

# WELCOME MESSAGE FROM PRESIDENT



On behalf of the Asia Pacific Signal and Information Processing Association (APSIPA), it is my great pleasure and honor to welcome all of you to the APSIPA Annual Summit and Conference (ASC), held in Taipei from October 31 through November 3, 2023. This is the 15th APSIPA ASC and the first ASC that I attend physically after the COVID-19 pandemic.

APSIPA was founded in 2009. It was targeted to cover signal and information processing, which is among the most growing research fields, in the most growing region of Asia Pacific. Since then, we have had APSIPA ASC, our flagship conference, every year in various sites in this region. In the past 15 years, we have seen steady growth in paper submissions and participants, even during the pandemic.

APSIPA now has more than one thousand members in total. Local chapters have been established in Japan, Taiwan, USA, and Singapore. We are now reaching out to developing countries, in particular ASEAN countries. We organized workshops in Hanoi, Vietnam, and Bandung, Indonesia, to attract papers to be presented in APSIPA ASC. We also provide financial support to attend the conference. As a result, a significant number of researchers participate from these countries.

The organizers of APSIPA ASC 2023 have worked very hard to make it successful. I would like to express my greatest appreciation and gratitude to the organizers led by General Co-Chairs, Jin-Ming Guo, Gwo-Giun Lee, Shih-Fu Chang, and Anthony Kuh. I believe their hard work will be paid off when the conference becomes a great experience for everyone. Eight technical committees (TCs) have also committed to organizing sessions, attracting papers, and overseeing the review process. The conference has a variety of programs including Winter School, Industrial Forum, and Women's Forum, which are organized by APSIPA VPs and BoG members to enhance diversity. In my personal experience, APSIPA provides an invaluable network through a variety of technical and regional areas, and we feel at home during the conference. I hope this tradition continues and is passed on to the future generation.

**Tatsuya Kawahara**

President, APSIPA (2023-2024)

# **WELCOME MESSAGE FROM GENERAL CO-CHAIRS**

Dear Esteemed Colleagues, Participants, and Friends,

It is our immense pleasure to extend a warm and hearty welcome to all of you to the 2023 Asia-Pacific Signal and Information Processing Association Annual Summit and Conference (APSIPA ASC 2023). This year, our prestigious event takes place from October 31st to November 3rd at the Taipei International Convention Center (TICC), situated in the vibrant heart of Taipei.

As we embark on this exciting journey, we recognize the extraordinary circumstances under which we convene once again. The global pandemic has presented unprecedented challenges, and our gathering for APSIPA ASC 2023 marks a significant milestone as the second APSIPA ASC conference held since the world began its journey towards recovery. We are truly delighted to welcome you all back and to witness the resilience and dedication of our global community as we come together to explore, discuss, and share the most cutting-edge research findings in the field of signal and information processing.

This year's conference program promises to be both intellectually stimulating and diverse, offering a wide range of opportunities for engagement. We have curated a lineup that includes four captivating keynote speeches by distinguished experts, an engaging industrial forum to bridge the gap between academia and industry, an empowering women's forum to celebrate diversity and inclusion in our field, five instructive tutorial sessions, and an immersive winter school program for students and researchers. The caliber of submissions for APSIPA ASC 2023 has been remarkable, with 532 contributions received from scholars and researchers representing different corners of the globe. After rigorous evaluation, we are thrilled to announce that 392 of these submissions have been accepted for presentation.

We extend our heartfelt gratitude to all participants, colleagues, and friends who have contributed to the success of this event. Your unwavering support has played a pivotal role in ensuring the smooth organization of this conference, and we are deeply appreciative of your commitment to advancing our shared goals.

Beyond the enriching academic exchanges and collaborative opportunities that await, we encourage you to take the time to explore the enchanting city of Taipei. Known for its blend of modernity and tradition, Taipei offers a unique cultural experience that is not to be missed. We hope that you will find moments of inspiration, connection, and rejuvenation throughout your stay.

In closing, we wish you a memorable and productive experience at APSIPA ASC 2023. May this conference be a catalyst for new insights, meaningful connections, and lasting memories. Together, we will continue to push the boundaries of knowledge and innovation in signal and information processing.

Welcome to APSIPA ASC 2023!

Warm regards,

**Jing-Ming Guo, Gwo-Giun Lee, Shih-Fu Chang, Anthony Kuh**

General Co-Chairs, APSIPA ASC 2023

# WELCOME MESSAGE FROM TPC CO-CHAIRS

On behalf of the Technical Program Committee, we welcome you to Asia-Pacific Signal and Information Processing Association Annual Summit and Conference (APSIPA ASC) 2023. The conference is being held as a hybrid event at Taipei International Conventional Center, Taiwan from October 31 to November 3, 2023.

Founded in 2009, APSIPA ASC has been the annual conference organized by APSIPA to promote research and education in signal processing, information technology, and communications. APSIPA ASC 2023 inherits the tradition of previous conferences in putting together a variety of technical elements, including tutorials, keynotes, special/regular sessions, winter schools, industrial forums, overview sessions, women forums and best paper competitions, in a rich technical program for leading experts from around the world to disseminate and exchange their latest research outcomes. The theme of APSIPA ASC 2023 is "Prevalence of Artificial Intelligence with Signal and Information Processing."

## PROGRAM HIGHLIGHTS

This year, we received from 21 countries/regions a total of 532 submissions, of which 395 were accepted through the single-blind review process managed by 115 Area Chairs and 616 reviewers. The accepted papers are organized into 46 oral sessions and 5 poster sessions. The oral sessions include 32 thematic Special Sessions, the papers of which were reviewed in the same way as regular papers.

Apart from the technical sessions, 4 outstanding keynote speakers have been invited to anchor the conference by sharing their perspectives on the forefront developments and trending topics around the conference theme:

- Wan-Chi Siu, The Hong Kong Polytechnic University, Hong Kong: "Deep Learning Latent Space for Super-Resolution with Extension to other Signal Processing Applications."
- Mark Hong-Yuan Liao, Academia Sinica, Taiwan: "From YOLOv4 to YOLOv7."
- TY Lin, MediaTek Inc., Taiwan: "The Impact of Edge AI – Opportunities and Challenges."
- Chiori Hori, Mitsubishi Electric Research Laboratory, USA: "Scene-aware Interaction for Human-Robot Communication."

To catch up with most recent active research, the Tutorial Chairs have selected 5 tutorials offered by leading experts in the APSIPA community:

- Advancements in AI: Transformers, Media Forensics and Cybersecurity.
- Defending against Misinformation in the Wild.
- Deep learning beyond curve fitting - Understanding bias and fairness in Computer Vision in the era of DALL-E and chatGPT.
- Advances in Psychoacoustics and Machine Learning towards Objective Speech Intelligibility Evaluation.

- Spoofing Face Recognition Systems with Adversarial Examples: Challenges and Countermeasures.

Moreover, APSIPA ASC 2023 follows the last few editions of APSIPA ASC to feature a Winter School on Generative AI Techniques for Signal and Information Processing Applications, inviting 5 renowned speakers from both academia and industry to address emerging topics on

- Deep Regression for Spectral Mapping with Applications to Speech Enhancement, Source Separation and Speech Dereverberation.
- Metaverse as AI Embodiment: Techniques, Impact, and Research Opportunities.
- Deep Learning in Image Processing and Computer Vision.
- How far are we from a speech version of ChatGPT?
- Energy-Efficient Generative AI Future: Low-Power Applications of ADI Max78000.

There are other interesting forums for you to learn fascinating insights into real-world problems of interest to industry. These forums offer opportunities for the conference participants to interact with our industry leaders.

## AWARDS

To recognize high-quality and important research works, 6 top papers have been recommended by Area Chairs and Reviewers to compete for Best Paper Awards. These papers will be presented in the Best Paper Competition session, with the winners selected on-site by an award committee. Additionally, this year, the Technical Program Chairs chose 5 reviewers according to the recommendations from Area Chairs for Best Reviewer Awards. These awards will be presented during the banquet on Thursday evening.

## ACKNOWLEDGEMENT

Last but not least, the conference would not have been successful without the contributions of every volunteer. We are deeply indebted to the voluntary services from Area Chairs and Reviewers. We are also very grateful to our patrons for their financial and/or technical sponsorships. We also like to thank every organizing committee member of APSIPA ASC 2023 for their commitment and help along the way, and the staff of the Conference Management for their assistance in organizing the conference. Of course, we cannot thank enough every author and participant. Without them, there is no point of holding this conference.

We hope that you will have an enjoyable and indelible experience at APSIPA ASC 2023.

## APSIPA ASC 2023 Technical Program Chairs,

**Regular Sessions:** Hsin-Min Wang, Wen-Hsiao Peng, Chia-Hung Yeh, Jia-Ching Wang, Yu-Chao Dai, Beth Jelfs, Jen-Tzung Chien, Minoru Kuribayashi, Jun Du, Hiroshi Tsutsui, Po-Chiang Lin, Chang-Su Kim

**Special Sessions:** Jian-Jiun Ding, Li-Wei Kang, Toshihisa Tanaka, Chee Seng Chan

**Wen-Hsiao Peng, Hsin-Min Wang, Chia-Hung Yeh and Jia-Ching Wang,**  
APSIPA ASC 2023 Technical Program Chairs

# ORGANIZERS AND SPONSORS

## ORGANIZERS



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(APSIPA)



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