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# New Frontiers in Artificial Intelligence

JSAI-isAI Workshops, JURISIN,
SKL, AI-Biz, LENLS, AAA, SCIDOCA, kNeXI
Tsukuba, Tokyo, November 13–15, 2017
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# Preface

JSAI (The Japanese Society for Artificial Intelligence) is a premier academic society that focuses on artificial intelligence in Japan and was established in 1986. JSAI-isAI (JSAI International Symposium on Artificial Intelligence) 2017 was the ninth international symposium on AI supported by the JSAI. JSAI-isAI 2017 was successfully held during November 13–15 at University of Tsukuba in Tokyo, Japan. In all, 203 people from 15 countries participated.

JSAI-isAI 2017 included seven workshops, where 16 invited talks and 91 papers were presented. This volume, *New Frontiers in Artificial Intelligence: JSAI-isAI 2017 Workshops*, is the proceedings of JSAI-isAI 2017. From the seven workshops (JURISIN 2017, SKL 2017, AI-Biz 2017, LENLS 14, AAA 2017, SCIDOCA 17, and kNeXI 2017) 30 papers were carefully selected and revised according to the comments of the workshop Program Committees. The acceptance rate was about 32%. This resulted in the excellent selection of papers that are representative of some of the topics of AI research both in Japan and in other parts of the world.

JURISIN 2017 was the 11th international workshop on Juris-informatics. Juris-informatics is a new research area that studies legal issues from the perspective of informatics. The purpose of this workshop was to discuss both fundamental and practical issues among people from various backgrounds such as law, social science, information and intelligent technology, logic and philosophy, including the conventional "AI and law" area.

SKL 2017 (the 4th International Workshop on Skill Science) aimed to internationalize research on skill sciences by organizing the meeting. Human skills involve well-attuned perception and fine motor control, often accompanied by thoughtful planning. The involvement of body, environment, and tools mediating them makes the study of skills unique among research on human intelligence.

AI-Biz 2017 (Artificial Intelligence of and for Business) was the second workshop held to foster the concepts and techniques of business intelligence (BI) in artificial intelligence. BI should include such cutting-edge techniques as data science, agent-based modeling, complex adaptive systems, and IoT. The main purpose of this workshop is to provide a forum for participants to discuss important research questions and practical challenges in business intelligence, business informatics, data analysis and agent-based modeling, to exchange the latest results, and to join efforts in solving common challenges.

LENLS 14 was the 14th event in the series, and it focused on the formal and theoretical aspects of natural language. LENLS (Logic and Engineering of Natural Language Semantics) is an annual international workshop recognized internationally in the formal syntax-semantics-pragmatics community. It has been bringing together for discussion and interdisciplinary communication researchers working on formal theories of natural language syntax, semantics and pragmatics, (formal) philosophy, artificial intelligence, and computational linguistics.

AAA 2017 (the Third International Workshop on Argument for Agreement and Assurance) focused on argumentation, which has now become an interdisciplinary research subject receiving much attention from diverse communities including formal logic, informal logic, and artificial intelligence. It aims at analyzing, evaluating, and systematizing various aspects of human argument appearing in the media — television, newspapers, WWW, etc. — and also artificial arguments constructed from structured knowledge with logical language and inference rules. Their research achievements are widely applicable to various domains such as safety, political, medical, and legal domains.

SCIDOCA 17 (the Second International Workshop on Scientific Document Analysis) focused on the recent proliferation of scientific papers and technical documents that has become an obstacle to efficient acquisition of new information in various fields. It is almost impossible for individual researchers to check and read all related documents. Even retrieving relevant documents is becoming more difficult. This workshop gathered together all researchers and experts who work on scientific document analysis from various perspectives, and invited technical paper presentations and system demonstrations that cover any aspects of scientific document analysis.

HAT-MASH 2016 (Healthy Aging Tech Mashup Service, Data, and People) was the second international workshop in the series that bridges healthy aging and elderly care technology, information technology, and service engineering. The main objective of this workshop was to provide a forum fo participants to discuss important research questions and practical challenges in healthy aging and elderly care support and to promote transdisciplinary approaches.

kNeXI 2017 (Knowledge Explication in Industry) was aimed at promoting research about improving the skill and knowledge of employees in industry. kNeXI focuses on industry in which the knowledge of employees is important to their daily work. Such industry includes elderly care, education, health-promotion services, etc.

It is our great pleasure to be able to share some highlights of these fascinating workshops in this volume. We hope this book will introduce readers to the state-of-the-art research outcomes of JSAI-isAI 2017, and motivate them to participate in future JSAI-isAI events.

April 2018

Sachiyo Arai
Kazuhiro Kojima
Koji Mineshima
Ken Satoh
Daisuke Bekki
Yuiko Ohta

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