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Volume 579

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Luis Fernando D'Haro ·  
Rafael E. Banchs · Haizhou Li  
Editors

# 9th International Workshop on Spoken Dialogue System Technology

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# Preface

The 9th International Workshop on Spoken Dialog Systems (IWSDS'18) was held on April 18–20, 2018, in Singapore; being the southernmost IWSDS ever, just one degree north of the Equator! The conference allowed participants to keep track of the state-of-the-art in spoken dialogue systems, while enjoying the year-round summer paradise island that is Singapore.

The IWSDS conference series brings together, on a yearly basis, international researchers working in the field of spoken dialogue systems and associated technologies. It provides an international forum for the presentation of current research, applications, technological challenges, and discussions among researchers and industrialists. The IWSDS'18 edition built over the success of the previous 8th editions:

- IWSDS'09 (Irsee, Germany),
- IWSDS'10 (Gotemba Kogen Resort, Japan),
- IWSDS'11 (Granada, Spain),
- IWSDS'12 (Paris, France),
- IWSDS'14 (Napa, USA),
- IWSDS'15 (Busan, Korea),
- IWSDS'16 (Saariselkä, Finland), and
- IWSDS'17 (Farmington, PA, USA).

IWSDS'18 conference theme was “Towards creating more human-like conversational agent technologies”, inviting and receiving paper submissions on the following topics:

- Engagement and emotion in human–robot interactions.
- Digital resources for interactive applications.
- Multi-modal and machine learning methods.
- Companions, personal assistants, and dialogue systems.
- Proactive and anticipatory interactions.
- Educational and healthcare robot applications.
- Dialogue systems and reasoning.



- Big data and large-scale spoken dialogue systems.
- Multi-lingual dialogue systems.
- Spoken dialog systems for low-resource languages.
- Domain transfer and adaptation techniques for spoken dialog systems.

However, submissions were not limited to these topics, and submission of papers in all areas of spoken dialogue systems was encouraged. In particular, IWSDS'18 welcomed also papers that could be illustrated by a demonstrator, organizing the conference to best accommodate these papers whatever their category.

The program of IWSDS'18 included three keynotes by renowned international authorities in dialogue system research:

- Prof. Tatsuya Kawahara from Kyoto University in Japan,
- Prof. Alex Waibel from Carnegie Mellon University in USA and Karlsruhe Institute of Technology in Germany, and
- Prof. David Traum from University of Southern California in USA.

The keynote speech by Prof. Tatsuya Kawahara was entitled: “Spoken dialogue for a human-like conversational robot ERICA”. He described a symbiotic human–robot interaction project, which aims at an autonomous android who behaves and interacts just like a human. This conversational android called ERICA is designed to conduct several social roles focused on spoken dialogue, such as attentive listening (similar to counseling) and job interview. Finally, he described the design principles, problems, and current solutions when developing the different spoken dialogue modules included in ERICA.

The keynote speech by Prof. Alex Waibel was entitled: “M3 Dialogs—Multimodal, Multilingual, Multiparty”. He started describing that even though great progress has been made in building and deploying speech dialog systems, they are still rather siloed and limited in scope, domain, style, language, and participants. Most systems are strictly human–machine, one language, one request at a time, usually with a clear on–off signal and identification of who wants what from whom. Even though existing systems do this now rather well, they fall far short of the ease, breadth, and robustness with which humans can communicate. During his talk, Prof. Waibel claimed that a dialog is not only human–machine, but also human–human, human–machine–human, and machine–machine–human, and preferably all of the above in purposeful integration. Then, he outlined the flexibility we are missing in modern dialog systems, review several of efforts aimed at addressing them, and finished speculating on future directions for the research community.

The keynote speech by Prof. David Traum was entitled: “Beyond Dialogue System Dichotomies: Principles for Human-Like Dialogue”. He started describing how many researchers have proposed related dichotomies contrasting two different kinds and aims of dialogue systems. One of the issues is whether human–system dialogue should even be human-like at all or humans should adapt themselves to the constraints given by the system. Then, he explored these dichotomies and presented “role-play dialogue” as a place where these dichotomies can find a commonality of purpose and where being human-like is important even simply for effective task

performance. After that, he defined “Human-like Dialogue” (HLD) as distinct from purely human dialogue and also distinct from instrumental dialogue. Then, he finished giving some guideline principles on how we should create and evaluate the new generation of agents.

In addition, the IWSDS’18 included three special sessions:

- **EMPATHIC:** Empathic Dialog Systems for Elderly Assistance,
- **HUMIC-DIAL:** Designing Humor in HCI with Focus on Dialogue Technology,
- **WOCHAT:** Workshop on Chatbots and Conversational Agent Technologies.

The **EMPATHIC** session was organized by Prof. María Inés Torres, Universidad del País Vasco UPV/EHU (Spain), Prof. Kristiina Jokinen, AIRC-AIST (Japan), Prof. Gérard Chollet, Intelligent Voice (UK), and Prof. Marilyn Walker, University of California-Santa Cruz (USA). This session focused on the problem of generating Empathic Dialog Systems for Elderly Assistance. One of the more important applications of spoken dialog systems (SDS) is the development of personal assistants for elderly people. These kinds of systems are intended to provide personalized advice guidance through a spoken dialogue system to improve the quality of life and independency living status of the people as they aged. To this end, SDS has to deal not only with user goals but also implement health goals through negotiation strategies to convince the user to develop healthy habits. Such SDS should also include perceived user affective status to support the dialog manager decisions. This session also welcomed papers focused on affective computing in SDS, user-centered design, policies dealing with shared user-coach goals, management strategies to keep the user engagement, personalization and adaptation, ontologies, and knowledge representation.

The **HUMIC-DIAL** session was organized by Dr. Andreea I. Niculescu, Institute for Infocomm Research (I2R, Singapore), Dr. Rafael E. Banchs, Nanyang Technological University (Singapore), Dr. Bimlesh Wadhwa, National University of Singapore (NUS, Singapore), Prof. Dr. Anton Nijholt, University of Twente (The Netherlands), and Dr. Alessandro Valitutti, Università di Bari (Italy). After a successful first edition of **HUMIC** (**HUMor in InteraCtion**) at **INTERACT 2017**, for **IWSDS’18**, the organizers focused on humorous verbal dialogue interactions between humans and machines. Humor embracing various types of expression can be used to enhance the interaction outcome while being socially and culturally appropriate. Therefore, during this session the presented papers explored challenges in designing, implementing, and evaluating humorous interactions in spoken and written dialogues with artificial entities, as well as benefits and downsides of using humor in such interactive tasks.

The **WOCHAT** session was organized by Dr. Ryuichiro Higashinaka, Nippon Telegraph and Telephone Corporation (Japan), Prof. Ron Artstein, University of Southern California (USA), Prof. Rafael E. Banchs, Nanyang Technological University (Singapore), Prof. Wolfgang Minker, Ulm University (Germany), and Prof. Verena Rieser, Heriot-Watt University (UK). The session included a Shared

Task organized by Prof. Bayan Abu Shawar, Arab Open University (Jordan), Prof. Luis Fernando D'Haro, Universidad Politécnica de Madrid, Spain, and Prof. Zhou Yu, University of California, Davis (USA). This was the fifth event of a “Workshop and Special Session Series on Chatbots and Conversational Agents”. WOCHAT aims at bringing together researchers working on problems related to chat-oriented dialogue with the objective of promoting discussion and knowledge sharing about the state-of-the-art and approaches in this field, as well as coordinating a collaborative effort to collect/generate data, resources, and evaluation protocols for future research in this area. The WOCHAT series also accommodated a Shared Task on Data Collection and Annotation for generating resources that can be made publicly available to the rest of the research community for further research and experimentation. In this shared task, human-machine dialogues are generated by using different online and offline chat engines, and annotations are generated following some basic provided guidelines.

IWSDS'18 received a total of 52 submissions, where each submission was reviewed by at least two program committee members. The committee decided to accept a total of 37 papers: 13 long papers, 6 short papers, 4 demo papers, 4 papers for the Empathic session, 7 papers for the WOCHAT session, 2 papers for the Humic session, and 1 invited paper.

Finally, we would like to take this opportunity to thank the IWSDS Steering Committee and the members of the IWSDS'18 Scientific Committee for their timely and efficient contributions and for completing the review process on time. In addition, we would like to express our gratitude to the members of the Local Committee who highly contributed to the success of the workshop, making it an unforgettable experience for all participants. Last, but not least, we want also to thank our sponsors: the Special Group on Discourse and Dialogue (SIGDial) and Chinese and Oriental Languages Information Processing Society (COLIPS) for their economical and logistic support; without it we and participants could not have such a remarkable conference.

With our highest appreciation,

Madrid, Spain  
Singapore  
Singapore  
April 2019

Luis Fernando D'Haro  
Rafael E. Banchs  
Haizhou Li

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