

# SAM TC Meeting @ ICASSP 2022

**Wei Liu**

**Thursday, 21 April 2022  
9:00am – 11:00am EDT  
Virtual Meeting via WebEx**

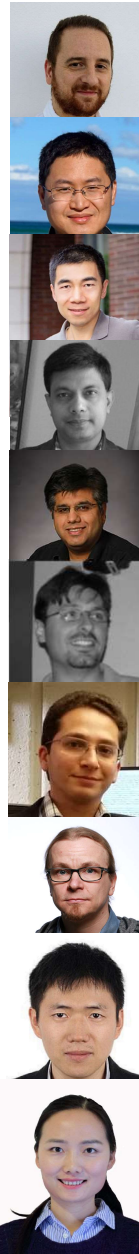
# Agenda

- ❑ 1. Welcome
- ❑ 2. Report from Chair (Part 1)  
Membership Update  
DIS and DL, and SPS Awards  
ICASSP 2022 (SAM TC Area)  
Unified EDICS
- ❑ 3. Workshop Report (Part 1)  
CAMSAP 2023, Costa Rica (Martin Haardt, André L.F. de Almeida, Rémy Boyer)
- ❑ 4. SPS Activities  
Data Science Initiative  
Synthetic Aperture TWG (Peter Vouras)  
SPS Education Board (Nuria)
- ❑ 5. SAM TC Webinar Series (Nuria and Xiao)
- ❑ 6. Report from Chair (Part 2)  
TC Review
- ❑ 7. Workshop Report (Part 2)  
SAM 2022, Trondheim, Norway (Pierluigi Salvo Rossi, Stefan Werner)
- ❑ 8. Proposals Requested for  
SAM 2024, CAMSAP 2025 (?)
- ❑ 9. Subcommittee Reports
- ❑ 10. Miscellaneous (Job Posting, etc.)

# 2: SAM Membership 2022

## New Members

- Angelo Coluccia, University of Salento, Italy
- Jun Fang, University of Electronic Science and Technology of China
- Yue Lu, Harvard University, USA
- Kumar Vijay Mishra, Army Research Laboratory, USA
- Vishal Monga, Pennsylvania State University, USA
- Danilo Orlando, Università degli Studi “Niccolò Cusano”, Italy
- Mojtaba Soltanalian, University of Illinois at Chicago, USA
- Mikko Valkama, Tampere University, Finland
- Gang Wang, Ningbo University, China
- Xiaoxiao Wu, Shenzhen University, China



## Retiring Members (Dec 2021)

- Fauzia Ahmad
- Waheed U. Bajwa
- Adel Belouchrani
- Yuejie Chi
- André L. F. de Almeida
- Qian He
- Hongbin Li
- Christoph Mecklenbräuer
- Gonzalo Mateos Buckstein
- Piya Pal
- Ashish Pandharipande

## Returning / Re-Elected

- Elias Aboutanios (2nd term)
- Walter Kellermann (2nd term)
- Xiao-Ping Zhang (2nd term)

## Statistics

- 12 R1-6, 1 R7, 14 R8, 2 R9, 11 R10
- 4 Industry/Lab, 36 Academic
- 6 female, 34 male



# SAM Membership Structure 2022

- In total 40 regular members.
- Seven Advisory Members (our past chairs): maximum one third of the regular membership.
- 20 Associate Members: maximum half the size of the regular membership.
- Affiliate Members: 149 (including 28 students).



# Seven Advisory Members

- Prof. Kon Max Wong, McMaster University, Canada
- Prof. Michael Zoltowski, Purdue University, USA
- Dr. Kristine L. Bell, Metron, USA
- Prof. Dominic K. C. Ho, University of Missouri, USA
- Prof. Peter Willett, University of Connecticut (CT), USA
- Prof. Martin Haardt, TU Ilmenau, Germany
- Prof. Christoph Mecklenbräuker, TU Wien, Austria



# 2021 SAM Awards

10 TC nominations, three selected for award:

**Signal Processing Letters Best Paper Award** awarded to **Chun-Lin Liu, P. P. Vaidyanathan**, *"Remarks on the Spatial Smoothing Step in Coarray MUSIC"*, *IEEE Signal Processing Letters*, September 2015

**IEEE SPS Young Author Best Paper Award** awarded to **Chengwei Zhou\***, **Yujie Gu**, **Xing Fan**, **Zhiguo Shi**, **Guoqiang Mao**, and **Yimin D. Zhang**, *"Direction-of-Arrival Estimation for Coprime Array via Virtual Array Interpolation," IEEE Transactions on Signal Processing*, November 2018.

**Fan Liu\***, **Longfei Zhou\***, **Christos Masouros**, **Ang Li\***, **Wu Luo**, and **Athina Petropulu**, *"Toward Dual-functional Radar-Communication Systems: Optimal Waveform Design," IEEE Transactions on Signal Processing*, August 2018.



# 2021 SAM Awards

**Not nominated by SAM TC, received by our TC member:**

**Pierre-Simon Laplace Early Career Technical Achievement Award**

awarded to

**Gonzalo Mateos Buckstein**, *for contributions to distributed signal processing over networks.*



# Distinguished Lecturers and Distinguished Industry Speakers:

2022 Class of DL: 1 Nomination (Yingbo Hua), 0 selected

2022 Class of DIS: 0 Nominations

2022 Distinguished Lecturers

Yuejie Chi

Yue Lu

Erik Meijering

Hiroshi Sawada

Tanja Schultz

2022 Distinguished Industry Speakers

Jerome R. Bellegarda

Mariya Doneva

Leo Grady

Le Lu

Andreas Stolcke

For 2023 Class of DL/DIS Call for Nominations, the internal SAM TC deadline is 9 May and for SPS, it is 31 May.





# ICASSP 2022 SAM Area

- 131 papers submitted.
- 60 accepted, which means an acceptance rate of 45.8%.
- Additionally there are 10 Signal Processing Letters to be presented in SAM sessions; 11 special session papers allocated to SAM TC for review.
- 12 poster sessions with maximum 6 papers each.
- Contributed 2 papers to a joint Data Science Initiative session.

SAM-1: Beamforming

SAM-2: DOA Estimation and Learning Based Methods

SAM-3: Wideband and Microphone Array Processing

SAM-4: MIMO Radar and Waveform Design

SAM-5: Direction of Arrival Estimation

SAM-6: Co-Array Based Array Processing

SAM-7: Tracking and Localization

SAM-8: Imaging and Environment Monitoring

SAM-9: Source Localization

SAM-10: Detection and Estimation

SAM-11: Array Calibration and Performance Analysis

SAM-12: Multichannel Processing and Communications



# ICASSP SAM Area Submissions

- Annual figures for SAM submissions as a fraction of total ICASSP submissions:

⇒ **2022: 131(141) / 3967 = 3.3 (3.6)% ? Singapore**

⇒ 2021: 146 / 3518 = 4.2 %

Toronto, Canada

⇒ 2020: 189 / 3711 = 5.1 %

Barcelona, Spain

⇒ 2019: 140 / 3294 = 4.3 %

Brighton, UK

⇒ 2018: 148 / 2736 = 5.4 %

Calgary, Canada

⇒ 2017: 164 / 2527 = 6.5 %

New Orleans, USA

⇒ 2016: 192 / 2575 = 7.5 %

Shanghai, China

⇒ 2015: 205 / 2273 = 9.0 %

Brisbane, Australia

⇒ 2014: 222 / 3407 = 6.5 %

Florence, Italy

⇒ 2013: 217 / 3346 = 6.5 %

Vancouver, Canada

⇒ 2012: 170 / 2615 = 6.5 %

Kyoto, Japan



# Unified EDICS for SAM TC

SAM-APPL	Applications of sensor & array multichannel processing
SAM-BEAM	Beamforming
SAM-CALB	Array calibration
SAM-CSSM	Compressed sensing and sparse modeling
SAM-DOAE	Direction of arrival estimation
SAM-GSSP	Geophysical and seismic signal processing
SAM-IMGA	Inverse methods and imaging with array data
SAM-LRNM	Learning models and methods for multi-sensor systems
SAM-MCHI	Multichannel processing, identification, and modelling
SAM-MAPR	Microphone array processing
SAM-NWAV	Non-wave based array processing
SAM-PERF	Performance analysis and bounds
SAM-SDET	Source detection and separation
SAM-SENS	Multi-sensor remote sensing
SAM-STAP	Space-time adaptive methods
SAM-TNSR	Tensor-based signal processing for multi-sensor systems
SAM-MUCN	Multi-user and cooperative networks
SAM-CAMS	Computational advances for multi-sensor systems



# Unified EDICS for SAM TC

RAS-DTCL	Target detection, classification, localization
RAS-LCLZ	Source localization
RAS-MIMO	MIMO Radar and waveform design
RAS-SARI	Synthetic aperture radar/sonar and imaging
RAS-SONR	Sonar and underwater signal processing
RAS-TRCK	Target tracking
BIO-SENS	Sensor arrays for medical signal and image processing
SPC-MIMO	Multiple-input multiple-output communication systems
SPC-MMIMO	Massive MIMO communication systems

## Unified EDICS List including update procedure:

<https://signalprocessingsociety.org/publications-resources/unified-edics>



## 3: SAM TC Workshop Report (Part 1)

### □ CAMSAP 2023

Costa Rica (Martin Haardt, André L.F. de Almeida, Rémy Boyer et al.)

## 4: SPS Activities

- **Data Science Initiative (Wei Liu)**
- **Synthetic Aperture TWG (Peter Vouras)**
- **SPS Education Board (Nuria)**



# Data Science Initiative:

- ❑ We have four representatives at the committee: Waheed Bajwa, Yuejie Chi, Martin Haardt, and Wei Liu
- ❑ We organized a joint ICASSP online session under the umbrella of data science initiative, together with the Audio and Acoustic Signal Processing Technical Committee and the Machine Learning for Signal Processing Technical Committee. The session has six papers, with two contributed from each TC.
- ❑ The Initiative is organizing the 2022 IEEE Data Science & Learning Workshop (DSLW 2022), co-located with ICASSP 2022.



# Synthetic Aperture TWG

- Approval by IEEE SPS on 15 April 2020
- TWG (Technical Working Groups) resides under SAM TC
- TWG Chair: Peter Vouras (NIST)





# IEEE SPS Education Board (Nuria)



## 5. SAM TC Webinar Series (Nuria and Xiao)

Five webinars have been organized since last December:

1. 20 April 2022 | Dr. Maria Sabrina Greco, "Cognitive Radar Systems: the Road to Reality".
2. 31 March 2022 | Dr. Robert W. Heath, Jr. , "Revisiting MIMO from a Circuits Perspective".
3. 24 February 2022 | Dr. Sundeep Prabhakar Chepuri, "Massive MIMO Systems with One-bit Spatial Sigma-Delta ADCs".
4. 27 January 2022 | Dr. Sundeep Rangan, "Signal Processing for THz Communications".
5. 9 December 2021 | Dr. Yuejie Chi, "Scaling and Scalability: Accelerating Ill-conditioned Low-rank Estimation via Scaled Gradient Descent"

<https://signalprocessingsociety.org/community-involvement/sensor-array-and-multichannel/sam-webinars>



## 6. SAM TC Review

**We received the final review report form the SPS on 20 December 2021, and it agrees that “Overall, ..... the SAM TC is in a healthy state.”**

**Q1.** The weakness here is represented by the membership from Industry and Government Labs (only 4 out of 41 members),..... This weakness is revealed also by the fact that in the last 3 years they did not put forward any nomination for the Distinguished Industry Speaker (DIS).....

I would suggest them to invite Industry and Government Labs researchers to give webinars to the SPS members, invite them to co-organize special sessions at conferences and workshop, to contribute as instructors in SPS PhD Schools, to participate to round tables at conferences on topics of interest for the Industry, etc. Then, once these activities have been put in place, maybe it would be easier to invite some of them to run for election to become TC members.

**Is the TC planning any specific actions to overcome this weakness?**



**A1.** ..... as a start, we will invite Industry and Government Labs researchers to give presentations in our online lecture series which will start soon, and also invite them to organize possible special sessions at our coming SAM2022 workshop.

**Q2.** There is an important ongoing cooperation with the Audio and Acoustics Signal Processing (AASP) TC in the areas of microphone arrays and multichannel audio processing. A lot of work has already been done, as detailed in the report, and some collaboration activities have been quite successful.

**What are you doing to keep this collaboration going in a sustainable way? What is planned for the future collaborations?**

**A2.** Our current TC member Walter Kellermann is a past chair of the AASP TC and also a former VP for Technical Directions. With his help, we will continue to build up the cooperation between the two TCs by organizing special sessions at ICASSP and our TC organized workshops. We will also contact the current Chair Gaël Richard of the AASP TC to discuss and explore various collaborative opportunities in the near future.



**Q3.** In general, the TC could be more active in organizing webinar series and PhD Schools on topics within the scope of the TC.

**Any plan in this regard?**

**A3.** We will set up a formal webinar series sponsored by SPS and this is now in the planning process. We will also consider organizing PhD schools after the pandemic ends.

**Q4.** I would have enjoyed to find more details about how to address the threats and the how to catch the opportunities for the TC. In the report it is mentioned the role of AI. Obviously, AI will have an increasing role in the areas of interest of the SAM TC, but maybe it would have been of interest to find more details about the directions that the TC wants to take.

**Can the TC chair elaborate more on this?**

**A4.** This is a very important but also very difficult question. In the future, we believe that the whole society will be built upon multi-sensor based networks/systems and almost everyone in signal processing will be working on something related to an array of sensors. We need to have regular discussions within the TC and consult with other relevant TCs to make sure we always have a clearly defined focused area. One important step in this dynamic process is that we should examine the EDICS covered by the TC and make necessary changes in a timely manner to reflect the updated focus and direction.



**Q5.** Some of the sub-committees have a counterpart at Society level (Student, Education, Regional Representatives, Technical Directions, and Membership). Only the Education subcommittee state explicitly that there is a liaison with the Signal Processing Education Technical Committee.

**What about the others? Can you state explicitly how these subcommittees collaborate with those of the Society? If not, can you do something to stimulate a closer collaboration?**

**A5.** This subcommittee structure is a good idea, but not all of the subcommittees are working in a proactive way, due to varied demand of their corresponding responsibilities. The current version of the subcommittee guidelines was drafted in 2014 and the only recent update is the EDICS subcommittee added last year and there are clear gaps between the guidelines and our current practice. We are now in the process of updating the guidelines with corresponding subcommittees and it is expected to have a new version ready by our next TC meeting at ICASSP2022.



# 7: SAM TC Workshop Report (Part 2)

## □ SAM 2022

Trondheim, Norway (Pierluigi Salvo Rossi,  
Stefan Werner)



## 8: Proposals Requested for SAM 2024 and CAMSAP 2025(?)

A complete proposal should address issues related to location and venue, dates, organization committee members, technical program structures, registration and fees, travel and accommodation, visa, and any other relevant factors.

The deadline for submission of proposals together with a video presentation of 10-15 minutes is 30 May, 2022. If you would like to have an informal discussion about the proposal before you submit it, please contact us using the following emails. We would appreciate it very much if you could let us know your intention to organize SAM2024 at early as possible.

Please submit your proposal to both the SAM TC Chair, Wei Liu at [w.liu@sheffield.ac.uk](mailto:w.liu@sheffield.ac.uk) and the SAM TC Vice-Chair Maria Sabrina Greco at [m.greco@iet.unipi.it](mailto:m.greco@iet.unipi.it).





# 9: Subcommittee 2022 Reports

- ❑ **Technical Directions** (Maria Sabrina Greco, Jun Liu, Peter Vouras)
- ❑ **Awards** (Elias Aboutanios, Antonio Napolitano, Lei Huang, Yao Xie)
- ❑ **Nominations and Elections** (Karim Abed-Meraim, Aboulnasr Hassanien, Gang Li, Vincenzo Matta)
- ❑ **Workshops** (Sundeeep Chepuri, Angelo Coluccia, Jun Fang, Danilo Orlando)
- ❑ **Webmaster** (Alexander Bertrand, Xiangrong Wang)
- ❑ **Newsletter** (Xiangrong Wang, Yao Xie)
- ❑ **Membership** (Xiao Fu, Henry Arguello, Yongwei Huang)
- ❑ **Industry/Government** (Pascal Chevalier, Yujie Gu, Hassan Mansour, Kumar Vijay Mishra)
- ❑ **Education** (Nuria González Prelcic, Vishal Monga, Xiaoxiao Wu)
- ❑ **EDICS** (Wei Liu, Maria Sabrina Greco, Usman Khan)
- ❑ **Student** (Ali Moussa)

(Underline means chair)



## Area Chairs

- ❑ Applications of SAM processing
- ❑ Beamforming and space-time processing
- ❑ Detection, estimation, and source separation
- ❑ Multi-antenna and multi-channel comm.
- ❑ Radar array processing
- ❑ Sensor array processing
- ❑ Sensor networks

Yue Lu  
Gonzalo Seco-Granados  
Walter Kellermann  
Mikko Valkama  
Bin Liao  
Rémy Boyer  
Xiao-Ping (Steven) Zhang

## Four Regional Representatives

- ❑ 1. USA (1-6)
- ❑ 2. Canada/Latin America (7/9)
- ❑ 3. Europe/Mid East/Africa (8)
- ❑ 4. Asia/Pacific (10)

Mojtaba Soltanalian  
Felix Antreich  
Angela Alexiou  
Gang Wang

<https://drive.google.com/file/d/14MsPdL34IWBEmGNUVLwFTIAw8wwSvcGw/view?usp=sharing>



## □ Archiving of SAM Workshop Websites

- ⇒ Responsible: Webmaster Subcommittee
- ⇒ Past workshops are often housed on University servers, and eventually are removed.
- ⇒ Lost TC memory (and memories).
- ⇒ IEEE is willing to house them, link from web page.
- ⇒ Presently the following workshops have been archived:
  - SAM2020
  - SAM 2018
  - CAMSAP 2017
  - SAM 2016
  - CAMSAP 2015
  - SAM 2014
  - CAMSAP 2013
  - CAMSAP 2011
  - SAM 2010
  - CAMSAP 2009
  - SAM 2008
  - CAMSAP 2007
  - CAMSAP 2005
  - SAM 2002
- ⇒ **To Do: SAM2022**
- ⇒ **Missing: SAM 2012, SAM 2006, SAM 2004.**



## 9: Miscellaneous (Job Posting, etc.)

**Job posting:** we have set up an SAM Jobs page:

<https://signalprocessingsociety.org/community-involvement/sensor-array-and-multichannel/sam-tc-jobs>

**Newsletter:** We have set up a newsletter page and Xiangrong is in charge of updating it:

<https://signalprocessingsociety.org/community-involvement/sensor-array-and-multichannel/newsletter>



# Main Task List 2022-2023 (1/2)

- **May 31, 2022:**  
Nominations for Distinguished Lecturers and DIS  
(Responsibility: TC chair, Awards subcommittee)
- **July/August 2022:**  
Vice-Chair election completed (Responsibility: TC chair, Elections and nominations subcommittee)
- **September 1, 2022:**  
Nominations for Paper Awards: BPA, YABPA, MBPA, LBPA, OPA, SIPA  
(Responsibility: TC Vice-Chair, Awards subcommittee)  
Nominations for Society Award, Technical Achievement Award  
(Responsibility: TC Chair, Awards subcommittee)
- **November 15, 2022:**  
Membership election completed (Responsibility: Elections and nominations subcommittee)
- **November 2022 – January 2023:**  
ICASSP 2023 Paper Reviews and Decisions  
(Responsibility: TC-chair)



# Main Task List 2022-2023 (2/2)

- **December 2022/January 2023:**
  - Checking the progress of CAMSAP2023
- **January 31, 2023:**
  - Update of IEEE SAM TC website: Membership 2023
  - Assignment of new members to subcommittees
  - Make sure that mailing lists reflect updated membership
- **January - April 2023:**
  - Call for proposals for CAMSAP2025.
- **December 2023:**
  - CAMSAP2023



**Thank You!**

