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APSIPA NEWSLETTER

Asia-Pacific Signal and Information Processing Association Newsletter

Greetings!

Welcome to the September issue of the APSIPA newsletter.

In this issue, we have the pleasure to have 3 technical committee chairs and Prof. Yoshinobu Kajikawa (VP-Member Relations and Development) to co-edit. Prof. Dong Wang will share about the Speech Language and Audio Technical Committee and two databases for speaker recognition and distributed microphone arrays in smart home. Prof. Chia-Hung Yeh will share about the Image, Video, and Multimedia Technical Committee and two conferences which were technically co-sponsored by APSIPA. Prof. Mingyi He will share about the Signal and Information Processing Theory and Methods Technical Committee and a conference which was technically co-sponsored by APSIPA. Prof. Kajikawa will introduce the recently established local APSIPA Chapters in Japan and Taiwan.

2020 APSIPA Annual Summit and Conference (APSIPA ASC 2020) will be held in fully virtual style, from 7th to 10th December 2020. More information is available at http://www.apsipa2020.org/.

Enjoy reading this issue!

Prof. Dong Wang
Chair, SLA TC
Tsinghua University
China

Prof. Chia-Hung Yeh
Chair, IVM TC
National Taiwan Normal University, Taiwan

Prof. Mingyi He
Chair, SIPTM TC
Northwestern Polytechnical University, China

Prof. Yoshinobu Kajikawa
VP -Membership Relations and Development
Kansai University, Japan

A/Prof. KokSheik Wong
EiC
Monash University Malaysia
Malaysia

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Speech Language and Audio Technical Committee (SLA TC)

Chair: **Dong Wang,** Tsinghua University, China

Message from the TC Chair

Speech Language and Audio (SLA) is the largest technical committee of APSIPA. We currently have 43 members from China, Japan, Taiwan, Singapore and other countries and regions. In APSIPA ASC 2019, 46% of the submissions were from SLA.

Our TC focuses on a wide range of topics related to speech processing, language processing, and audio processing. Speech processing involves a large amount of research subjects, including how to retrieve useful information from speech (speech recognition, speaker/language/emotion recognition etc.), how to represent speech in an efficient way (e.g., speech coding, speech analysis and synthesis), how to use speech to assist our daily life (e.g., speech UI for cars and household facilities). Language processing involves research on methodologies for understanding human languages (e.g., linguistics, language modeling, language understanding), as well as the related applications, such as spoken dialog systems and language translation. Audio processing focuses on diverse topics including speech enhancement, audio tracking, source separation, music processing, etc.

Conventionally, research on SLA mostly relies on domain knowledge. Taking speech recognition as an example, early research puts much effort on pursuing good features that can retrieve information related to phone content from speech signal, and good statistical models that can represent the temporal dynamics. All the algorithmic designs were based on human wisdom for the nature of speech signal and how people produce speech. Another example is the array-based speech enhancement, where the predefined geometric knowledge played the fundamental role. For the recent decade, the conventional knowledge-rich methods give much way to data-rich methods, mostly attributed to the emergence of deep learning approach. The new approach more relies on knowledge learned from the data, rather than the knowledge designed by human, which makes the processing pipeline much simplified and the system much task-oriented. All the researchers of this generation witnessed the boom of deep learning.

Although the data-driven approach is a historic trend and the deep learning methods gained the most success, SLA researchers continue to discover new science. The submissions of APSIPA 2020 ASC reveal several interesting trends, including the combination of statistical models and neural nets, careful analysis for the behavior of deep nets, attempts to solving very challenging tasks. It is very exciting to see that APSIPA SLA is becoming an active research committee to foster cutting-edge technologies.

Below you will find a sharing by Lantian Li about CNCeleb2: A Large-Scale Multi-Genre Speaker Recognition Database, and another sharing by Hui Bu (AISHELL Foundation) about Distributed Microphone Arrays in Smart Home (DMASH) database.

Welcome to APSIPA ASC 2020!

Prof. Dong Wang
TC Chair of SLA

CNCeleb2: A Large-Scale Multi-Genre Speaker Recognition Database

Lantian Li

Center for Speech and Language Technologies,
Tsinghua University, China

Research on speaker recognition tends to be vulnerable in the wild conditions, especially when the enrollment and test are in different genres. For instance, enroll with reading speech while test on singing. This mismatch leads to complex and composite inter-session variations, both intrinsic (i.e., speaking style, physiological status) and extrinsic (i.e., recording device, background noise). Unfortunately, multi-genre corpora are very scarce, especially in real-life scenarios.

Recently, we published a free multi-genre speaker recognition database, called *CNCeleb* [1]. This database consists of speech segments from 1,000 Chinese celebrities recorded in very diverse conditions. All the speech data were mainly downloaded from http://bilibili.com, and the recording conditions covered 11 genres, from reading and interview to vlog and drama. The database has been used by many groups to conduct speaker recognition research in very challenging conditions.

Based on the pipeline of *CNCeleb*, we recently have collected more multi-genre data and will release it as a new database, called *CNCeleb2*. Compared to *CNCeleb*, *CNCeleb2* involves more data (2,000 speakers and 1,000 hours in total), therefore can be used not only for evaluation test, but also for model training. Especially, the data sources are more diverse than *CNCeleb*, which makes it suitable as a general training set. The covered genres and the data sources are shown in Table 1 and Figure 1, respectively.

CNCeleb2 will be released in two weeks. For more details of the database and registration for free download, please contact info@cslt.org.

Distributed Microphone Arrays in Smart Home (DMASH) database

Hui Bu

Beijing Shell Shell Technology Co. Ltd,
Beijing, China

The Distributed Microphone Arrays in Smart Home (DMASH) database was constructed by AIShell, and will be released for free for research purpose. The database is featured by multichannel recordings, especially with far-field distributed microphone arrays, and so is suitable for a multitude of research, including far-field speech/speaker recognition, cross-channel speaker recognition, speech enhancement, array processing, etc.

As shown in Figure 1, the recording devices include one close-talking microphone and 7 sets of recording packages placed at different locations, and each recording package involves one iPhone, one Android phone, one iPad, one microphone and one circular microphone array. The entire database consists 500 speakers, amounting to 3k hours of speech signals (including all the channels).

The DMASH database has been used for the FFSVC20 Challenge, hosted by Interspeech 2020. For more details of the database and registration for download, please contact opensource@aishelldata.com.

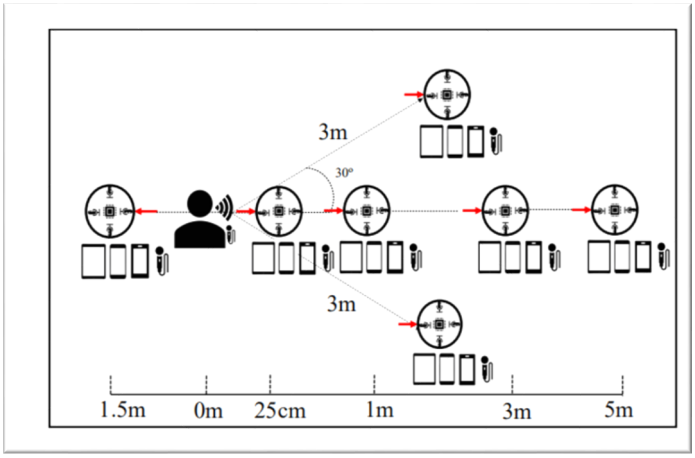


Figure 1. Recording configuration of DMASH

Image, Video, and Multimedia Technical Committee (IVM TC)

Chair: **Chia-Hung Yeh**, National Taiwan Normal University, Taiwan

Vice Chair: **Chang-Su Kim**, Korea University, Korea

Secretary: **Li-Wei Kang**, National Taiwan Normal University, Taiwan

Message from the TC Chair

Image, Video, and Multimedia (IVM) is a technical committee of APSIPA that promotes and support artificial intelligence (AI) related advancement and exchange of researches on image, video, multimedia, and technologies in the Asia-Pacific region. All AI related novel theories, algorithms, systems, and architectures and their applications to the formation, acquisition, processing, communication, analysis, and display of images, videos, and multimedia signals are within the committee's scope. Our fields of interests widely range from image/video compression, storage, indexing and retrieval, transmission, enhancement, restoration, forensics and security, to multimedia networking, multimedia big data analysis, multimedia system integration, to hardware and software design, and implementation. Most notably, we are interested in novel AI-driven methodologies and applications in multimedia, such as deep learning-based feature learning or representation learning with intelligent applications.

As of now, APSIPA ASC 2020, Dec 7-10, Auckland, New Zealand has accepted three special session proposals: "High Performance Image and Video Processing and Applications," "Recent Advances in Deep Learning with Multimedia Applications," and "Image and video processing based on deep learning," respectively. We also expect to have at least three high-quality IVM special sessions at APSIPA ASC 2020. This year, 6 of the current 36 TC members will join IVM: Prof. Ce Zhu, University of Electronic Science and Technology of China (China), Prof. Chau-Wai Wong, North Carolina State University (US), Prof. Hui Yuan, Shandong University (China), Prof. Runmin Cong, Beijing Jiaotong University (China), Prof. Seisuke Kyochi, University of Kitakyushu (Japan), and Prof. YoongChoon Chang, Universiti Tunku Abdul Rahman (Malaysia). The IVM TC members consists of reputable researchers from academic or industrial communities in the fields of image, video, and multimedia. More information about IVM TC is available from http://www.apsipa.org/TC/IVM.html.

Prof. Chia-Hung Yeh,
TC Chair of IVM

33rd IPPR Conference on Computer Vision, Graphics, and Image Processing (CVGIP 2020), Taiwan

One of our activities in Taiwan this year is co-organizing the 33rd IPPR Conference on Computer Vision, Graphics, and Image Processing (CVGIP 2020). CVGIP is the largest academic conference for the community of image processing, computer vision, and multimedia in Taiwan. CVGIP 2020, jointly organized by IPPR (Chinese Image Processing and Pattern Recognition Society, Taiwan), APSIPA IVM, and National Chiao Tung University, was held in Hsinchu, Taiwan, from Aug. 16 to Aug.18, 2020. CVGIP2020 arranged 26 technical paper presentation sessions, 2 keynote speeches, and 1 industrial forum. This year there were more than 300 professors, students, researchers, and engineers, joined this event and engaging in exchanging technical ideas and academic/industrial news. The main CVGIP 2020 organizing team members and invited speakers included:

Honorary Chair:	Prof. Hsueh-Ming Hang, National Chiao Tung University
General Chair:	Prof. Chia-Wen Lin, National Tsing Hua University
Program Chair:	Prof. Wen-Huang Cheng, National Chiao Tung University
Keynote Speakers:	Prof. Jiun-In Guo, National Chiao Tung University
	Dr. Ted Chang, Quanta Computer lnc.
Forum Speakers:	Dr. Trista Chen, Inventec
	Prof. Chuan-Yu Chang, Industrial Technology Research Institute

10th National Conference on Web Intelligence and Applications (NCWIA) 2020, Taiwan

One of our activities in Taiwan this year is organizing the 10th National Conference on Web Intelligence and Applications (NCWIA 2020). NCWIA 2020 was held in Taiwan at National Yunlin University of Science and Technology from Jul. 31 to Aug.1, 2020. This conference is organized by WIC-Taiwan (Taiwan Association for Web Intelligence Consortium, Taiwan) and IRIS Center (Intelligent Recognition Industry Service Research Center). In NCWIA2020, there are 18 technical paper presentation sessions and 2 keynote speeches. The theme of NCWIA2020 is "Future of Web Intelligence"; we received about 130 submissions, only 98 papers was accepted for presentation. There were over 200 professors, students, researchers, and entrepreneurs joined this event for exchanging technical ideas and the latest academic/industrial dynamics. The main NCWIA 2020 organizing team members and invited speakers included:

Honorary Chair: Prof. Chuan-Yu Chang, National Yunlin University of Science and Technology.

General Chair: Prof. Chien-Chou Lin and Prof. Ching-Lung Chang,
National Yunlin University of Science and Technology.

Program Chair: Prof. Shih-Yu Chen, National Yunlin University of Science and Technology.

Keynote Speakers: Prof. Liao, Mark, Institute of Information Science
Prof. Pao-Ann Hsiung, National Chung Cheng University

Signal and Information Processing Theory and Methods Technical Committee (SIPTM TC)

Chair: **Mingyi He**, Northwestern Polytechnical University, China

Message from the TC Chair

Signal and Information Processing Theory and Methods (SIPTM) is an APSIPA technical committee that promotes research, education, academic exchange, and cooperation in the world especially in Asia-Pacific region in the areas of signal and information processing with emphases on new theories and methods. The SIPTM areas can be very wide: from external intuitive sensing signals to internal abstract information, from 1D (acoustic signal) to 2D (image) or higher dimensional signals, from traditional directions to advanced topics, from model driven methods to data driven approaches, from shallow architectures to deep network systems, from traditional processing to advanced intelligent processing, etc.

Signal and information processing can be divided into theory and practice (application), but also into theory, method, design, implementation and application. The theory and method lay stress on its foundation and theoretical guidance. According to its theory and technical methods, signal and information processing can also be divided into two levels: conventional processing and intelligent processing. Conventional signal and information processing (CSIP), usually physical model based processing, mainly includes signal modeling, amplification, enhancement, restoration, detection, filtering, correlation, denoising, various transforms (Fourier transform, wavelet transform, etc.), calculation of parameters such as entropy, feature selection, estimation, coding, compression and so on. Intelligent signal and information processing (ISIP) is an “learning” or “knowledge” based processing, such as feature mining, recognition, classification, fusion, learning, reasoning, understanding and so on. ISIP emphasizes that the purpose of processing is to obtain new information, knowledge and intelligent strategies from signals. Intelligent signal and information processing is usually through logical reasoning method, neural learning method, evolutionary method, knowledge mining method and other machine learning methods.

In recent years, with the technological breakthrough of machine/ deep learning methods, the processing of bigdata through deep learning has made unprecedented progress in intelligent signal and information processing methods, which has triggered a new wave of AI (artificial intelligence). We provide, in this newsletter issue, a conference news, APSIPA Cosponsored China Conference on Bigdata and Intelligent Processing-CCBIP’19, which is the first China Conference on Bigdata and Intelligent Processing (CCBIP’19) sponsored by Signal Processing Society of Chinese Institute of Electronics (CIE), technically cosponsored by APSIPA, NSFC (National Natural Science Foundation of China), and hosted by Northwestern Polytechnical University, Xian Jiaotong University and Xidian University. CCBIP’19 was held November 24-25, 2019 in Xian, China, just after APSIPA ASC 2019.

Intelligent Signal and Information Processing is the theme of the 2019 and 2020 APSIPA Annual Summit and Conferences. They provide opportunities and challenges for SIP theory and methods researchers, engineers and students.

APSIPA ASC 2020 has accepted two special session proposals in SIPTM: “Advanced topics in signal processing & machine learning - acoustic & biomedical applications” and “Recent developments on signal processing theory and techniques in fractional Fourier and linear canonical domain”. More special sessions are cross two or more technical committees. In 2020, 5 new members join SIPTM technical committee: they are Professors Bo Chen, Yan Chen, Jiaying Liu, Huanqiang Zeng and Vicky Zhao. We expect more new members will be selected at APSIPA ASC 2020. More information about SIPTM is available from http://www.apsipa.org/TC/SIPTM.html.

Welcome to APSIPA ASC 2020!

Prof. Mingyi He
TC Chair of SIPTM

APSIPA Cosponsored China Conference on Bigdata and Intelligent Processing (CCBIP), China 2019

The First China Conference on Bigdata and Intelligent Processing (CCBIP’19) sponsored by Signal Processing Society of Chinese Institute of Electronics (CIE), technically cosponsored by APSIPA, NSFC (National Natural Science Foundation of China), and hosted by Northwestern Polytechnical University, Xian Jiaotong University and Xidian University, was held November 24-25, 2019 in Xian, China. Over 300 delegates attended the conference.

CCBIP’19’s Sponsor and Cosponsors

The main purpose of the conference is to provide an academic exchange platform for researchers, graduate students and engineers in the field of big data and intelligent processing, and provide opportunities for local Chinese researchers to further understand APSIPA and explore new modules of cooperation for APSIPA with local community in signal and information processing, especially with Signal Processing Society of Chinese Institute of Electronics.

Professor Mingyi HE, the director of international research center for information acquisition and processing in Northwestern Polytechnical Univ., chair of SIP (signal and information processing) committee of Shaanxi Institute of Electronics and BoG member of APSIPA was appointed as the general chair by Signal Processing Society, CIE. This conference had 1 keynote speech, 11 invited talks and 2 industrial reports. APSIPA BoG member, Professor Kai-Kuang Ma from NTU Singapore addressed the keynote speech. APSIPA technical committee members, Professors Xiangui Kang, Bo Chen and Jiaying Liu presented invited talks. The main speech and talks are as follows:

Keynote Speech

- Kai-Kuang Ma (NTU, Singapore): Next generation Image Processing---when signal processing meets deep learning

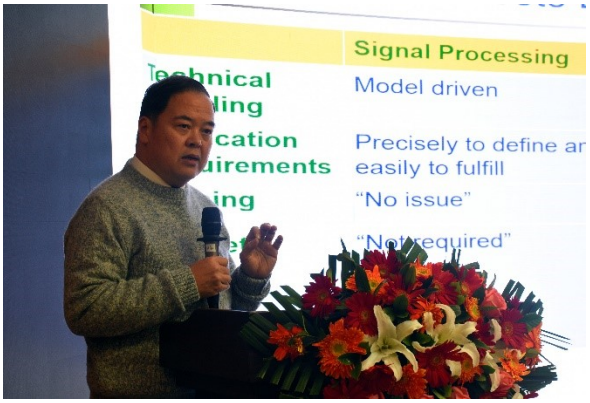
Invited Talks

- Bing Zhang (Aerospace Information Research Institute, Chinese Academy of Sciences): Remote sensing bigdata era and intelligent information extraction.
- Qihui Wu (Nanjing Univ of Aeronautics and Astronautics): Aviation 6G and spectrum intelligent control.
- Xiaopeng Hong (Xi'an Jiaotong Univ), Weak-supervised Learning for Crowd Counting based on Bayesian loss.
- Deyu Meng (Xi'an Jiaotong Univ), Model and data driven in the underlying visual tasks.
- Yuchao Dai (Northwestern Polytechnic Univ), Multi-view geometry based on deep learning.
- Jinwen Ma (Peking Univ), Parameter learning, model selection and application of Gaussian process mixture model.
- Ning Xu (China Academy of Space Technology - Xian), Research on the application of machine learning in communication.
- Jiaying Liu (Peking Univ), Intelligent image enhancement computing.
- Xiangui Kang (Sun Yatsen Univ), Multimedia information security method based on GAN and deep learning.
- Bo Chen (Xidian Univ), Probabilistic and statistical deep networks and their applications.
- Shaohui Mei (Northwest Polytechnic Univ), Hyperspectral computational imaging based on super-resolution learning.

Industrial Reports

- Jiantao Xia (AllSense Shanghai Co., Ltd.), Application of data intelligence in thermal power production process optimization control.
- Gaofeng Zhang (SmartEarth Beijing Co., Ltd.), Interpretation and practical application of digital twin system in smart cities.

BoG Member, Professor Mingyi He is delivering an opening address



BoG Member, Professor Kai-Kuang MA is making keynote speech

Invited Speakers of CCBIP'19

CCBIP'19 at a View

Introduction to APSIPA Local Chapters

Yoshinobu Kajikawa

VP -Membership Relations and Development

APSIPA starts Local Chapter system from the beginning of 2020. As you know, APSIPA spans more than 20 countries in Asia-Pacific region, but local Chapters serve APSIPA members by holding meetings at the local level. Local chapter activities may include guest speakers, workshops, and seminars as well as social functions. Local chapters provide APSIPA members with valuable opportunities to network at a local level, enabling their personal and professional growth. If you're interested in connecting with professionals, academics and students in your region, getting involved locally provides exciting opportunities for networking, research, and project collaboration with others.

Chapters are constituted by a minimum of ten active members, and are established by application to APSIPA. For more details, please see the guideline of APSIPA Local Chapters. If you want to establish a local chapter in your region, please fulfill the application form and submit it to APSIPA Headquarter and VP Membership Relations and Development.

APSIPA Chapter Operation Manual

APSIPA Chapter Application Form

So far, APSIPA has two local chapters; one is Japan Chapter (29, Jan, 2020), another is Taiwan Chapter (20, May, 2020). The first chairs are Prof. Toshihisa Tanaka and Prof. Gwo Giun Chris Lee, respectively. I'd like to thank them for their great contributions to the local chapters. The details of each local chapter are introduced below.

APSIPA Japan Chapter -- Challenges of Latecomers

Toshihisa Tanaka
Tokyo University of Agriculture and Technology, Japan)

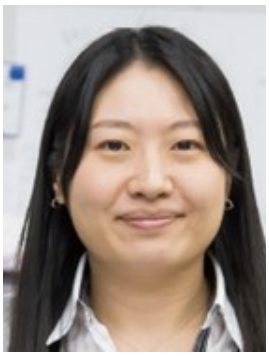
It is my great honor to be the founding Chair of the Japan Chapter, the first established APSIPA Chapter. The APSIPA Board-of-Governors resolved the establishment of local Chapters in 2019. Following this resolution, APSIPA has started to encourage members to develop local Chapters to promote the presence and activities of APSIPA. With the initiative by President Hitoshi Kiya, the first APSIPA Chapter covering a whole area of Japan (APSIPA Japan Chapter) was established in Japan this year. Vice-President for Member Relations and Development Yoshinobu Kajikawa appointed me (former member of BoG of APSIPA) as Chair of the Chapter.

Following this initiative, I have selected Executive Committee Members of this Chapter as follows:

Chair: Toshihisa Tanaka
Tokyo University of Agriculture and Technology

Vice-Chair: Norihide Kitaoka
Toyohashi University of Technology

Secretary: Hiroshi Higashi
Kyoto University



Treasurer: Sayaka Shiota
Tokyo Metropolitan University

A challenge (also advantage) of this new Chapter is that there already exist several active academic societies in signal processing covering the Japan area. For example, IEICE, one of the most present organizations in electronics, information, and communication engineering, has several technical committees related to APSIPA. These technical committees hold technical meetings (workshops), monthly or bimonthly. There already exist the IEEE local chapters of the Signal Processing Society. In the presence of these already active organizations, how to conduct unique activities is a crucial issue for our novel APSIPA chapter. I plan to collaborate with those active organizations to promote the technical activities of the APSIPA Japan Chapter.

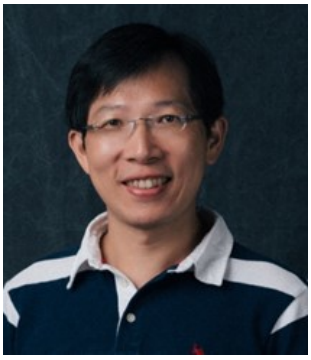
The first kick-off workshop was supposed to be held in summer in 2020; however, due to the Covid-19 pandemic, the Chapter has not launched the first technical meeting. As other technical conferences do, we plan to organize the first kick-off workshop online, which will be open for everyone. Moreover, Japan is the host country of the APSIPA Annual Summit and Conference 2021 (APSIPA ASC 2021). We believe that the establishment of this Chapter will contribute to the success of the APSIPA ASC 2021 in Tokyo.

Introduction to APSIPA Local Chapters

Prepared by: Chris Gwo Giun Lee
National Cheng Kung University, Taiwan

Officers Introduction

Chair: Chris Gwo Giun Lee,
National Cheng Kung University



Vice-Chair: Wen-Hsiao Peng,
National Chiao Tung University

Secretary: Jing-Ming Guo,
National Taiwan University of Science and Technology

Treasurer: Kun-Chih Chen,
National Sun Yat-sen University

Advisory Board

Prof. Chung-Nan Lee, National Sun Yat-sen University
Prof. Chung-Hsien Wu, National Cheng Kung University
Prof. Hsueh-Ming Hang, National Chiao Tung University
Prof. Homer Chen, National Taiwan University

Chapter Introduction

Taiwan employs significant roles in the research and technology advancement of signal and information processing (SIP) within the vibrant Asia Pacific region. The APSIPA ASC conference organized successfully by Prof. Chung-Nan Lee in Kaohsiung, Taiwan on 2013, has aroused high local interests witnessing high participation. Recent trend in Artificial Intelligence has further triggered yet more innovations and involvement in diverse signal and information processing areas in Taiwan. In view of this strategic importance, the APSIPA Taiwan Local Chapter was therefore established to provide a platform in expanding our APSIPA community for further SIP technology innovations and information exchange among research organizations, academia, and industry within Asia Pacific and reaching out globally.

Aspiration

In view of the global fast-changing landscape due to Industry 4.0 and with anticipation of aligning Taiwan Chapter with APSIPA's strategic direction in advancing SIP technology with higher industry involvement, our local chapter provides a professional networking platform upon which more bi-directional academia and industry activities are fostered in servicing APSIPA members within our Asia Pacific Region!

In the 21st century, McKinsey has forecasted on changes brought forth by **ARTIFICIAL INTELLIGENCE (AI)** to be 10 times faster and 300 times larger in scale as compared to former Industrial Revolution! In many countries, big corporate style on-the-job-training is reducing and the overall ecosystem with more startups and self-employment places more requirements upon self-learning and metacognitive skills. The APSIPA community should inevitably witness more startups, entrepreneurs, mobility of Young Professionals (YP), self-employment, leadership and participation by Women in Engineering (WIE), etc. as being new paradigm shifts in workplace modality.

Today, COVID-19 is disrupting all aspects of our society and everyone's daily life rhythms. Amid lockdowns, working-from-home, and remote learning, especially with elevation of anxiety and mental stress, rapid point-of-care using telehealth including telemedicine and tele-wellness for both physical and mental health care and other pertinent ONLINE SIP technologies have been accelerated with unprecedented demands worldwide.

CHALLENGES BRING OPPORTUNITIES!

With these CHALLENGES amid current vibrant environment, APSIPA Taiwan Chapter is committed to providing new disruptive OPPORTUNITIES with yet more emphasis on cross pollination between academia & Industry in fostering Innovation, Internship & Entrepreneurship for humanity!

Future Plans

In the immediate future, APSIPA Taiwan Chapter should, under proactive initiatives of our officers, organize the committee in compliant with APSIPA's bylaw. We also anticipate hosting of Taiwan Chapter's annual general assembly with proposition of the by-laws.

During the first year, we anticipate the recruitment of more new members including students. There are a total of 65 valid members in Taiwan as of July, 2020. In addition to inviting them to joining our newly established Taiwan Chapter, efforts would specifically be put in to reactivate membership for 254 expired members. We should also initiate collaborations and joint alliances with IEEE Tainan and Taipei Sections; in addition to working closely with our APSIPA Industrial Governance Board for further publicity.

We anticipate, in the first year, to also organizing "Virtual Industry Forums" and "Leadership Summit" with human-centric themes on sharing COVID-19 experiences via SIP technologies and with empathy or our society, the world, and nature. We should organize "Industry Forums (IF)", which differing from traditional forum with academia initiating presentations, characterizes flipping of roles in which industry speakers address pain spots they encounter, subsequently with academia brainstorming for solutions together for **innovation**. This shall provide students with real world thesis topics and/or possible **internship** opportunities in easing their career paths towards industry. Academia shall work on real world problems with research outcome required by the Industry, which including YP and WIE, should in turn have access to advanced technologies and talents throughout this professional networking platform so provided by APSIPA Taiwan Chapter.

In the foreseeable near future, APSIPA Taiwan Chapter should further foster **entrepreneurship** via the organization of IF panels where the fundamentals and need-to-know of startups are introduced by industry leaders. Hackathons and pitching competitions by startup teams from YP, WIE, and students should also be Matchup with investors and venture capitalists (VCs) who serve as judges.

Latest Articles from APSIPA Transactions on Signal and Information Processing (ATSIP)

- **Hue-correction scheme considering CIEDE2000 for color-image enhancement including deep-learning-based algorithms**
  - Yuma Kinoshita, Hitoshi Kiya
  - DOI: https://doi.org/10.1017/ATSIP.2020.17
  - Published online: 10 September 2020, e19

- **NLCA-Net: a non-local context attention network for stereo matching**
  - Zhibo Rao, Mingyi He, Yuchao Dai, Zhidong Zhu, Bo Li, Renjie He
  - DOI: https://doi.org/10.1017/ATSIP.2020.16
  - Published online: 07 July 2020, e18

Most Read Articles from ATSIP

https://www.cambridge.org/core/journals/apsipa-transactions-on-signal-and-information-processing/most-read

- **An overview of channel coding for 5G NR cellular communications**
  - Jung Hyun Bae, Ahmed Abotabl, Hsien-Ping Lin, Kee-Bong Song, Jungwon Lee
  - DOI: https://doi.org/10.1017/ATSIP.2019.10
  - Published online: 24 June 2019, e17

- **An Overview of Coding Tools in AV1: the First Video Codec from the Alliance for Open Media**
  - Yue Chen, Debargha Mukherjee, Jingning Han, Adrian Grange, Yaowu Xu, Sarah Parker, Cheng Chen, Hui Su, Urvang Joshi, Ching-Han Chiang, Yunqing Wang, Paul Wilkins, Jim Bankoski, Luc Trudeau, Nathan Egge, Jean-Marc Valin, Thomas Davies, Steinar Midtskogen, Andrey Norkin, Peter de Rivaz, Zoe Liu
  - DOI: https://doi.org/10.1017/ATSIP.2020.2
  - Published online: 24 February 2020, e6

- **Use cases and challenges in telecom big data analytics**
  - Chung-Min Chen
  - DOI: https://doi.org/10.1017/ATSIP.2016.20
  - Published online: 12 December 2016, e19

Most Cited Articles from ATSIP for the Last 3 Years

https://www.cambridge.org/core/journals/apsipa-transactions-on-signal-and-information-processing/most-cited

- **A comprehensive study of the rate-distortion performance in MPEG point cloud compression**
  - Evangelos Alexiou, Irene Viola, Tomás M. Borges, Tiago A. Fonseca, Ricardo L. de Queiroz, Touradj Ebrahimi
  - DOI: https://doi.org/10.1017/ATSIP.2019.20
  - Published online: 12 November 2019, e27
- **A review of blind source separation methods: two converging routes to ILRMA originating from ICA and NMF**
  - Hiroshi Sawada, Nobutaka Ono, Hirokazu Kameoka, Daichi Kitamura, Hiroshi Saruwatari
  - DOI: https://doi.org/10.1017/ATSIP.2019.5
  - Published online: 14 May 2019, e12
- **Grayscale-based block scrambling image encryption using YCbCr color space for encryption-then-compression systems**
  - Warit Sirichotedumrong, Hitoshi Kiya
  - DOI: https://doi.org/10.1017/ATSIP.2018.33
  - Published online: 01 February 2019, e7

APSIPA Membership

Membership Benefits:

- Links to highly qualified people within the organization to develop research, technology, teaching, and career
- Discount fee on APSIPA conferences
- Reduced subscription fee for APSIPA journals
- Access to information about the international activities in signal and information processing such as conferences, continuing education, short courses, seminars, distinguished lecture series, student internships, scholarships, job listings, publication venues, and mentorships

To motivate APSIPA members to participate in APSIPA conferences, the registration for the 11th APSIPA conference implies an automatic renewal of APSIPA membership up to the end of December 2020.

You may join as:

- Student Membership: Student members are those who are enrolled full time in universities, institutes, or any accredited degree
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Type of membership	Fees in US$	Fees in HK$
Student Membership	10 (per annual)	78 (per annual)
Full Membership	30 (per annual)	234 (per annual)
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12th Asia Pacific Signal and Information Processing Association Annual Summit and Conference (APSIPA ASC)

(Auckland Fully Virtual Conference)

DECEMBER 7 – 10, 2020, AUCKLAND, NEW ZEALAND
WWW.APSIPA2020.ORG

Timeline/Important Dates

- **March 1, 2020** – Submission of Proposals for Special Sessions, Forum, Panel & Tutorial Sessions
- **April 1, 2020** – Notification of Acceptance for Special Sessions, Forum, Panel & Tutorial Sessions
- **April 8, 2020** – Online Submission Website Ready for Full, Short and Special Sessions Papers Upload
- **August 1, 2020** – All Papers Submission
- **October 1, 2020** – Notification of All Papers Acceptance
- **November 1, 2020** – Submission of Camera-Ready Papers
- **November 1, 2020** – Early Bird Authors Registration
- **December 7 – 10, 2020** – Tutorials, Summit and Conference Dates

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APSIPA ASC 2020 (www.apsipa2020.org) is the 12th annual conference organised by Asia-Pacific Signal and Information Processing Association (APSIPA), which will be held on December 7 – 10, 2020, Auckland, New Zealand. Founded in 2009, APSIPA organisation (www.apsipa.org) aims to promote research and education in signal processing, information technology, and communications. The annual conferences have been held previously in Lanzhou, China (2019), Hawaii, USA (2018), Kuala Lumpur, Malaysia (2017), Jeju, Korea (2016), Hong Kong, China (2015), Siem Reap, Cambodia (2014), Kaohsiung, China (2013), Los Angeles, USA (2012), Xi'an, China (2011), Singapore (2010), and Sapporo, Japan (2009).

APSIPA is interested in all aspects of signal and information processing theories, algorithms, securities, implementations, and applications. Call for Special Sessions – APSIPA ASC 2020 program augments the main program with selected special sessions. Please refer to the conference web page for information about the proposals and submissions of the special sessions. Call for Tutorials – Organising tutorials at APSIPA ASC 2020 is one of APSIPA organisation strategies to proliferate and ease learning in core subjects and new topics in evolving research branches. Therefore, the tutorials should be addressed to attract a wide audience. Applicants interested in presenting tutorials may discuss their proposals with one of the tutorial chairs for more information. Call for Exhibitors and Sponsors – APSIPA ASC 2020 organisers encourage exhibitors, publishers, and companies to showcase their products during the conference period. Please refer to the conference web page for full information. All accepted papers are expected to be included in IEEE Xplore and indexed by EI, like all previous years.

The technical program includes, but not limited to, the following areas

- Signal Processing Systems: Design and Implementation
- Signal and Information Processing Theory and Methods
- Speech, Language, and Audio
- Biomedical Signal Processing and Systems
- Image, Video, and Multimedia
- Multimedia Security and Forensics
- Wireless Communications and Networking
- Signal and Information Processing in Education
- Medical Signal Acquisition, Analysis and Processing
- Internet of Things Technology
- Data Analytics and Machine Learning
- Deep Learning: Algorithms, Implementations, and applications
- Human Biometrics and Security Systems
- Renewable Energy, Sustainability and the Environment
- AI and Smart Grids
- AI and Power Systems
- Wireless Power Transfer
- Autonomous Intelligent Self-Driving Cars
- Smart Materials and Sensors
- Signals and Control Systems

Organising Committee

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Summary of Links

- APSIPA ASC 2020: http://www.apsipa2020.org/
- APSIPA Transaction on Signal and Information Processing: http://journals.cambridge.org/sip
- Paper Submission to APSIPA Transaction on Signal and Information Processing: http://mc.manuscriptcentral.com/apsipa
- APSIPA Industrial Activities: http://www.apsipa.org/industrial.htm
- APSIPA Friend's Lab: http://www.apsipa.org/friendlab/FriendLabs.htm
- APSIPA Membership Registration/Renewal: http://www.apsipa.org/reg.asp
- APSIPA Magazine: http://www.apsipa.org/doc/magazine/apsipa_magazine2018.pdf
- APSIPA Photo Gallery: http://www.apsipa.org/photo/photo.htm

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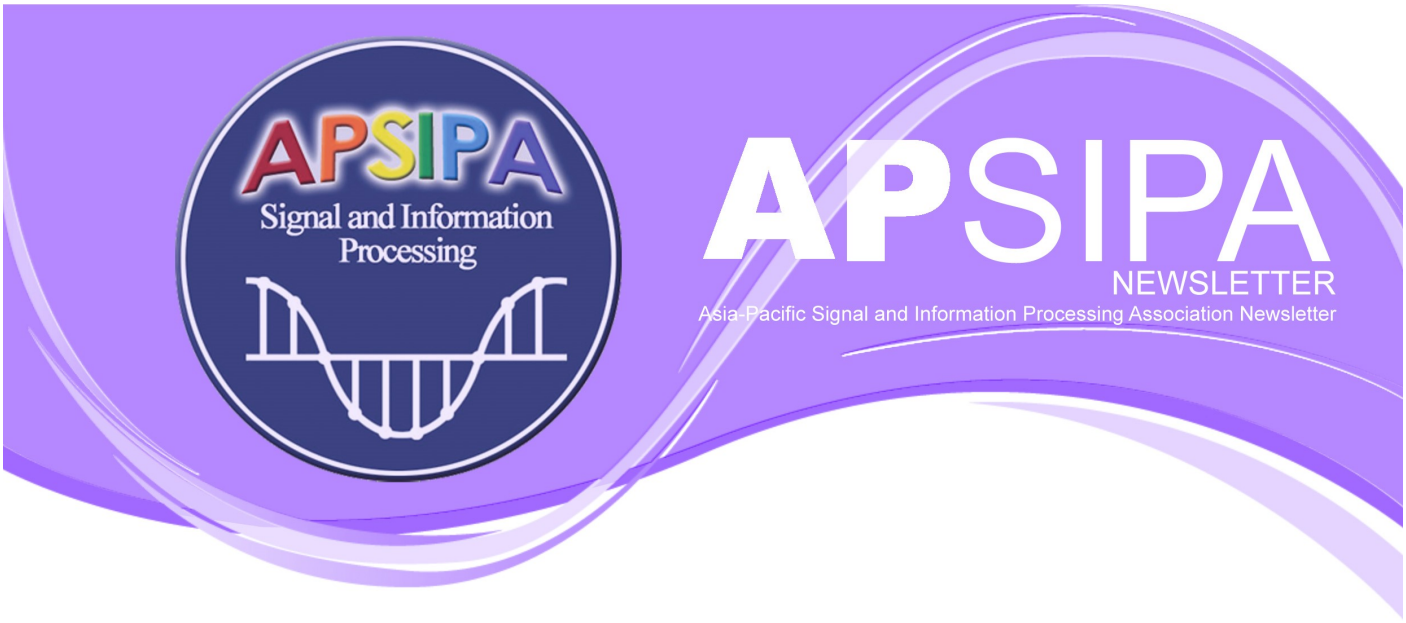

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