SIGNAL PROCESSING

The Science Behind our Digital Life

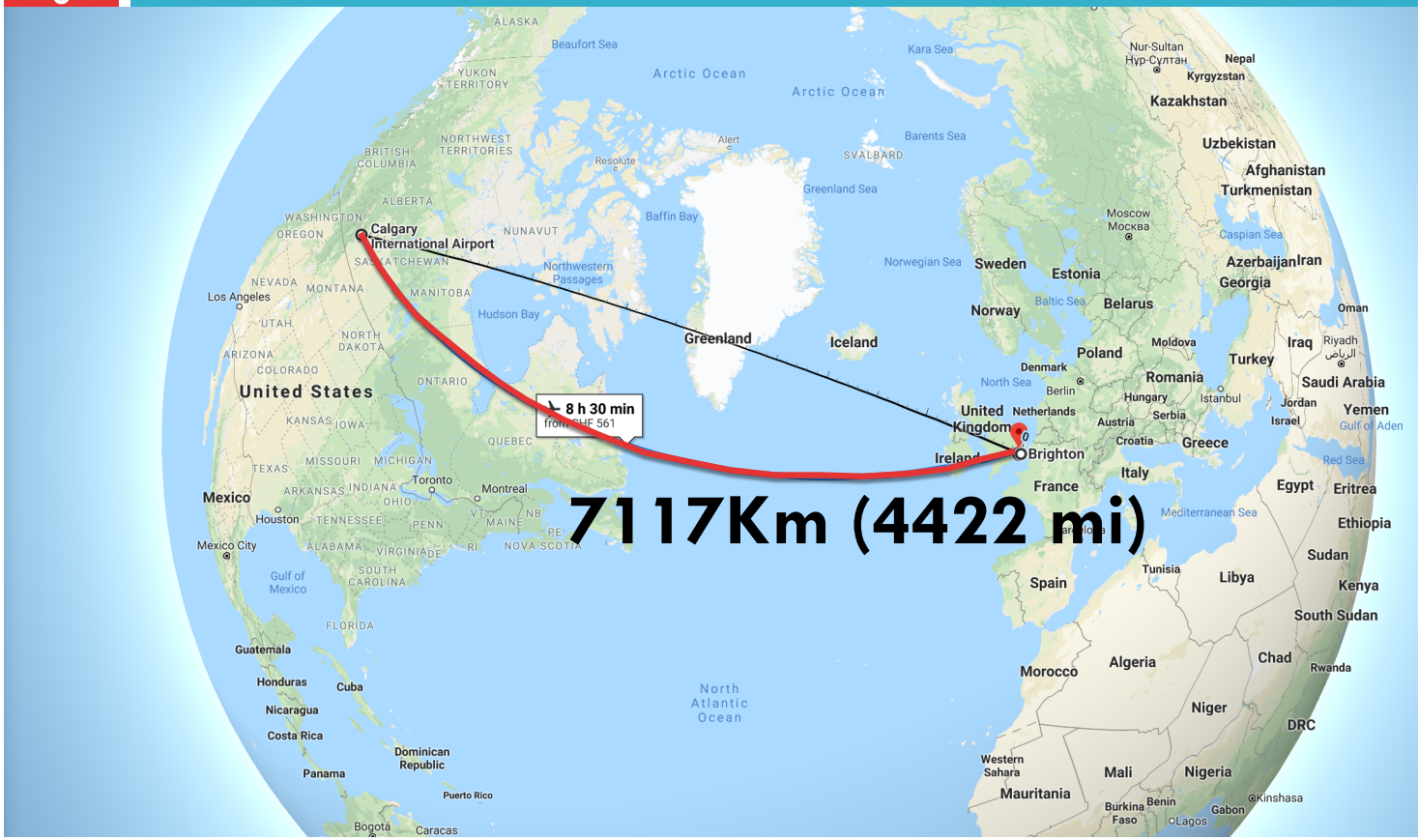
Ali H. Sayed, *President*
IEEE Signal Processing Society

IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Brighton, UK, May 2019

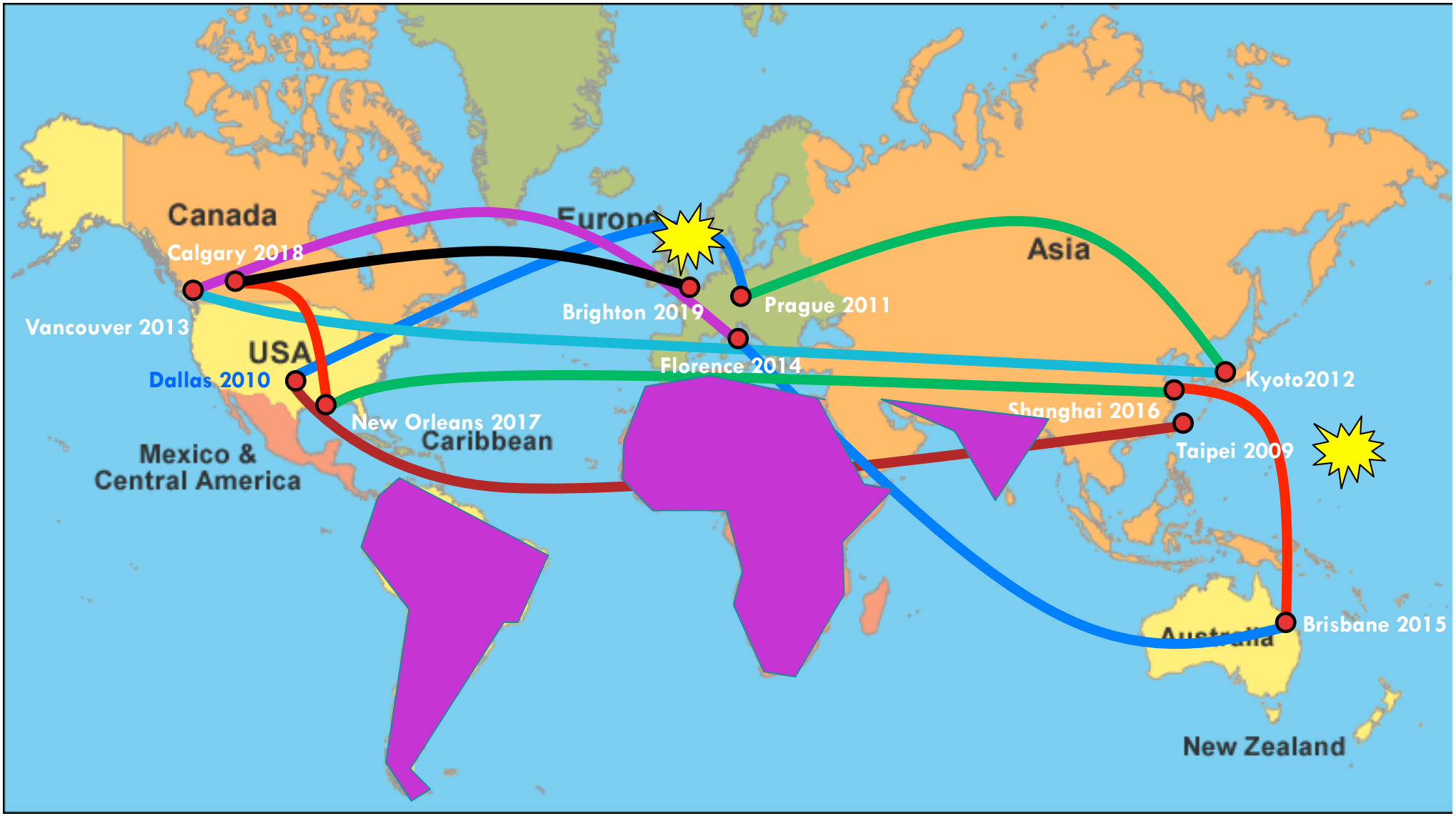
Stay tuned…

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


Canada
Calgary 2018
Vancouver 2013
USA
Dallas 2010
New Orleans 2017
Caribbean
Mexico &
Central America
Europe
Brighton 2019
Prague 2011
Florence 2014
Asia
Kyoto2012
Shanghai 2016
Taipei 2009
Brisbane 2015
New Zealand

1

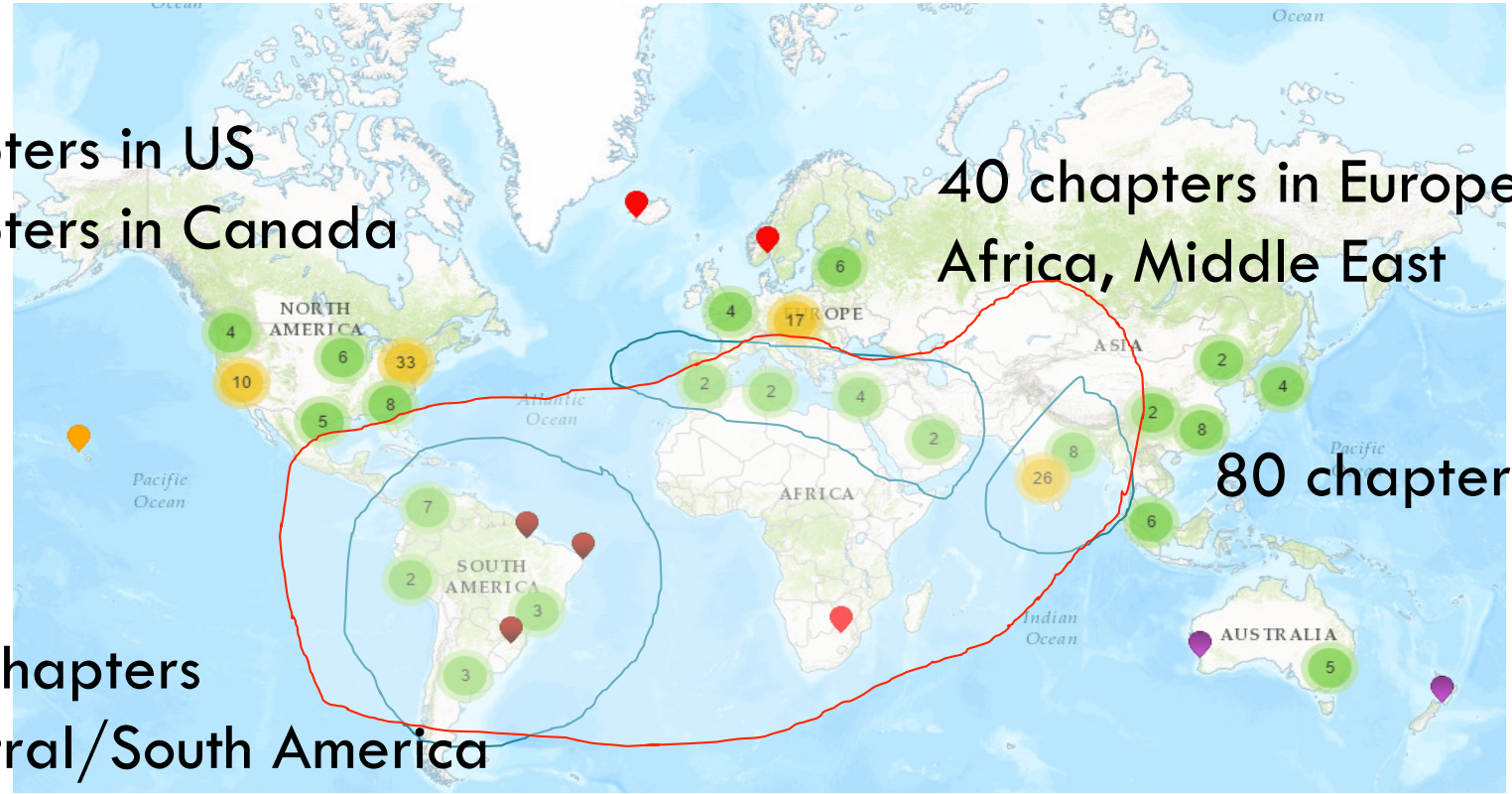
Is this your first ICASSP?

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**.

PRESIDENT'S MESSAGE

Ali H. Sayed | IEEE Signal Processing Society President | ali.sayed@epfl.ch

Science Is Blind

IEEE SIGNAL PROCESSING MAGAZINE | September 2018

"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…

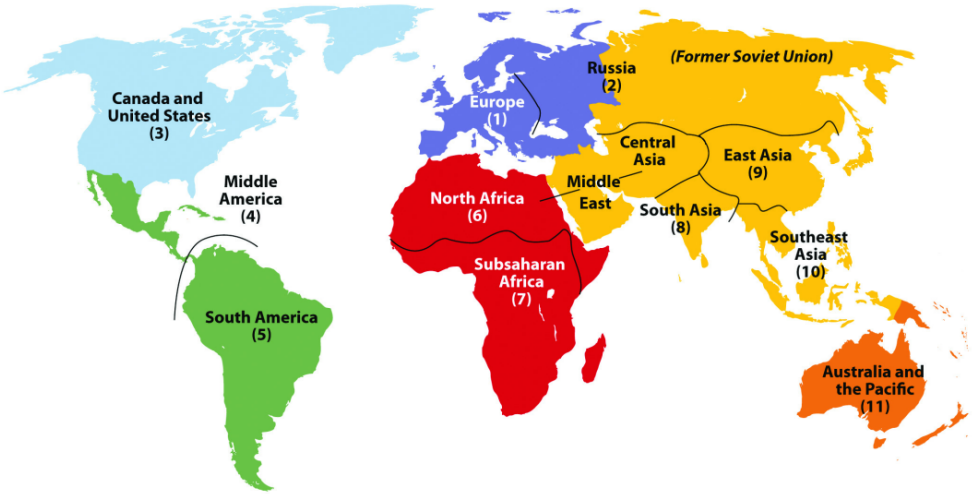
We have put in place policies to make our Society more welcoming to **students**; especially from disadvantaged regions.

The $1 Student-Membership Society

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!

It matters …

Advanced SPS Student Registrations:

354% increase in a single year!

ICASSP 2019 (Brighton)	ICASSP 2018 (Calgary)
453	128

I am told this number has risen to 750!

It matters … since Feb. 2018

Significant increase in student membership, especially in **regions 9 (Latin America), 10 (Asia & Pacific).**

Student Membership	Graduate Student Membership
+84.3% (IEEE 1.8%)	**+40.1%** (IEEE 1.5%)

Overall society membership: +6% (IEEE -1.2%)

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

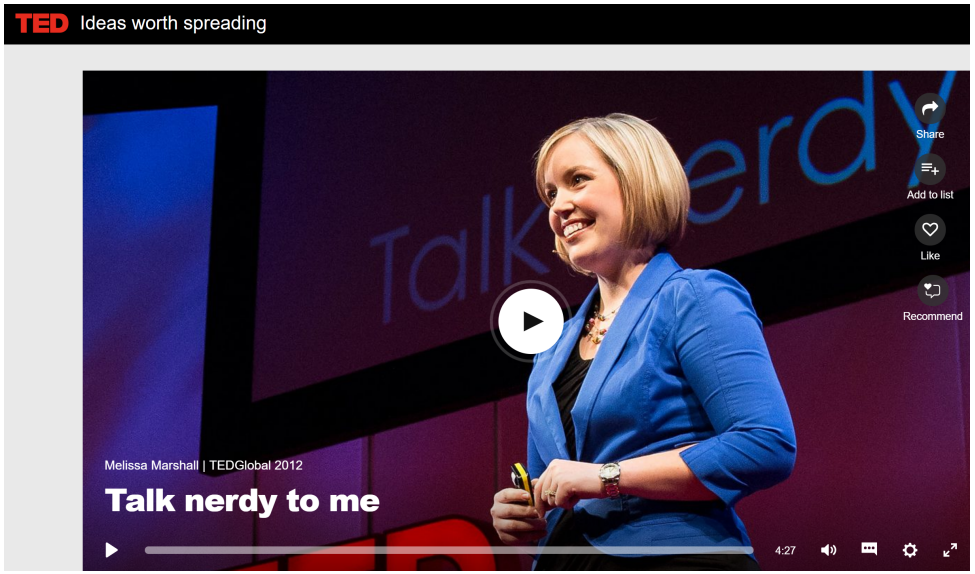
to recognize individuals who have excelled in the teaching of Signal Processing and the generation of educa material for students.

Young Professionals Development Workshops

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

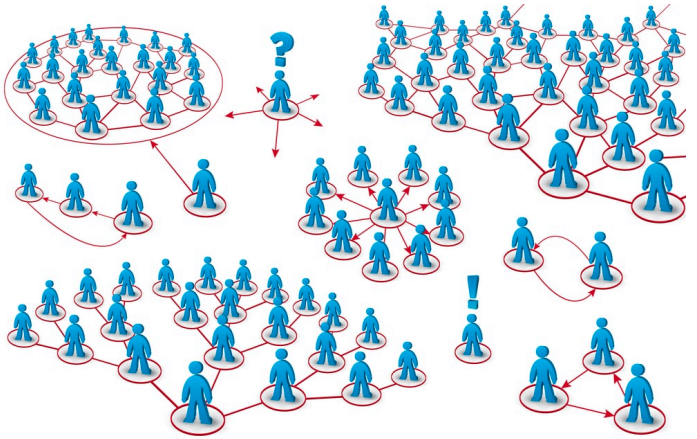
by Melissa Marshall

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

ANALOG DEVICES
AHEAD OF WHAT'S POSSIBLE™

Google

Microsoft

SAMSUNG
R&D Institute UK

BOSCH

NTT

SONY

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

many more volunteers…

15 Technical Committees & Special Interest Groups…

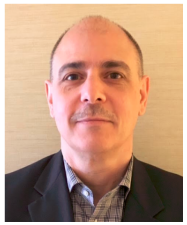
Society Staff

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

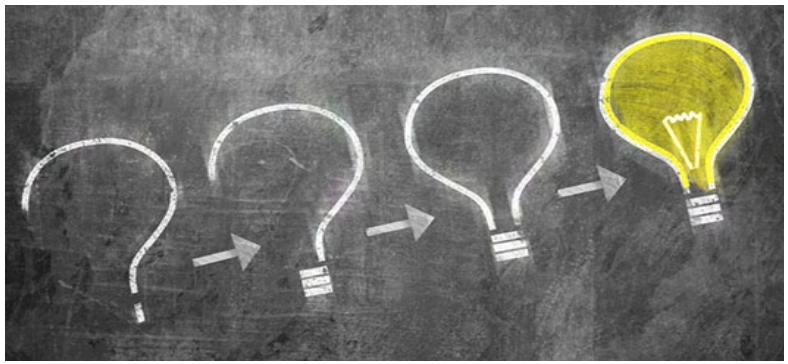
Senior Manager, Conferences

- **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!

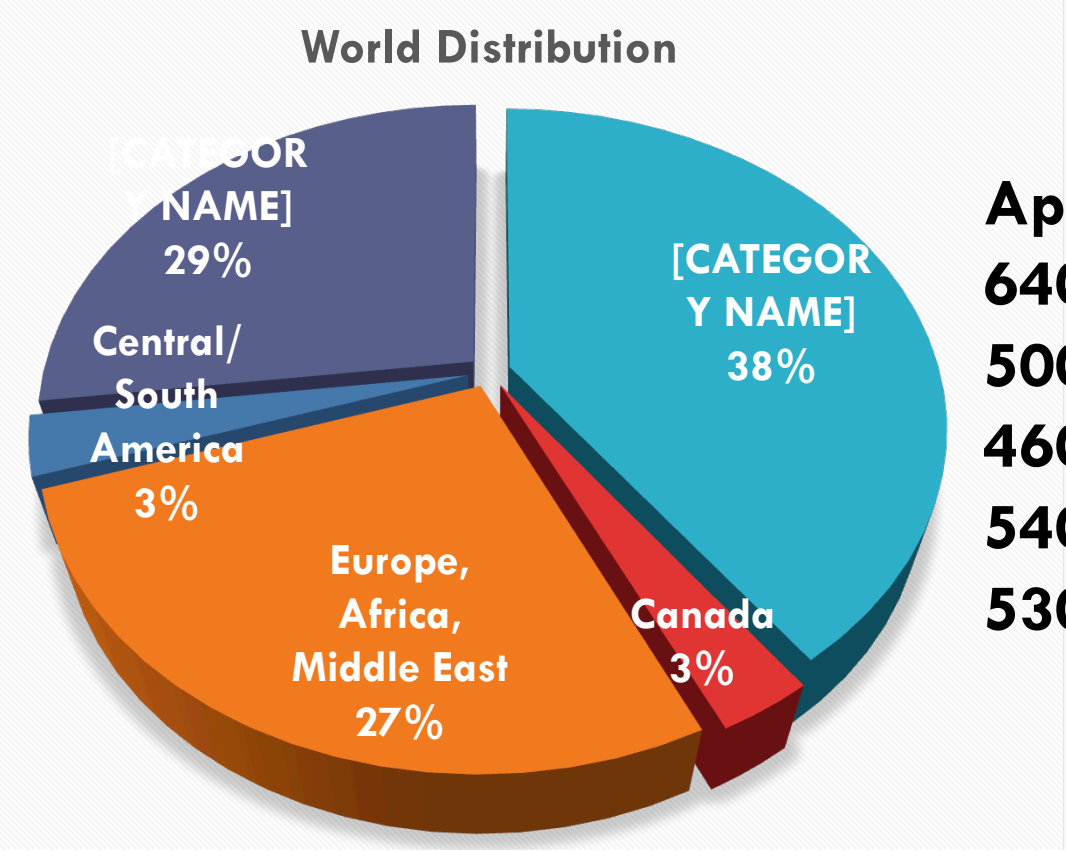
Write to society leaders or to **sps-president@ieee.org**

Today, we are the …

- **4th largest** IEEE Society: Computer, Power and Energy, Communications, and Signal Processing.
- **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)

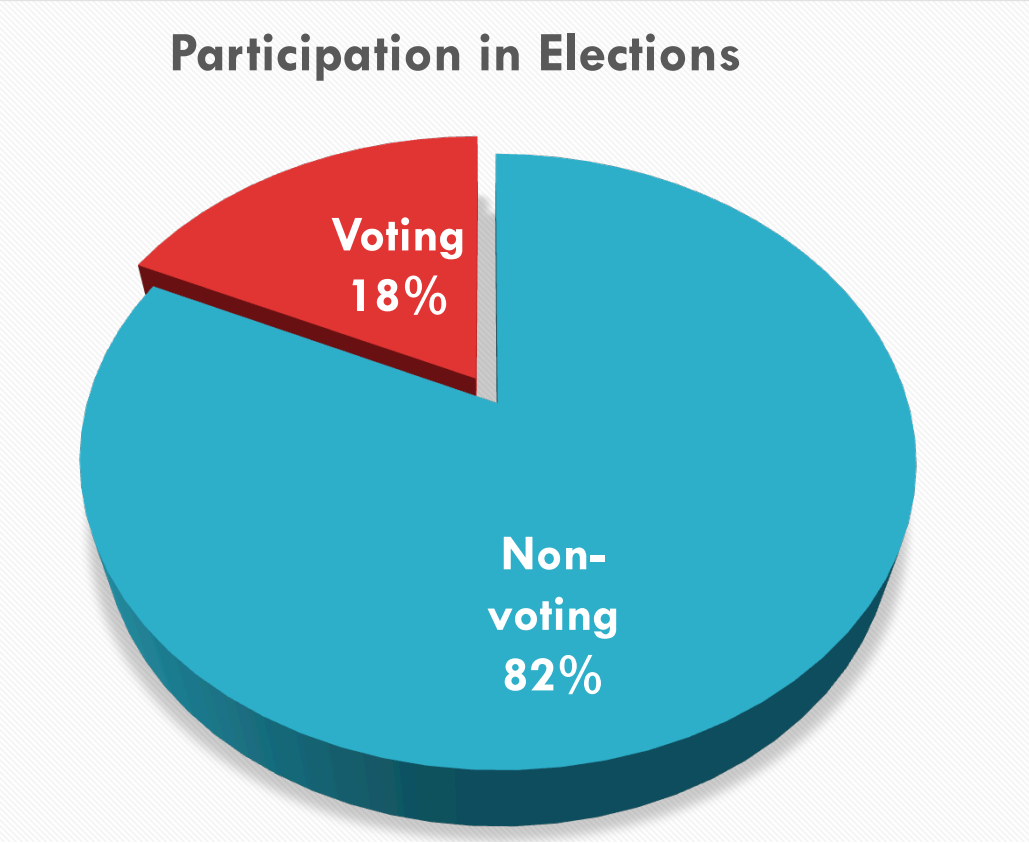
530 Central/South America (R9)

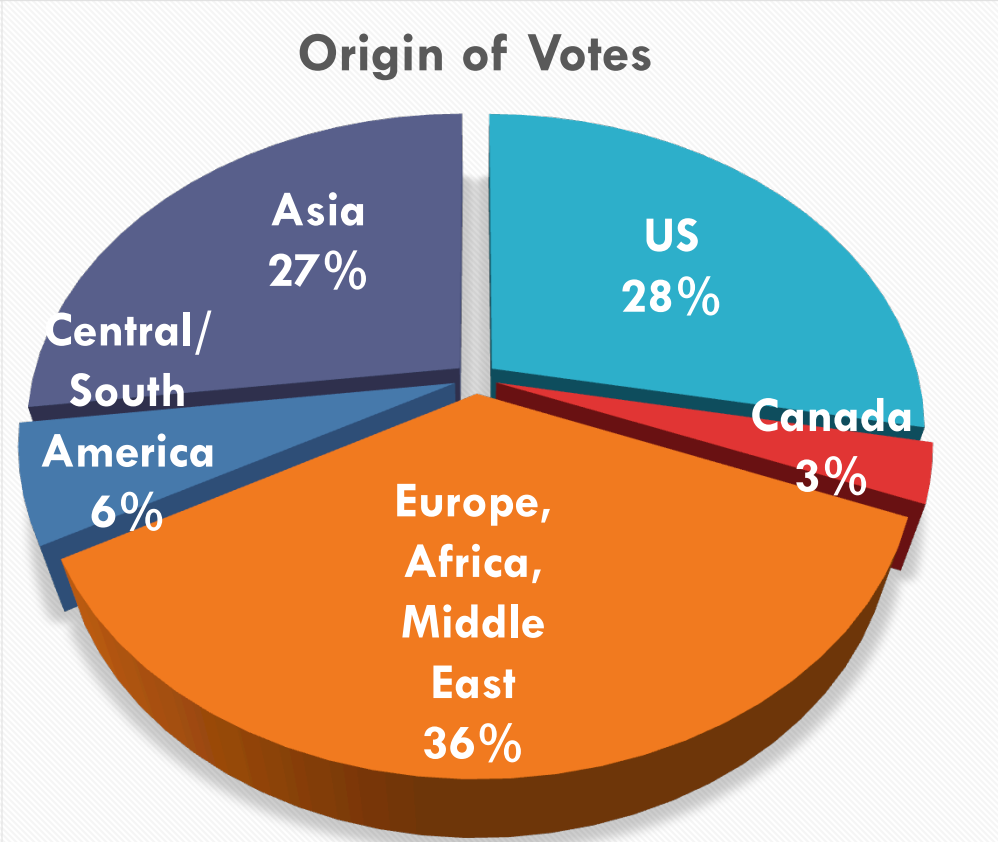
Region	Population	Members	Members / Population
Asia (Region 10)	**4.4B**	**5000**	p
Central/South America (R9)	**464M**	**530**	p
Europe/Middle East/Africa (Region 8)	**2B** Europe: 741M Africa: 1.2B Middle East: 218M	**4600**	2p
Canada (Region 7)	**36M**	**530**	14p
USA (Regions 1-6)	**325M**	**6400**	20p

Region	Population	Members	Members / Population
Asia (Region 10)	**4.4B**	**5000**	p

- ✓ 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.

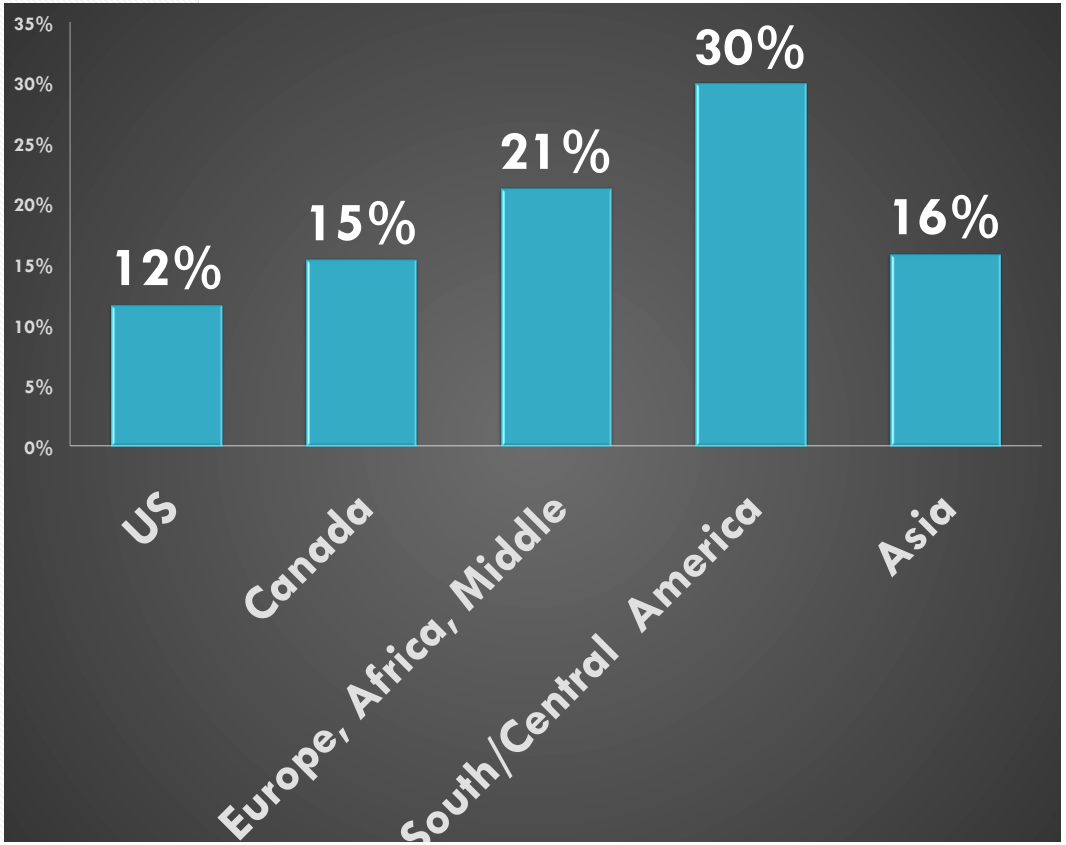
Participation in Society Elections





Level of Engagement in Elections

Percentage of Members Participating in Voting from each Region



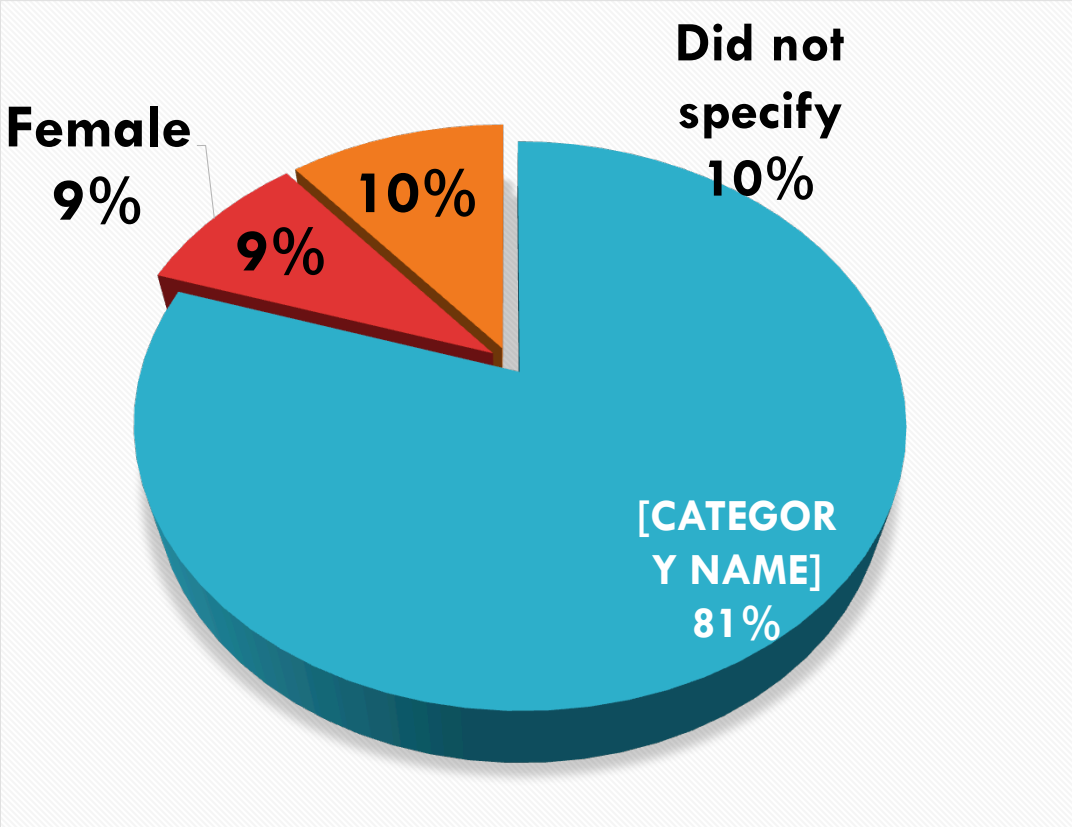
Election of Society President

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.

PRESIDENT'S MESSAGE

Ali H. Sayed | IEEE Signal Processing Society President | ali.sayed@epfl.ch

Dynamite, Electricity, and Nobel's World

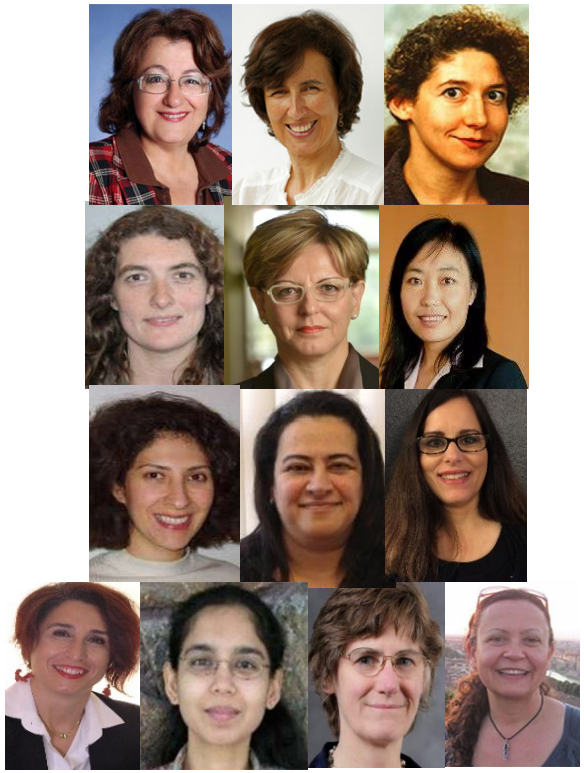
IEEE SIGNAL PROCESSING MAGAZINE | January 2019 |

Table 1. Gender statistics for the Nobel Prizes.

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

Only 5.7% !

Women Leader Volunteers

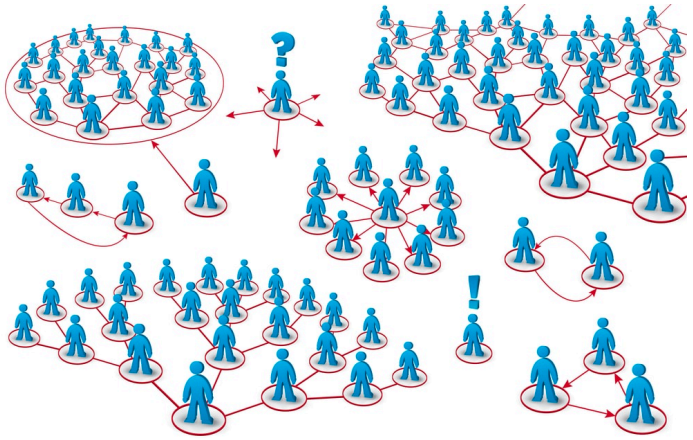


Rabab Ward, *Chair, Awards Board* (and Past President)
Isabel Trancoso, *Chair, Fellow Evaluation Committee*
Tulay Adali, *Vice President-Technical Directions*
Ana Perez-Neira, *Board of Governors, Member-at-Large*
Zhi Tian, *Board of Governors, Member-at-Large*
Athina Petropulu, *Board of Governors, Member-at-Large*
Beatrice Pesquet-Popescu, *Board of Governors, Member-at-Large*
Abeer Alwan, *Board of Governors, Member-at-Large*
Bhuvana Ramabadhran, *Regional Director-at-Large*
Lina Karam, *Editor-in-Chief, IEEE J. of Selected Topics in SP*
Dilek-Hakkani Tur, *Editor-in-Chief, IEEE Trans. Audio, Speech, Lang.*
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.

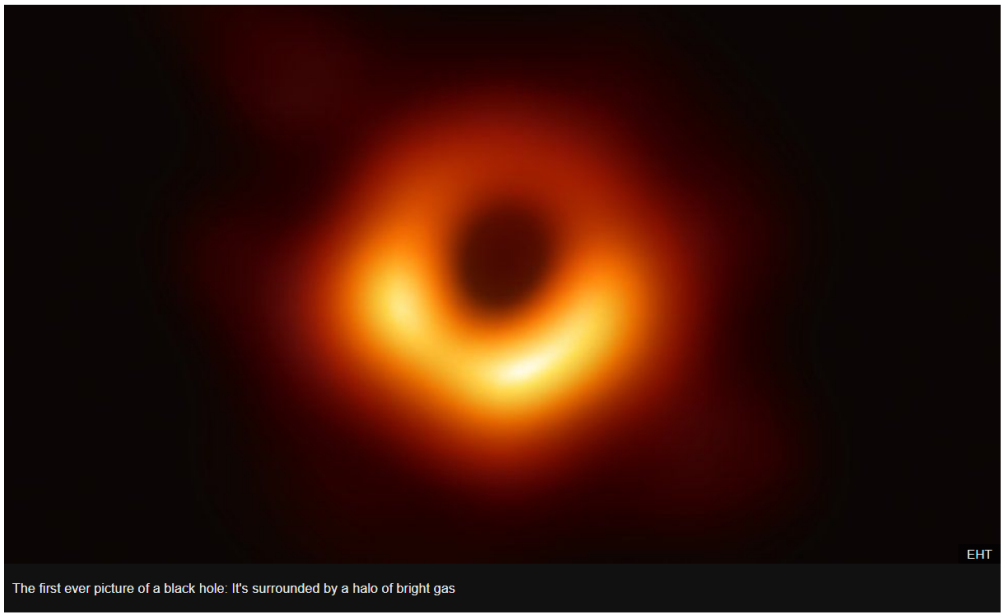
Science & Environment

IEEE SIGNAL PROCESSING SOCIETY

Katie Bouman: The woman behind the first black hole image

11 April 2019 Share

By **Brie Stimson | Fox News**



The first ever picture of a black hole: It's surrounded by a halo of bright gas

Computational Imaging

Computational Imaging Home

Computational Imaging Technical Committee

IEEE TRANSACTIONS ON
COMPUTATIONAL IMAGING

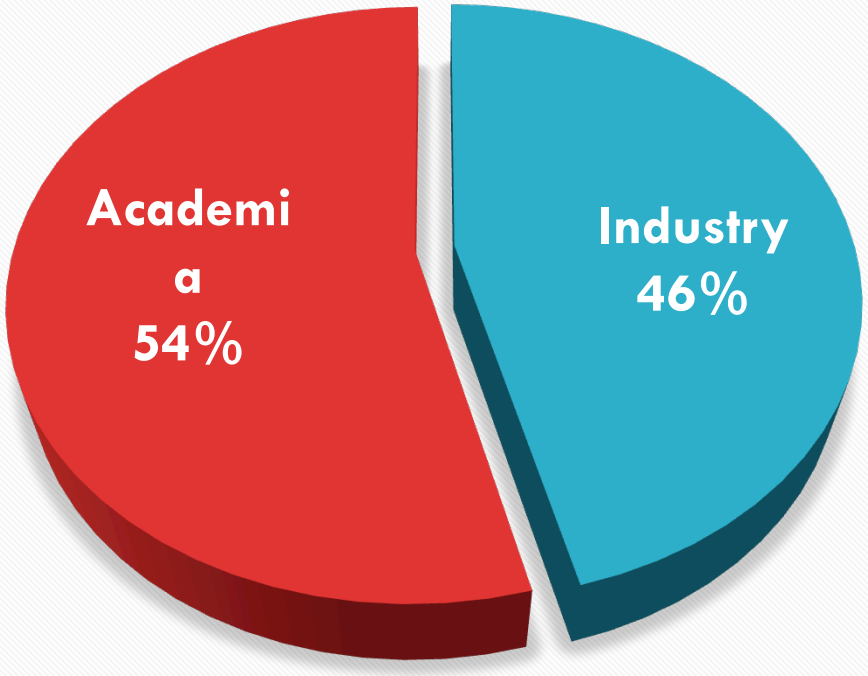
A PUBLICATION OF
IEEE SIGNAL PROCESSING SOCIETY
IEEE ENGINEERING IN MEDICINE AND BIOLOGY SOCIETY
IEEE CONSUMER ELECTRONICS SOCIETY

Members

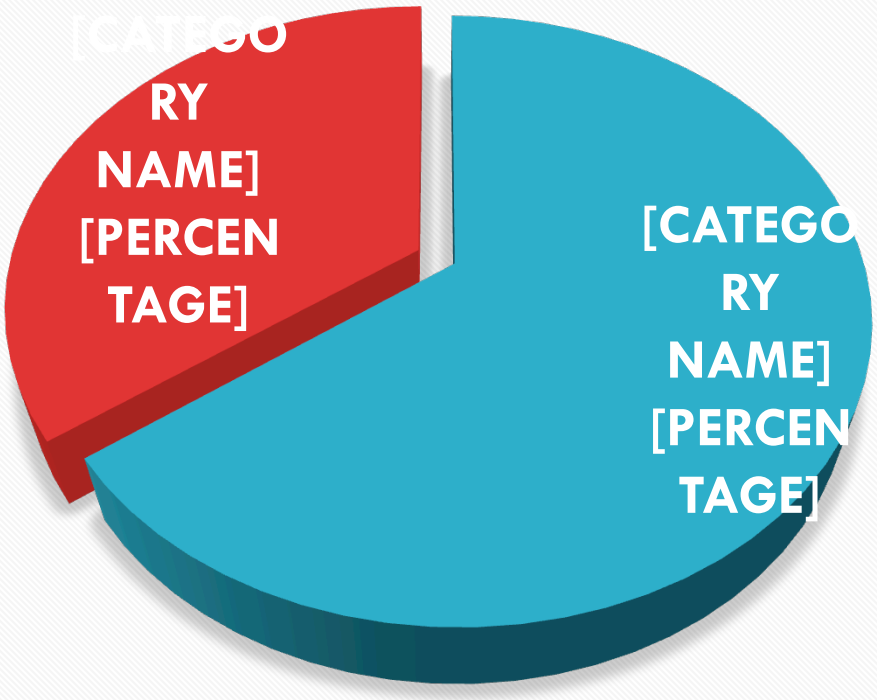
Name
Fauzia Ahmad (2020)
Mehmet Akcakaya (2020)
Henry Arguello (2019)
M. Salman Asif (2021)
Katherine L. Bouman (2021)
Greg Buzzard (2020)
Stanley Chan (2020)
Se Young Chun (2021)

Industry Membership

World Distribution



US Distribution



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You are:

1) Faculty.

2) Student.

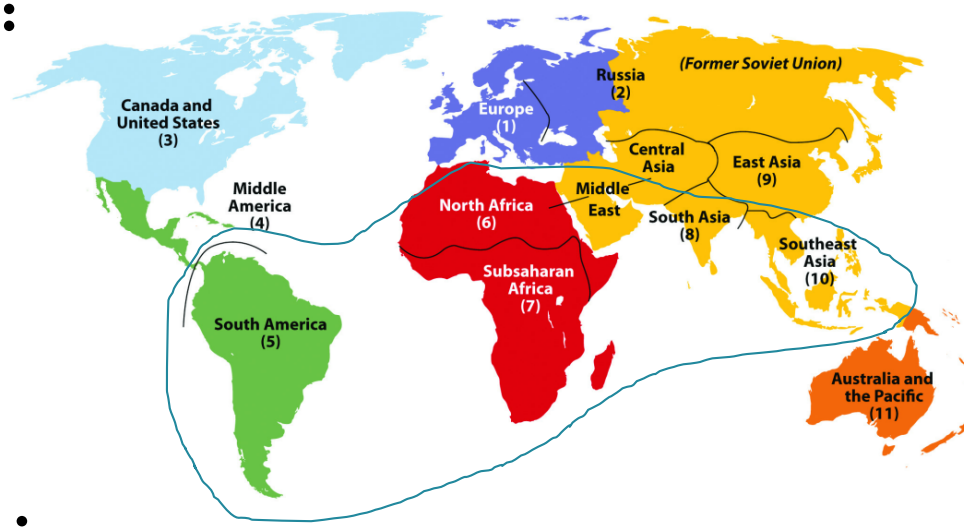
3) Industry professional.

4) Other.

Value for our Members

More than one type of member:

- Young professionals (YP).
- Women (W).
- Academics (A).
- Industry professionals (IP)



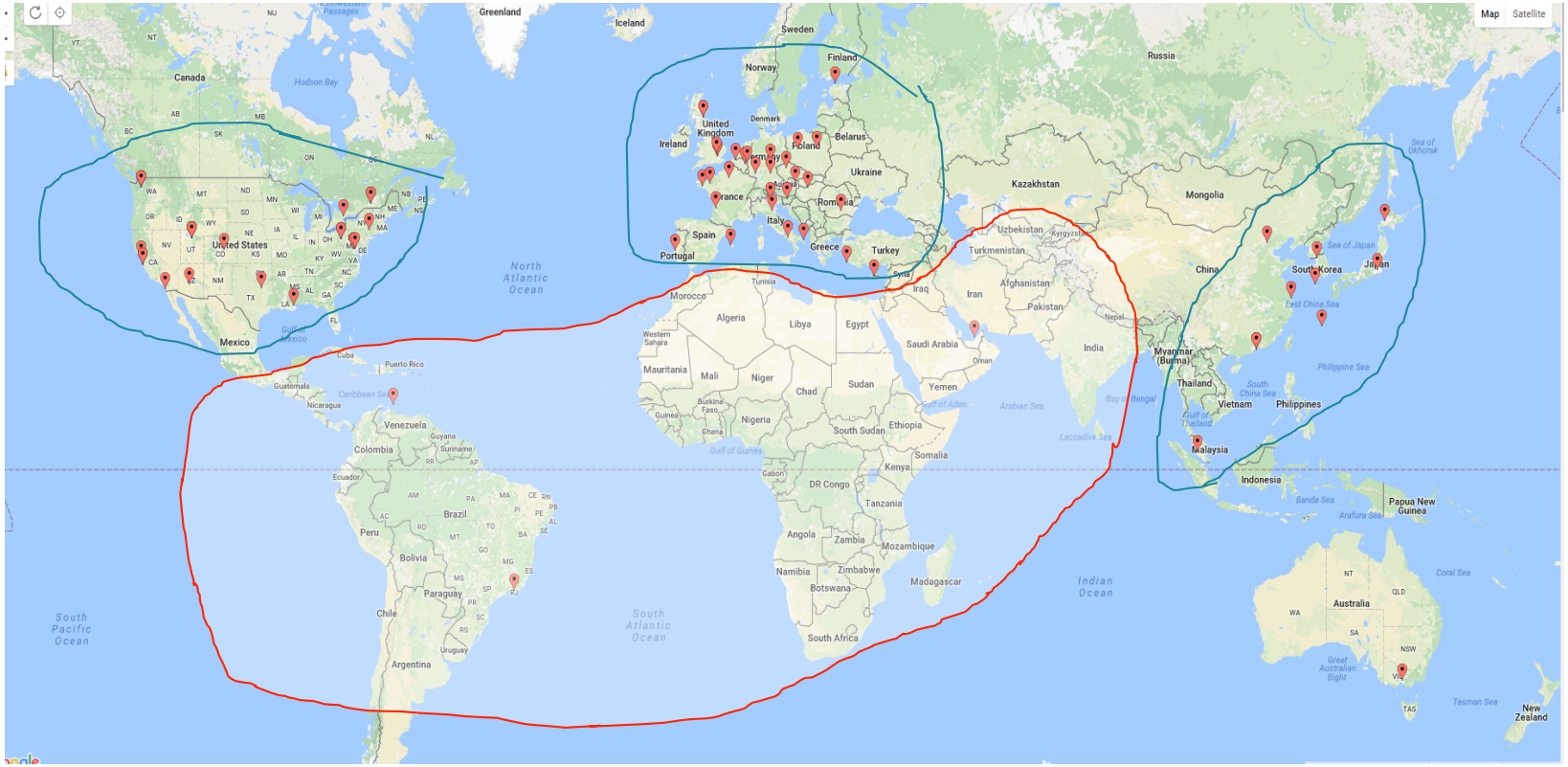
Important to reach out to many regions:

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

Summer or winter schools.
Purpose: educational opportunities to students & practitioners.

SEASONAL SCHOOLS

Panel sessions & presentations by industry experts.

Purpose: aimed at networking.

FORUMS

Local technical events.

Purpose: serve a local/regional community.

REGIONAL MEETINGS

We serve you in (many) other ways…

JOURNAL	IMPACT FACTOR
IEEE Signal Processing Magazine	7.45
IEEE Trans. Information Forensics & Security	5.82
IEEE Trans. Image Processing	5.07
IEEE J. Selected Topics Signal Processing	4.36
IEEE Trans. Signal Processing	4.2
IEEE Trans. Audio/Speech/Language	2.95
IEEE Signal Processing Letters	2.8

Gold Open Access Journal

In the process of launching

IEEE Open Journal of Signal Processing

with

- multimedia capabilities
- reproducible research options

4

Should we make reproducible research the default for our Publications?

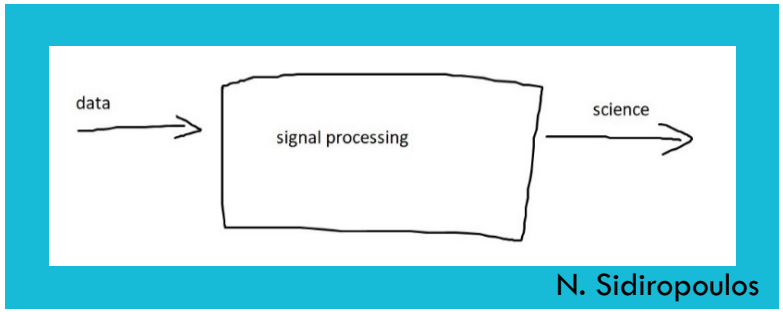
1) YES.

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.

IEEE Signal Processing Society (SPS) ASI

Autonomous Systems Initiative

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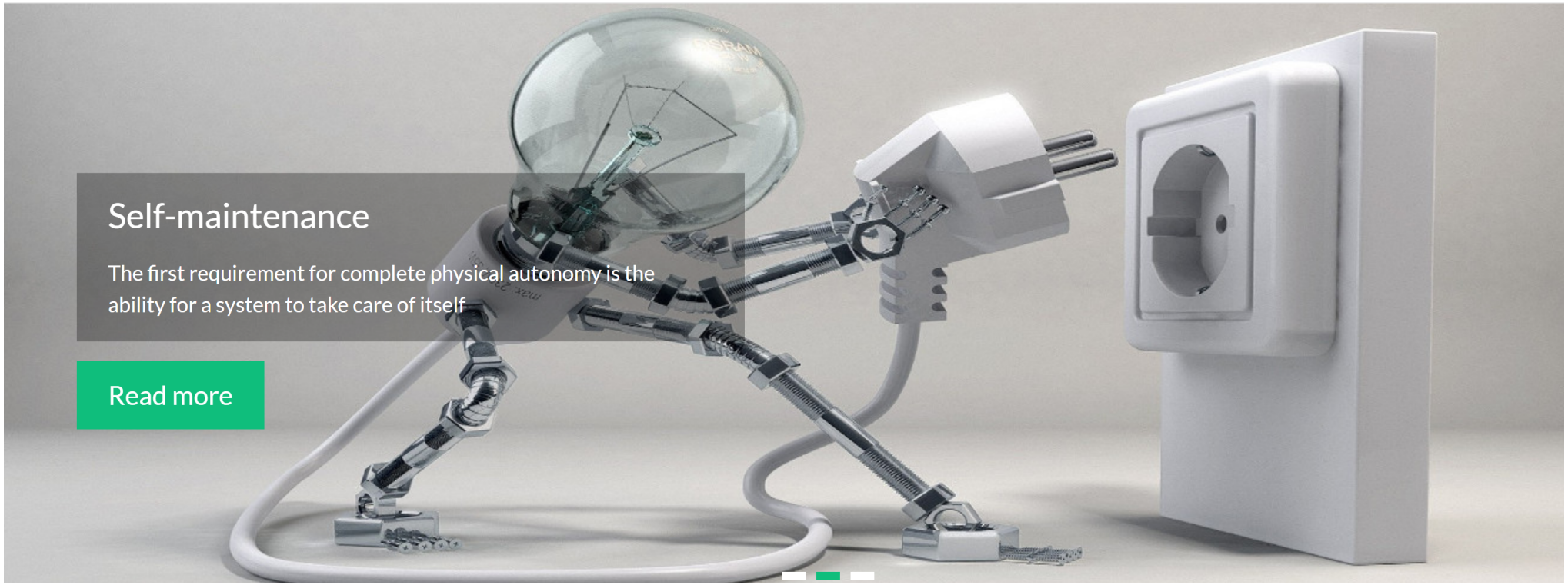


A New Reality… for IEEE too…

BLOCKBUSTER

YouTube

NETFLIX

BBC NEWS

CNN

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.

5

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.

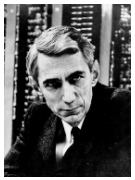
4) Access to newsletters, webinars, tutorials, educational material,…

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)

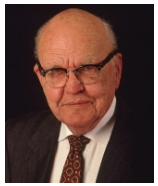
(1898-1976)

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)

Society Logo

Concluded effort to modernize the Society logo to better reflect current state of discipline.

Society Logo

A modern look to reflect the **global reach** of SP, and how it promotes a **convergence of ideas** and methods to solve challenging problems.

IEEE Signal Processing Society ®

Society Logo

A modern look to reflect the **global reach** of SP, and how it promotes a **convergence of ideas** and methods to solve challenging problems.

Society Logo

IEEE Signal Processing Society

IEEE Signal Processing Society

Society Logo

IEEE Signal Processing Society

It is easy to get involved

Suggestions and feedback are always welcome.

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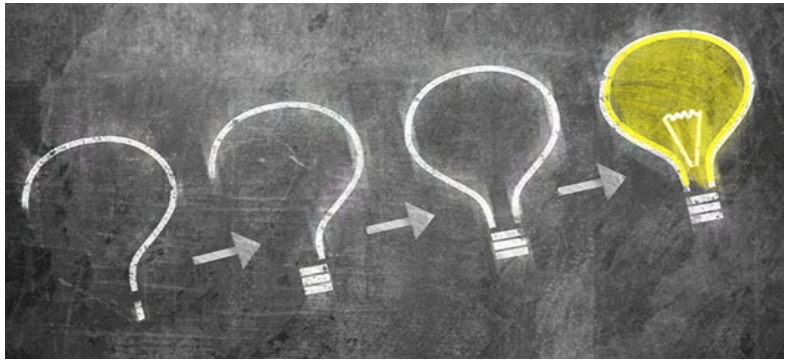

All our initiatives, including publications and conferences, are run by volunteers like you and me!

Write to society leaders or to **sps-president@ieee.org**

You can find this presentation on the Society's website.

Thank you!