C. Shannon-H. Nyquist **Technical Achievement Award**.  
(1916-2001)  
(1898-1976)

Leo L. Beranek **Meritorious Service Award**.  
(1914-2016)
IEEE Level Awards Related to SP

IEEE Fourier Award for Signal Processing
(1768-1830)

IEEE James L. Flanagan Speech and Audio Processing Award
(1925-2015)

IEEE Jack S. Kilby Signal Processing Medal
(1923-2005)
Concluded effort to modernize the Society logo to better reflect current state of discipline.
A modern look to reflect the **global reach** of SP, and how it promotes a **convergence of ideas** and methods to solve challenging problems.
A modern look to reflect the **global reach** of SP, and how it promotes a **convergence of ideas** and methods to solve challenging problems.
TIME TO SAY GOOD BYE
It is easy to get involved

Suggestions and feedback are always welcome.

> Volunteers are needed <

All our initiatives, including publications and conferences, are run by volunteers like you and me!

Write to society leaders or to sps-president@ieee.org
You can find this presentation on the Society’s website.

Thank you!