

IJCNLP-AAACL 2023

**The 13th International Joint Conference on Natural
Language Processing and the 3rd Conference of
the Asia-Pacific Chapter of the Association for
Computational Linguistics**

Proceedings of the Conference (Volume 1: Long Papers)

November 1 – 4, 2023

The IJCNLP-AACL organizers gratefully acknowledge the support from the following sponsors.

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ISBN 979-8-89176-013-4

Message from the General Chair

Welcome to IJCNLP-AAACL 2023, the 17th International Joint Conference on Natural Language Processing (IJCNLP) and the 3rd Conference of the Asia-Pacific Chapter of the Association for Computational Linguistics (AAACL). The conference will be held in Nusa Dua, Bali, Indonesia, during November 1-4, 2023.

The joint conferences of IJCNLP and AAACL are organized by alternating leadership in the Asia-Pacific region, in odd years by Asian Federation of Natural Language Processing (AFNLP) and in even years by AAACL, except when the annual meetings of ACL are offered in the region every three years, in which case the conferences will be offered and organized solely by ACL. This year, the conference is organized by AFNLP.

As President of AFNLP, I have formed the Conference Coordination Committee (CCC) last year with executive members of AFNLP: Sadao Kurohashi (Vice President), Min Zhang (Secretary), Liang-Chih Yu (Honorary Treasurer), and Minghui Dong (Web Master). Xuanjing Huang has participated in the meetings of the committee as AAACL Representative. I am truly thankful for their dedication in the initial stages as CCC members, in particular during the selection of the Local Chairs together with the conference venue and the nomination and appointment of General Chair and Program Committee Chairs, and, after it is decided that I also serve as General Chair of the conference, for their service as respective chairs throughout the conference preparation stages. Their continued support has been of tremendous help and is much appreciated.

I would also like to thank deeply the entire organizing committee of the conference for their hardwork and superb handling of difficult situations, most of all due to the much limited time to address their respective tasks.

- Program Committee Chairs: Yuki Arase, Baotian Hu and Wei Lu have managed the most critical task of establishing the main program of the conference, which includes, among many others, forming and coordinating the Program Committee, constructing the call for papers with a timely theme track, overseeing the review process on both Softconf and ARR, making decisions on paper acceptance, selecting keynote speakers and putting together the program schedule, and most of all communicating with the reviewers, authors, and other committee members over numerous times during the entire process. This is a formidable task, and their efforts for leading to its successful completion are so much appreciated.
- Tutorial Chairs: Yun-Nung (Vivian) Chen and Sadao Kurohashi have gone through the tutorial proposals to select six tutorials that are well balanced both topically and geographically, actively fostering diversity and inclusion.
- Workshop Chairs: Kehai Chen and Lun-Wei Ku have gone over the workshop proposals to select eight strong workshops, NLPWC, WIESP, Eval4NLP, SocialNLP, SEA, FinNLP, NLInt, and ArtOfSafety.
- Demo Chairs: Sriparna Saha and Herry Sujaini have overseen the process of selecting papers among those submitted to the system demonstration session independently of the main program.
- Publication Chairs: Minghui Dong and Kotaro Funakoshi have put together all the documents and articles to construct the conference proceedings expertly, cordially and in a timely manner.
- Sponsorship Chairs: Min Zhang, Satoshi Sekine, Haofeng Wang, and Zhongqing Wang have worked hard to solicit funding to support the conference, and successfully, despite the short time to operate. We are all much grateful to the funding organizations for their generous help.

- Finance Chair: Liang-Chih Yu has always been the person to consult whenever any financial issues arise. Things are not yet fully over at the time of preparing for this message, but are believed to come to self-sustainment, with some room for financial aid as well, thanks to the valiant efforts of all the people involved.
- Website & App Chair: Juntao Li has worked single-handedly and dependably to reflect all the requests to post important news at our conference homepage.
- Publicity & Social Media Chairs: Koustava Goswami and JinYeong Bak have worked to disseminate information over social media as widely as possible whenever there are notable events for the conference.
- Handbook Chairs: Yasuhide Miura and Yunita Sari have worked very hard to meet the deadline for the conference handbook when there is really not much time left. The help of Sonoko Miura as Conference Handbook Designer is also gratefully acknowledged.
- Faculty Advisors to Student Research Workshop (SRW): Hyeju Jang, Yugo Murawaki, and Derek Fai Wong have worked to oversee the SRW, in particular communicating with its chairs, Dongfang Li, Rahmad Mahendra and Zilu Peter Tang. The efforts of the faculty advisors and SRW chairs are much appreciated.
- Diversity & Inclusion Chair: Hwanhee Lee has worked to resolve requests for financial aid, mostly in the form of registration waiver, and as amicably as possible, under a strict limit on granting such requests.
- Registration Chair: Dessi Puji Lestari has worked to oversee the process of registration, together with the kind help of Minghui Dong as the manager of the registration site.
- Local Chairs: Derry Wijaya, Ayu Purwarianti and Adila Alfa Krisnadhi have worked to resolve practically numerous issues, many times beyond the duties of local chairs, after successfully bidding to host the conference in Nusa Dua, Bali, Indonesia. It is with much gratitude and respect that I commend their efforts to the fullest.

In summary, I can only say that their sense of duty and responsibility has been critical to meeting and resolving so many difficulties that we faced along the way. Many, many thanks to all of them.

The mode of the conference has been determined early on to be hybrid, considering the fact that we are not fully over the coronavirus pandemic. However, it has not been quite clear until very recently whether we would need, and can afford, the top-notch professional service of an on-demand video platform such as Underline for a hybrid conference. I am very grateful to all the chairs for the remarkable patience and very happy with the concerted decision to go for the service of Underline, albeit in a limited scope. I wish to thank kindly Damira Mrcic and Sol Rosenberg, representatives of Underline, for the patience and expert help. I also thank Richard Gerber for the help with our use of Softconf.

The Local Chairs made a proposal to host the conference in Nusa Dua early on, but it took all of us a long time to finally come to a decision to choose Grand Hyatt Bali, Nusa Dua, Bali, Indonesia for its exceptional location in the region as the conference venue. Its daytime temperatures are expected to reach 31°C, with the nighttime temperatures of around 24°C. I wish a very pleasant time for all the off-line participants of the conference and an equally memorable time for all the on-line participants.

Welcome to the conference and Nusa Dua!

IJCNLP-AAACL 2023 General Chair
 Jong C. Park
 Korea Advanced Institute of Science and Technology (KAIST)

Message from the Program Committee Co-Chairs

Welcome to IJCNLP-AAACL 2023, the 13th International Joint Conference on Natural Language Processing and the 3rd Conference of the Asia-Pacific Chapter of the Association for Computational Linguistics. This year, we have organized the conference in a hybrid format to accommodate both in-person and virtual participation, making it accessible to everyone regardless of travel constraints. The physical conference takes place in Bali; we are looking forward to discussions on present and future research in NLP with all of you.

This conference has been made possible through the dedicated voluntary efforts of hundreds of individuals. We sincerely thank everyone involved, in particular:

- The incredible team of 30 SACs, 72 ACs, and 427 reviewers who carefully handled submissions.
- Our Best Paper Award Committee, Danushka Bollegala, Jing Jiang, Yang Liu (Tsinghua University), Nanyun (Violet) Peng, Xiaojun Wan, Taro Watanabe, and Koichiro Yoshino, who assessed the candidate papers under the tight schedule.
- Computational Linguistics Editor-in-Chief, Hwee Tou Ng, for exploring the presentation possibility of CL papers with us.
- The ARR technical team, Jonathan Kummerfeld, Nils Dycke, Yoshitomo Matsubara, Dhruv Naik, and Amanda Stent, for supporting IJCNLP-AAACL 2023 to have submissions through ARR.
- Rich Gerber at Softconf, who always addressed our inquiries and issues quickly.
- The Program Chairs of conferences going on the same period of time, including Houda Bouamor, Juan Pino, Kalika Bali (EMNLP 2023), Maria Keet, Hung-Yi Lee, Sina Zarrieß (INLG 2023), Svetlana Stoyanchev, Shafiq Joty (SIGDIAL 2023), and Jennifer Dy, Sriraam Natarajan, Kristian Kersting, Sameer Singh, Prasad Tadepalli, Angela Yao (AAAI 2024), whom we cooperated with to preclude multiple submissions.
- The ACL Executive Committee, especially Yusuke Miyao (Conference Officer), for supporting IJCNLP-AAACL 2023 with various advice on conference organization.
- The ACL Ethics Committee, Min-Yen Kan, for advising us to conduct ethics reviews.
- The past *ACL conference program chairs, in particular Jordan Boyd-Graber, Naoaki Okazaki, Anna Rogers (ACL 2023) for sharing their experiences that were crucial to avoid pitfalls and practically sharing tools to handle a large volume of submissions.
- ACL Anthology director, Matt Post, for supporting us to publish the proceedings.
- Underline team, Jernej Masnec, Luka Simic, Sol Rosenberg, Borna Bevanda, and Damira Mrcic (Underline Science, Inc.), for their professional services and supports to realize the online part of the conference.

The conference owes its existence to the collaborative efforts of multiple chairs of IJCNLP-AAACL 2023. We are deeply grateful to:

- General Chair, Jong C. Park, who was responsible for and led the whole process.
- Publication Chairs, Minghui Dong and Kotaro Funakoshi, for compiling the proceedings and ensuring the correct formatting.

- Handbook Chairs, Yunita Sari and Yasuhide Miura, for creating the conference handbooks.
- Web Chair, Juntao Li, and Publicity & Social Media chairs, JinYeong Bak and Koustava Goswami, for distributing the important information on the web, which allowed efficient and timely communication.
- Local Chairs, Derry Wijaya, Ayu Purwarianti, and Adila Alfa Krisnadhi, who did everything for realizing the physical part of the conference.
- Our assistants, Jindi Yu, Senbao Shi, and Jiayi Li for their help and support throughout the conference preparation period.

Last but not least, we extend our heartfelt gratitude to all the authors for their invaluable scientific contributions, which are at the very heart of IJCNLP-AAACL 2023. We hope everyone will enjoy IJCNLP-AAACL 2023 either on-site or online.

Submission and Acceptance

IJCNLP-AAACL 2023 used two submission platforms: direct submission through SoftConf and submissions through ACL Rolling Review (ARR). We received 338 direct submissions (229 long and 109 short) and 25 commitments from ARR (19 long and 6 short), in total 363 valid papers went through the review process. The submissions came from 33 countries and regions of all over the world: 49.2% from Asia-Pacific, 26.7% from North America, 18.7% from Europe, 4.1% from Middle East, and 1.3% from Africa.

The direct submissions were thoroughly reviewed by 427 reviewers under 72 ACs and 30 SACs in 19 tracks. The ARR committed papers were handled by the SACs based on review and meta-review comments gained through ARR. Finally, we have accepted 94 submissions (72 long and 22 short) as the main conference papers accompanied by 37 Findings papers (23 long and 14 short), which results in the acceptance rates of 25.9% for the main conference (29.0% long and 19.1% short) and 36.1% when including the Findings papers (38.3% long and 31.3% short).

In adherence to the ACL code of ethics, we have conducted ethics reviews. Given the limited number of papers that raised ethical concerns, the program chairs assumed the responsibilities of ethics reviewers. Authors of papers that received ethics review comments were requested to address these concerns in their final versions.

The papers accepted to the main conference will be presented in the form of either oral and poster presentations. The presentation modes were determined solely based on the nature of the work, irrespective of review scores. There is no distinction in the proceedings regarding the presentation modes. The Findings papers will have optional lightning talks to introduce highlights of their work.

Design of Tracks

IJCNLP-AAACL 2023 has incorporated 18 general areas reflecting the trends of the field. Most of these areas are consistent with the recent *ACL conferences. In addition, recognizing the conference centers on Asia-Pacific regions, which boast a variety of regional languages with limited language resources, we have introduced a special theme track this year: Large Language Models and Regional/Low-Resource Languages. The most popular areas were “NLP Applications,” “Resources and Evaluation,” and “Large Language Models and Regional/Low-Resource Languages.”

- Dialogue and Interactive Systems
- Discourse and Pragmatics

- Generation and Summarization
- Information Extraction
- Information Retrieval and Text Mining
- Interpretability and Analysis of Models for NLP
- Language Modeling and Analysis
- Linguistic Theories, Cognitive Modeling, and Psycholinguistics
- Machine Learning for NLP
- Machine Translation and Multilingualism
- Multimodality: Speech, Vision, Robotics, and Beyond
- NLP Applications
- Question Answering
- Resources and Evaluation
- Semantics: Lexical, Sentence-level Semantics, Textual Inference, etc.
- Sentiment Analysis, Stylistic Analysis, and Argument Mining
- Society and NLP
- Syntax: Tagging, Chunking, Parsing, etc.
- Theme Track: Large Language Models and Regional/Low-Resource Languages

Limitations Section and Responsible NLP Checklist

Following ACL 2023, EMNLP 2022, and ARR, we made it mandatory to discuss limitations of a study and submit the responsible NLP checklist to foster the open and honest scientific discussions and promote consideration of responsibility in NLP research. We also encouraged authors to include Ethics Statements whenever there might be potential concerns. The Limitations Section and Ethics Statements did not count towards the page limit.

Best Paper Awards

Following the new ACL conference awards policy, we organized the Best Paper Award Committee to select the Best Paper Awards followed by Outstanding Paper Awards, together with two special awards, namely Social Impact Award and Resource Award. The committee assessed 15 papers nominated by reviewers. In addition, SACs of each track selected at most a paper for Area Chair’s Awards. The award winners will be announced in a dedicated plenary session on November 4, 2023.

IJCNLP-AAACL 2023 Program Committee Co-Chairs
 Yuki Arase (Osaka University)
 Baotian Hu (Harbin Institute of Technology (Shenzhen))
 Wei Lu (Singapore University of Technology and Design)

Message from the Local Co-Chairs

It is with immense excitement and a profound sense of achievement that we, the local co-chairs of IJCNLP-AAACL 2023 - Ayu Purwarianti, Adila Krisnadhi, and myself - welcome you to the breathtaking island of Bali, Indonesia. The significance of this moment cannot be understated, as it marks the very first time that the IJCNLP or ACL conference has found its home in the enchanting Indonesian archipelago. This landmark occasion has doubled our excitement as local chairs, and we are thrilled to share this unique experience with all of you.

Since the moment when we were awarded the privilege of organizing IJCNLP-AAACL 2023, we have been tirelessly working to ensure this conference exceeds all expectations. We embarked on an extensive quest to discover the perfect venue and event organizer, negotiated hybrid support, searched for sponsorships, all while meticulously managing the budget, and addressing an array of logistical details, all with the goal of enhancing your experience at the conference. While our commitment to delivering an exceptional event has remained steadfast, we did encounter some noteworthy challenges. The close proximity of EMNLP 2023, scheduled in nearby Singapore just one month after IJCNLP-AAACL 2023 and whose submission deadline is also just a month after IJCNLP-AAACL 2023's, might have created scheduling dilemmas for prospective authors and participants. We sincerely hope that, despite these challenges, our captivating Bali location will draw participants from around the globe, ensuring IJCNLP-AAACL 2023 remains a highlight in the NLP conference calendar.

Another notable challenge has been attracting local participants to the conference. The absence of Scopus indexing for IJCNLP or AAACL proceedings, a critical factor for researchers in Indonesia, has presented hurdles. We hope that in the future, as more NLP proceedings are indexed by Scopus, we can generate greater local interest and participation in the region.

On behalf of the local organizing team, I extend my heartfelt gratitude and appreciation to our General Chair, Jong Park; Publication Co-Chair, Minghui Dong; Finance Chair, Liang-Chih Yu; Tutorial Co-Chair, Sadao Kurohashi; Sponsorship Chair, Min Zhang; Registration Chair, Dessi Puji Lestari; and the PC co-chairs who have given so much help and support to the local co-chairs. I have learned a lot from you. Hosting the AAACL-IJCNLP 2023 has been an invaluable learning experience for me, and it is an experience I will carry with me. I am also grateful for the contributions and hard work of the entire organizing committee and our kind sponsors, without whom none of this would have been possible.

We look forward to the exciting discussions, sharing of knowledge, and camaraderie that will define IJCNLP-AAACL 2023. Welcome to Bali, and we sincerely hope you have one of the most wonderful conference experiences.

Warm regards,

IJCNLP-AAACL 2023 Local Co-Chairs

Derry Tanti Wijaya (Monash University Indonesia)

Ayu Purwarianti (Institut Teknologi Bandung)

Adila Krisnadhi (Universitas Indonesia)

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(Conference Handbook Designer: Sonoko Miura)

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Society and NLP

Senior area chair: Wei Gao

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Senior area chair: Kewei Tu

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Theme Track: Large Language Models and Regional/Low-Resource Languages

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Outstanding Services

Outstanding ACs

We are indebted to these area chairs who offered a distinguished and professional meta-reviewing.

Jun Araki, Prafulla Kumar Choubey, Fenia Christopoulou, Shi Feng, Kokil Jaidka, Zhenghua Li, Massimo Piccardi, Lei Sha, Elena Voita, Henning Wachsmuth, Wenlin Yao, Rui Zhang

Outstanding Reviewers

The community has greatly benefited from these outstanding reviewers who delivered particularly insightful and constructive review comments.

Dario Bertero, Hsin-Hsi Chen, Colin Cherry, Sarthak Dash, Tunga Gungor, Hwichan Kim, Zuchao Li, Tao Li, Han Liu, Sergiu Nisioi, Zhufeng Pan, Anoop Sarkar, Akihiro Tamura, Stephen Wu, Frances Yung

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