International Joint Conference on Artificial Intelligence - Pacific Rim International Conference on Artificial Intelligence.

January 7-15, 2021. Yokohama, Japan.

IJCAI-PRICAI
YOKOHAMA
2020

WELCOME TO IJCAI-PRICAI 2020!

Welcome to IJCAI-PRICAI 2020: the 29th International Joint Conference on Artificial Intelligence and the 17th Pacific Rim International Conference on Artificial Intelligence!

IJCAI is the premier international gathering of researchers in Artificial Intelligence (AI) and the longest-running major conference series spanning all areas of AI, having been launched in Washington, D.C., in 1969. PRICAI was initiated in 1990 to create an artificial intelligence conference that would promote collaborative AI research in the Pacific Rim nations. This is the first time that IJCAI and PRICAI have been held jointly. The conference was originally scheduled to be held in Yokohama in July 2020, but as a result of the COVID-19 pandemic, IJCAI-PRICAI 2020 has been moved to an entirely virtual format and rescheduled to January 7-15, 2021. We are pleased to be partnering with VirtualChair to offer a fully immersive online conference experience.

With the current exploding interest in AI and its applications, the joint IJCAI-PRICAI conference will provide an exciting forum to present and hear about cutting-edge research in AI. The IJCAI-PRICAI 2020 conference will include many activities: presentations of the latest research in technical paper sessions, a broad slate of workshops, tutorials to introduce researchers to other areas of AI, competitions from several AI subdisciplines, an extensive range of industry exhibits, and panels on various topics.

For the regular research track, 591 papers were selected from a new record of 5147 submissions. The program also includes presentations of 21 award-winning papers from sister AI conferences, celebrating excellence in the field as a whole. The Journal track consists of 29 presentations summarizing work that has been published in major journals in artificial intelligence, but not in a major conference. The Survey track features 28 papers that provide overviews of AI research areas to discuss non-technical and societal issues in interaction with the audience. This year's conference also has two special tracks. The "AI in FinTech" track contains 35 papers showing how AI can transform the way financial businesses operate, transact, interact and collaborate with their consumers, markets, and regulators."Computational Sustainability and Human Well-being" contains 19 papers on the deployment of AI techniques that will improve the quality of life of the world's population covering all aspects of sustainability, from climate change to infectious diseases to agriculture. In addition to these presentations of papers, the IJCAI-PRICAI 2020 program includes a Demo Presentation track with 31 accepted contributions, a Robot Exhibition track with 13 videos presenting advanced robotic systems that exploit AI technologies, and a number of talks on research achievements by distinguished AI researchers at different career stages. In particular, 14 talks by early career researchers discuss some of the latest and most innovative work in AI.

Eight plenary talks cover a variety of topics and new grand challenges for AI. The IJCAI Awards section features this year's Computer and Thought Award lecture by Piotr Skowron, the John McCarthy Award lecture by Daniela Rus, and the Research Excellence Award lecture by Eugene Freuder. The IJCAI-PRICAI

2020 program includes 35 workshops and 47 tutorials, covering most aspects of AI and directed to a broad audience, to enable collaborative learning and exchange about new ideas and approaches in AI in an informal setting. Furthermore, the IJCAI Doctoral Consortium offers a forum for PhD students to present and discuss their work, obtaining feedback from senior researchers in the field.
In addition to the IJCAI-PRICAI 2020 AI Video Competition, whose submissions will be on display throughout the conference, and the Angry Birds Competition, which has been part of IJCAI program for several years, we are pleased to host this year's Automated Negotiating Agents Competition (ANAC 2020).

The IJCAI Opening Reception will be held on Monday evening in a virtual Japanese venue, where attendees can enjoy a variety of activities giving a flavour of Japanese traditions, including the customized virtual Japanese village with tea ceremony, Japanese artworks, and more. IJCAI-PRICAI 2020 will also provide online Japanese cultural demonstrations, such as Taiko drum, Geisha performance, Samurai demonstration, Swordsmith visit, and Zen practice.

Marie desJardins, Christian Bessiere and Takayuki Ito

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IJCAI-20 AWARDS

The IJCAI-20 Award for Research Excellence, the John McCarthy Award and the Computers and Thought Award are awarded by the IJCAI Board of Trustees, upon recommendation by the IJCAI-20 Awards Selection Committee, which consists this year of:

- Thomas Eiter, Vienna University of Technology (AUSTRIA)
- Maria Gini, University of Minnesota Twin Cities (USA)
- Subbarao Kambhampati, Arizona State University Tempe, (USA)
- Luc De Raedt, KU Leuven (BELGIUM)
- Chengqi Zhang, University of Technology Sydney (AUSTRALIA)
- Qiang Yang, Hong Kong University of Science and Technology, Hong Kong (CHINA)

The IJCAI Awards Selection Committee receives advice from members of the IJCAI-20 Awards Review Committee, who comment on the accuracy of the nomination material and provide additional information about the nominees. The IJCAI-20 Awards Review Committee is the union of the former Trustees of IJCAI, the IJCAI-20 Advisory Committee, the Program Chairs of the last three IJCAI conferences, and the past recipients of the IJCAI Award for Research Excellence and the IJCAI Distinguished Service Award, with nominees excluded.

IJCAI-20 AWARD FOR RESEARCH EXCELLENCE

The Research Excellence award is given to a scientist who has carried out a program of research of consistently high quality throughout an entire career yielding several substantial results. Past recipients of this honor are the most illustrious group of scientists from the field of Artificial Intelligence.

They are: John McCarthy (1985), Allen Newell (1989), Marvin Minsky (1991), Raymond Reiter (1993), Herbert Simon (1995), Aravind Joshi (1997), Judea Pearl (1999), Donald Michie (2001), Nils Nilsson (2003), Geoffrey E. Hinton (2005), Alan Bundy (2007), Victor Lesser (2009), Robert Anthony Kowalski (2011), Hector Levesque (2013), Barbara Grosz (2015), Michael I. Jordan (2016), Andrew Barto (2017), Jitendra Malik (2018) and Yoav Shoham (2019).

The winner of the 2020 Award for Research Excellence is **Eugene Freuder**, Professor Emeritus, School of Computer Science and Information Technology, University College Cork. Professor Freuder is recognized for his pioneering research in constraint-based reasoning and problem solving.

IJCAI-20 COMPUTERS AND THOUGHT AWARD

The Computers and Thought Award is presented at IJCAI conferences to outstanding young scientists in artificial intelligence. The award was established with royalties received from the book, Computers and Thought, edited by Edward Feigenbaum and Julian Feldman. It is currently supported by income from IJCAI funds. Past recipients of this honor have been: Terry Winograd (1971), Patrick Winston (1973), Chuck Rieger (1975), Douglas Lenat (1977), David Marr (1979), Gerald Sussman (1981), Tom Mitchell (1983), Hector Levesque (1985), Johan de Kleer (1987), Henry Kautz (1989), Rodney Brooks (1991), Martha Pollack (1991), Hiroaki Kitano (1993), Sarit Kraus (1995), Stuart Russell (1995), Leslie Kaelbling (1997), Nicholas Jennings (1999), Daphne Koller (2001), Tuomas Sandholm (2003), Peter Stone (2007), Carlos Guestrin (2009), Andrew Ng (2009),Vincent Conitzer (2011), Malte Helmert (2011), Kristen Grauman (2013), Ariel Procaccia (2015), Percy Liang (2016), Devi Parikh (2017), Stefano Ermon (2018) and Guy Van den Broeck (2019).

The winner of the 2020 IJCAI Computers and Thought Award is **Piotr Skowron**, Assistant Professor at Faculty of Mathematics, Informatics and Mechanics, University of Warsaw. Professor Skowron is recognized for his contributions to computational social choice, and to the theory of committee elections.

IJCAI-20 JOHN MCCARTHY AWARD

The IJCAI John McCarthy Award is intended to recognize established mid-career researchers, typically between fifteen to twenty-five years after obtaining their PhD, that have built up a major track record of research excellence in artificial intelligence. Nominees of the award will have made significant contributions to the research agenda in their area and will have a first-rate profile of influential research results.

The award is named for John McCarthy (1927-2011), who is widely recognized as one of the founders of the field of artificial intelligence. As well as giving the discipline its name, McCarthy made fundamental contributions of lasting importance to computer science in general and artificial intelligence in particular, including time-sharing operating systems, the LISP programming languages, knowledge representation, common-sense reasoning, and the logicist paradigm in artificial intelligence.

The award was established with the full support and encouragement of the McCarthy family.

Past recipients of this honor have been: Bart Selman (2015), Moshe Tennenholtz (2016), Dan Roth (2017), Milind Tambe (2018) and Pedro Domingos (2019).

The winner of the 2020 John McCarthy Award is **Daniela Rus**, Andrew and Erna Viterbi Professor of Electrical Engineering and Computer Science and Director of the Computer Science and Artificial Intelligence Laboratory (CSAIL) at MIT. Professor Rus is recognized for her contributions to the science and engineering of autonomy, and development of multi-agent algorithms.

DONALD E. WALKER DISTINGUISHED SERVICE AWARD

The IJCAI Distinguished Service Award was established in 1979 by the IJCAI Trustees to honor senior scientists in AI for contributions and service to the field during their careers. Previous recipients have been: Bernard Meltzer (1979), Arthur Samuel (1983), Donald Walker (1989), Woodrow Bledsoe (1991), Daniel G. Bobrow (1993), Wolfgang Bibel (1999), Barbara Grosz (2001), Alan Bundy (2003), Raj Reddy (2005), Ronald J. Brachman (2007), Luigia Carlucci Aiello (2009), Raymond C. Perrault (2011), Wolfgang Wahlster (2013), Anthony G. Cohn (2015), Erik Sandewall (2016), Ramon Lopez de Mantaras (2017), Craig Knoblock (2018) and Francesca Rossi (2019).

At IJCAI-20, the Donald E. Walker Distinguished Service Award will be given to **Toby Walsh**, Scientia Professor of Artificial Intelligence at UNSW, and leader of the Algorithmic Decision Theory group at Data61.bProfessor Walsh is recognized for his substantial contributions, as well as his extensive service to the field of Artificial Intelligence throughout his career.

2020 IJCAI-JAIR BEST PAPER PRIZE

From Skills to Symbols: Learning Symbolic Representations for Abstract High-Level Planning (2018)
by George Konidaris, Leslie Pack Kaelbling and Tomas Lozano-Perez

Honourable Mention:
Coactive Learning (2015)
by Pannaga Shivaswamy and Thorsten Joachims

Invited talks

SOCIALLY INTERACTIVE ARTIFICIAL INTELLIGENCE: CHALLENGES AND PERSPECTIVES

Elisabeth André
Universität Augsburg, Germany

AUTOMATED DECISION MAKING FOR SAFETY CRITICAL APPLICATIONS

Mykel Kochenderfer
Stanford University, USA

AD HOC AUTONOMOUS AGENT TEAMS: COLLABORATION WITHOUT PRE-COORDINATION

Peter Stone
The University of Texas at Austin and Sony AI, USA

ON USER UTILITY AND SOCIAL WELFARE IN RECOMMENDER ECOSYSTEMS

Craig Boutilier
Google Research, Mountain View, CA, USA

A MATHEMATICS VIEW OF DEEP NEURAL NETWORKS

Stéphane Mallat
Collège de France, PSL University, Paris, France

THE QUEST FOR THE PERFECT IMAGE REPRESENTATION

Tinne Tuytelaars
KU Leuven, Belgium

STUDIES ON AVATARS AND OUR FUTURE SOCIETY

Hiroshi Ishiguro
Department of Systems Innovation, Osaka University and ATR Hiroshi Ishiguro Laboratories, Japan

DOES PREDICTIVE CODING PROVIDE A UNIFIED THEORY OF ARTIFICIAL INTELLIGENCE?

Yukie Nagai
The University of Tokyo, Japan

Early Career Spotlight Talks

MULTIMODAL, GROUNDED, AND KNOWLEDGEABLE LANGUAGE UNDERSTANDING+GENERATION

Mohit Bansal

BRIDGING CAUSALITY AND LEARNING: HOW DO THEY BENEFIT FROM EACH OTHER?

Mingming Gong

UNDERSTANDING OVERPARAMETERIZED DEEP NEURAL NETWORKS: FROM OPTIMIZATION TO GENERALIZATIO

Quanquan Gu

LEARNING FROM USER AND ENVIRONMENT IN COMBINATORIAL OPTIMISATION

Tias Guns

SINGLE AND MULTI-AGENT PATH PLANNING

Daniel Harabor

TOWARDS TRUSTABLE EXPLAINABLE AI

Alexey Ignatiev

DEVELOPING AN INTEGRATED MODEL OF SPEECH ENTRAINMENT

Rivka Levitan

OPTIMIZATION LEARNING: PERSPECTIVE, METHOD, AND APPLICATIONS

Risheng Liu

FRONTIER OF SUBMODULAR MAXIMIZATION

Takanori Maehara

CLOSING THE LOOP: BRINGING HUMANS INTO EMPIRICAL COMPUTATIONAL SOCIAL CHOICE AND PREFERENCE REASONING

Nick Mattei

LEARNING LANGUAGE IN SIMULATION FOR REAL ROBOT INTERACTION

Cynthia Matuszek

LEARNING TO ANTICIPATE

Alex Schwing

MECHANISM DESIGN WITH UNCERTAINTY

Taiki Todo

HANDING CONSTRAINTS IN PROBABILISTIC PLANNING: PROBLEMS, ALGORITHMS, AND HEURISTICS

Felipe Trevizan

ONLINE LEARNING IN CHANGING ENVIRONMENTS

Lijun Zhang

Tutorial program

ID	Tutorial name	Tutorial URL
T1	Adversarial Machine Learning: On The Deeper Secrets of Deep Learning	http://lis.inf.kyushu-u.ac.jp/ijcai2020_tutorial.php
T2	Algorithm Configuration: Challenges, Methods and Perspectives	https://www.automl.org/tutorial_ac_ijcai20/
T3	Bayesian Optimization for Balancing Metrics in Recommender Systems	https://sites.google.com/view/ijcai2020-linkedin-bayesopt/home
T4	Belief and Opinion Dynamics and Aggregation in Multi-Agent Systems	https://sites.google.com/viewopinionaggregationmas/home
T5	Causal Inference and Stable Learning	http://pengcui.thumedialab.com/IJCAI20-tutorial.html
T6	Combinatorial Approaches for Data Feature Topic Selection and Summarization	https://sites.google.com/view/ijcaitutorial2020summarization/home
T7	Compressed Communication for Large-scale Distributed Deep Learning	https://aritra-dutta.github.io/IJCAI-2020/
T8	Compression of Deep Learning Models for NLP	https://www.humanizing-ai.com/model-compression.html
T9	Computational Game Theory and Its Applications	https://sites.google.com/view/ijcai-2020tutorialcgt/
T10	Current and Future Trends of Neural Knowledge Graph Representation and Reasoning	https://deepsemantic2020.github.io/deepsemantic2020/
T11	Conscious AI: Significance and Development	https://wba-initiative.org/en/12120/
T12	Ethics in Sociotechnical Systems	https://research.csc.ncsu.edu/mas/ethics/tutorial/
T13	Exploring Attention, Dynamic Information Flow, and Modularity as Ingredients for Generalization in Deep Learning	https://sites.google.com/view/ijcai-2020-tutorial/home
T14	Exploring Rare Categories on Graphs: Representation, Inference, and Generalization	https://sites.google.com/view/ijcai20-rca/home
T15	Fact-Checking, Fake News, Propaganda, and Media Bias: Truth Seeking in the Post-Truth Era	https://propaganda.qcri.org/ijcai20-tutorial/
T16	Fair AI in a Nutshell: Can Algorithms be Fair?	https://sites.google.com/view/fairai
T17	Federated Learning Systems: Comparative Studies and Hand-on Demonstrations	https://github.com/Xtra-Computing/PrivML/tree/master/Tutorial
T18	Federated Recommender Systems	https://www.fedai.org/research/conferences/ijcai-2020-tutorial/
T19	From Data Independence to Ontology Based Data Access (and back)	http://cs.uwaterloo.ca/~david/ijcai20
T20	Goal Recognition Design	https://sarahkeren.wixsite.com/sarahkeren-academics/goal-recognition-design-tutorial
T21	Heterogeneous Information Network Embedding and Applications	http://www.shichuan.org/IJCAI20_Tutorial.html
T22	Logic-Enabled Verification and Explanation of ML Models	https://alexeyignatiev.github.io/ijcai20-tutorial/index.html
T23	Machine Ethics State-of-the art and interdisciplinary challenges	http://slavkovik.com/ijcaitutorial2020.html
T24	Machine Learning and Game Theory	https://aperrault.github.io/IJCAI20MLandGT/
T25	Machine Learning for Combinatorial Optimization	http://ekhalil.com/tutorial/

T26	Machine learning for data streams with scikit-multiflow	https://streamlearningtutorial2020.netlify.com/
T27	Machine Learning for Drug Development	https://zitniklab.hms.harvard.edu/drugml
T28	Making Your Research Reproducible – Practical Advice on How to Implement the General Guidelines for Making Empirical AI Research Reproducible	https://folk.idi.ntnu.no/odderik/IJCAI20-Tutorial/
T29	Meta-learning and Automated Machine Learning: Approaches and Applications	http://media.cs.tsinghua.edu.cn/~wangx/ijcai2020Tutorial
T30	Mining User Interests from Social Media	https://sites.google.com/view/uimt2020/home
T31	Multimodal Learning in K-12 Education: Promise, Progress and Challenges	http://ai4ed.cc/tutorials/ijcai2020
T32	Multi-Stage Voting	http://www.bgu.ac.il/~omerlev/ijcai2020tutorial
T33	Music AI	http://musicalmetacreation.org/tutorials/music-ai-tutorial-ijcai2020/
T34	Next-Generation Recommender Systems and Their Advanced Applications	https://sites.google.com/view/shoujinwanghome/home/talks/ijcai-pricai-2020-tutorial
T35	Optimization & Learning Approaches to Resource Allocation for Social Good	https://learn2allocate.github.io/
T36	Probabilistic Circuits: Representations, Inference, Learning and Applications	https://web.cs.ucla.edu/~guyvdb/talks/IJCAI20-tutorial/
T37	Robust Multi-view Visual Learning: A Knowledge Flow Perspective	https://allanding.github.io/IJCAI_20_Tutorial_Website/index.html
T38	Rule-based Stream Reasoning	https://sites.google.com/view/stream-reasoning-tutorial
T39	Scalable Deep Learning: How far is one billion neurons?	https://sites.google.com/view/ijcai2020-sparse-training/home
T40	Theoretical Foundations of multi-agent Flexible Temporal Epistemic and Contingent Aspects of Planning	https://www.irit.fr/maftec2020/tutorial.php
T41	The role of AI in developing persistent personalized privacy and online deception awareness	https://sites.google.com/view/ijcai2020-aimeur-hage
T42	The Role of Knowledge Repositories in Information Retrieval	
T43	Towards Deep Explanation in Machine Learning Supported by Visual Methods	http://www.cwu.edu/~borisk/IJCAI2020/
T44	Trusting AI by Testing and Rating Third Party Offerings	https://sites.google.com/view/ijcai2020tut-aitrust/home
T45	Trustworthiness of Interpretable Machine Learning	https://ijcai20interpretability.github.io/
T46	Tutorial on Robot Audition Open Source Software HARK	https://www.hark.jp/ijcai-2020-tutorial-onrobot-audition-open-source-software-hark/
T47	Video-based Data Collection for Sports Tactical Analysis	https://hackmd.io/HbJxYsRTQiaaclegOCfNKg

Workshop program

ID	January 7 9am – 2pm JST	January 7 5pm – 10pm JST	January 8 9am – 2pm JST	January 8 5pm – 10pm JST	Workshop Name
W01					Principle and Practice of Data and Knowledge Acquisition Workshop (PKAW2020)
W02					8th Artificial Intelligence for Knowledge Management (AI4KM)
W03					Disease Computational Modeling
W04					5th International Workshop on Biomedical Informatics with Optimization and Machine learning (BOOM 2020)
W05					1st Workshop on Artificial Intelligence for Function, Disability, and Health (AI4Function)
W06					Joint Workshop on Human Brain and Artificial Intelligence (HBAI 2020)
W08					4th Workshop on Artificial Intelligence in Affective Computing (AffComp)
W09					AI for Social Good
W10					2nd AI-based Multimodal Analytics for Understanding Human Learning in Real-World Educational Contexts (AIMA4Edu)
W11					4th International Workshop on Multi-Agent Path Finding
W14					Data Science Meets Optimization (DSO)
W15					Monte Carlo Search 2020
W16					1st International Workshop on Heuristic Search in Industry
W17					AI for Internet of Things (AI4IoT 2020)
W18					1st International Workshop on Harmonious and Symbiotic Interaction in AI & Robotics (HSIAR2020)
W19					Robot Dialogues – Dialogue Models for Human-Robot Interaction
W20					Artificial Intelligence for Anomalies and Novelties
W21					2nd International Workshop on Bringing Semantic Knowledge into Vision and Text Understanding
W22					2nd Workshop on Financial Technology and Natural Language Processing (FinNLP)
W23					Linguistic and Cognitive Approaches to Dialogue Agents (LACATODA)
W24					AI4Narratives
W25					Neuro-Cognitive Modeling of Humans and Environments
W26					Tensor Network Representations in Machine Learning
W27					Knowledge-Based Reinforcement Learning (KBRL)
W28					6th Workshop on Semantic Deep Learning

W29					Learning Data Representation for Clustering
W30					2nd International Workshop on Deep Learning for Human Activity Recognition
W32					Federated Machine Learning for Data Privacy and Confidentiality
W34					Applied Mechanism Design
W35					3D Artificial Intelligence Challenge through 3D-FUTURE Benchmark
W36					Workshop on AI and Blockchains
W38					Workshop on Artificial Intelligence Safety (AISafety)
W40					2nd Workshop on AI & Food (AIxFood)
W41					Explainable Artificial Intelligence (XAI)

Doctoral Consortium

January 7th
9 am-2 pm JST
5 pm -10 pm JST

The doctoral consortium provides an opportunity for Ph.D. students to discuss their research interests and career objectives with established researchers in AI, to network with other participants, and to receive mentoring about career planning and career options. It will expose students to different areas of research within AI and help build professional connections within the international community of AI researchers.

Panels

AI FUTURES: REPORT FROM THE ONE HUNDRED YEAR STUDY ON ARTIFICIAL INTELLIGENCE (AI100)

January 13th
12:45-13:45 JST

The One Hundred Year Study on Artificial Intelligence, or AI100, has a unique mission: launch a study every five years, over the course of a century, to better track and anticipate how artificial intelligence ripples through society, shaping every facet of how people work, live, and play. The first study panel report, released in 2016, was well-received by researchers, educators, practitioners, and policy-makers. The second study panel report, expected in late 2021, is now underway. It will be based, in part, on two study-workshops commissioned by the AI100 standing committee, one entitled "Coding Caring" and the other "Prediction in Practice". This IJCAI roundtable will bring together members of the standing commiteee, the ongoing study panel, and the two workshops for a discussion about the themes of those workshops, the current study panel's efforts, and the overall trajectory of AI100.

Chairs: Peter Stone and Mary Gray

AI APPROACHES FOR COVID-19

January 15th
8:00-9:00 JST

Chair: Amulya Yadav

COMPUTATIONAL SUSTAINABILITY AND HUMAN WELL-BEING

January 12th
19:00-20:00 JST

Chairs: Michela Milano and Sabine Storandt

AI IN FINTECH: CHALLENGES AND FUTURE

January 14th
8:00-9:00 JST

AI in finance has been a lasting and increasingly vigorous area. It goes beyond the applications of AI in finance services. The era of new-generation AI inflames and embraces unprecedented financial innovations that facilitate, diversify, and transform our daily life, society, and economy. While enjoying and excited about numerous new AI applications in finance, one may be more curious about:

– What makes AI unrivaled in innovating FinTech?
– What financial challenges demand AI?
– What are new challenges brought by AI-empowered finance?
– What will next-generation AI-enabled FinTech look like? and
– Will AI bring more opportunities or challenges to future finance and economy?
Answering these big questions demand deep thinking, insight, knowledge, and experience in the interdisciplinary and cross-domain research, innovation, and practices. Four outstanding leaders from both academia and industry will share their unique insights and impactful experience on the above issues and more. You are welcome to attend this prestigious panel and join the webinar discussions.

Chair: Longbing Cao

Panelists
– Dr Usama Fayyad, CEO, Open Insights, USA
– Dr Amy Shi-Nash, Global Head of Analytics and Data Science at HSBC, UK
– Prof Michael Wellman, Professor, University of Michigan, USA
– Prof Qiang Yang, Chief AI Officer, WeBank/Chair Professor at HKUST, China

DIVERSITY IN AI
January 12th
12:45-13:45 JST

Chair: Neil Yorke-Smith

WOMEN IN AI
January 14th
22:00-23:00 JST

Chair: Neil Yorke-Smith

Artificial Intelligence Journal Awards

The AIJ Prominent Paper Award recognizes outstanding papers published not more than seven years ago in the AI Journal that are exceptional in their significance and impact.

2020 Prominent AIJ Paper Award winner is:
Conflict-Based Search for Optimal Multi-Agent Pathfinding
Guni Sharon, Roni Stern, Ariel Felner, Nathan R. Sturtevant
Volume 219, February 2015, Pages 40-66

The AIJ Classic Paper Award recognizes outstanding papers published at least 15 calendar years ago in the AI Journal that are exceptional in their significance and impact.

2020 Classical AIJ Paper Award winner is:
Temporal Constraint Networks
Rina Dechter, Itay Meiri, Judea Pearl
Volume 49, May 1991, Pages 61-95

COMPETITIONS

ANAC

Competition Schedule
To be announced.

Website URL
The competition webpage has been released at
http://web.tuat.ac.jp/~katfuji/ANAC2020/

The Automated Negotiating Agent Competition (ANAC) is an international tournament that has been running since 2010 to bring together researchers from the negotiation community. ANAC provides a unique benchmark for evaluating practical negotiation strategies in multi-issue domains and has the following aims: to provide an incentive for the development of effective and efficient negotiation protocols and strategies for bidding, accepting and opponent modeling for different negotiation scenarios;to collect and develop a benchmark of negotiation scenarios, protocols and strategies; to develop a common set of tools and criteria for the evaluation and exploration of new protocols and new strategies against benchmark scenarios, protocols and strategies;to set the research agenda for automated negotiation.
The previous competitions have spawned novel research in AI in the field of autonomous agent design which are available to the wider research community.
This year, we introduce five different negotiation research challenges: Agent Negotiation and Elicitation (GeniusWeb framework), Human-Agent Negotiation (IAGO framework), Werewolf Game (AIWolf Framework), Supply Chain Management (NegMas framework), HUMAINE (HUman Multi-Agent Immersive NEgotiation).
We expect innovative and novel agent strategies will be developed, and the submitted ANAC 2020 agents will serve as a negotiating agent repository to the negotiation community. The researchers can develop novel negotiating agents and evaluate their agents by comparing their performance with the performance of the ANAC 2020 agents.

IQ Test Competition

Competition Schedule
To be announced.

Website URL
The competition webpage has been released at
https://www.iqtest.pub/

The automated IQ test competition is a test that contains three major categories of IQ test including verbal comprehension, diagram reasoning and sequence reasoning. All questions are collected manually from genuine real IQ tests for human-beings.
Participants are required to develop AI programs to solve these problems automatically, providing some given dataset. Human players are also encouraged to participate the test as well.

Mahjong

Competition Schedule
To be announced.

Website URL
https://botzone.org.cn/static/gamecontest2020a.html

In this competition, your task is to develop an intelligent Mahjong agent that is able to compete with other agents as well as human players on the online AI platform, Botzone. We adopt Mahjong Competition Rules (MCR) in this challenge. We provide a sample program for Mahjong beginners. You are also provided with our judge program which can help you learn the rules of MCR and debug your AI. The final winner after two formal rounds will be the champion of the competition.

Abstractive Short Text Summarization (AbSTS) Competition

Competition Schedule
To be announced.

Website URL
To be announced.

Abstractive text summarization (AbTS) is a very challenging task in natural language processing (NLP). Two bottlenecks greatly limit the research on AbTS: 1) the lacking large scale corpus, 2) the difficulty for objective evaluation. The latter is a general issue for most of the natural language generation (NLG) tasks. To abate the former issue, we had published a million-scale of the abstractive summary corpus for short text in 2015, namely, the LCSTS corpus. Up to now, hundreds of NLP teams all over the world conduct their works with this corpus, which makes a very solid foundation of research on AbTS. With the development of language generation techniques and the increasing need for abstractive summarization, AbTS is becoming a hotspot

topic among NLP tasks. Nevertheless, comparing with other NLP tasks such as reading comprehension, image caption generation, machine translation, etc., the AbTS research still needs to be greatly boosted.

The Abstractive Short Text Summarization (AbSTS) Competition is purposed to provide an open platform of showing the most recent achievements on AbSTS techniques and to appeal to more NLP researchers working on AbTS. Since writing a good text summary or highlight sentence for a given text is also a challenging task for article writers, this competition may abstract not only NLP researchers but also a very wide range of audiences outside of the technique community.

The main task of the AbSTS Competition is generating highlight sentence(s) for a given Chinese short text with a maximum length of 140 Chinese characters. This highlight sentence(s) must be generated by generated rather than extracted from the original text and should cover the main information of the given text. Both quantitative and qualitative measures will be used at the final stage of the evaluation. The ROUGE measures will be used for quantity evaluation. For the quality evaluation, we will manually evaluate the top 5 or 10 systems according to their quantitative scores. The competition consists of two stages:
1) Model training stage: during this stage, the participants will train and optimize their systems. To support the participants training their models, the Large-scale Chinese Short Text Summarization (LCSTS) dataset is provided. This corpus is automatically constructed from the Chinese microblogging website Sina Weibo for promoting the research on automatic text summarization. This corpus consists of over 2 million real Chinese short texts with short summaries given by the writer of each text. There are 10,666 manually tagged short summaries with their corresponding short texts that will be provided as the development set. There is another test set without summaries provided to participants, they can submit their abstractive summaries for this test set each day. The quantitative evaluation will be conducted on this test set, and a leaderboard based on the quantitative evaluation results will be updated daily.
2) Finality stage: during this stage, a different test set will be provided to participants. One day is given to participants to run and submit their final results for the new test set. The quantitative evaluation is firstly conducted for submitted systems, and then qualitative evaluation is run for top-ranked systems. Final competition scores for the top-ranked systems are calculated by combining both quantitative and qualitative scores. For other systems, only quantity scores are counted.

NetML Challenge 2020

Competition Schedule
To be announced.

Website URL
To be announced.

Recent progress in AI, Machine Learning and Deep Learning has demonstrated tremendous success in many application domains such as games and computer vision. Meanwhile, there are challenges of proliferating data flows and increasing malicious traffic on today's Internet that call for advanced network traffic analysis tools. In this competition, we challenge the participants to leverage novel machine learning technologies to detect malicious flows and/or distinguish applications in a fine-grained fashion among network flows. This NetML Challenge 2020 is the 1st of the Machine Learning Driven Network Traffic Analytics Challenge. In this year's challenge, a collection of 1,318,976 flows in three different datasets are given including detailed flow features and labels. We also provide simple APIs and baseline machine learning models to demonstrate the usage of the datasets and evaluation metrics. There are 7 tracks for specific analytics objectives.

This challenge is organized by the Laboratory of Advanced Computer Architecture and Network Systems (ACANETS) at the University of Massachusetts Lowell, and sponsored by Intel Corporation.

iCartoonFace

Competition Schedule
To be announced.

Website URL
The competition webpage has been released at
http://challenge.ai.iqiyi.com/detail?raceId=5def71b4e9fcf68aef76a75e

Nowadays, the cartoon industry shows explosive growth, and more and more cartoon videos are produced every year. But how to automatically understand the content of these videos, especially the information of cartoon characters, is becoming more and more important. To promote the identification of cartoon characters and deepen understanding of cartoon video content, we held this iCartoonFace challenge. With the proposals of numerous large datasets, deep learning approaches have achieved remarkable progress in the field of face recognition and surpassed the human annotation performances. Neverthe-

less, the performance of deep learning approaches heavily rely on the availability of large training dataset. In this less-explored task of cartoon recognition, few datasets have been proposed for specific purposes, which can be roughly grouped into two categories. The first category is the caricature dataset, which is fundamentally based on real human identities. These caricatures images share strong similarities with the human portrait but exaggerate certain specific facial features. The second category focuses on the cartoon recognition task. However, this part datasets are either too small or too noisy and do not meet the demand of large-scale training data for deep learning approaches. Therefore, to enable the cartoon media understanding by learning approaches, the establishment of a large-scale, challenging cartoon dataset is in high demand.

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IJCAI-PRICAI 2020 MULTI-ZONE SCHEDULE

https://static.ijcai.org/ijcai-pricai-2020-schedule/

Participant registration for IJCAI-PRICAI 2020

ONSITE REGISTRATION: January 6-15, 2021 (noon, JST)
More info:
https://ijcai20.org/register/

IJCAI-PRICAI-2020 Exhibit program

SONY

Sony is a major electronics, entertainment and finance conglomerate. Sony continues to innovate in all industries: Mobile Communications, Games & Network Services, Imaging Products & Solutions, Home Entertainment & Sound, Semiconductor, Components, Movies, Music and Finance. Artificial Intelligence and Machine Learning are one of the key drivers in Sony's business success and the company has been at the forefront of developing Machine Learning technologies for finance, manufacturing, music and entertainment among many others.

AI JOURNAL

Elsevier is a world-leading provider of information solutions that enhance the performance of science, health, and technology professionals, empowering them to make better decisions, deliver better care, and sometimes make ground-breaking discoveries that advance the boundaries of knowledge and human progress. Elsevier publishes over 3,800 journals and also provides web-based, digital solutions including: ScienceDirect, Scopus, Elsevier Research Intelligence and ClinicalKey.

DIDI CHUXING

Didi Chuxing ("DiDi") is the world's leading mobile transportation platform. The company offers a full range of app-based transportation services for 550 million users across Asia, Latin America and Australia, including Taxi, Express, Premier, Luxe, Bus, Designated Driving, Enterprise Solutions, Bike Sharing, E-bike Sharing, Automobile Solutions and food delivery. Tens of millions of drivers who find flexible work opportunities on the DiDi platform provide 10 billion passenger trips a year. DiDi is committed to collaborating with policymakers, the taxi industry, the automobile industry and communities to solve the world's transportation, environmental and employment challenges with localized smart transportation innovations by leveraging its AI capabilities. By continuously improving user experience and creating social value, DiDi strives to build a safe, inclusive and sustainable mobile transportation ecosystem for cities of future.

HUAWEI

Huawei is a leading global ICT solutions provider. Through our dedication to customer-centric innovation and strong partnerships, we have established end-to-end capabilities and strengths across the carrier networks, enterprise, consumer, and cloud computing fields. We are committed to creating maximum value for telecom carriers, enterprises and consumers by providing competitive ICT solutions and services. Our products and solutions have been deployed in over 140 countries, serving more than one third of the world's population.

BAIDU

Founded on January 1st, 2000, Baidu, Inc. is the leading Chinese language Internet search provider and the largest Chinese website globally. Robin Li, co-founder of the company, initially developed the Rankdex site-scoring algorithm for search engine page rankings and received a U.S. patent for this technology.

Each day, Baidu responds to billions of search requests from more than 100 countries and regions, and it has grown to become the most important way for netizens to access Chinese information. With its mission to "make the complicated world simpler through technology", Baidu promotes constant technological innovation and is committed to providing products and services that better understand users. Since 2016, Baidu has positioned artificial intelligence as a strategic driver for the development of its business. Under the strategy of "strengthening the mobile foundation and leading in AI", Baidu has steadily improved its AI ecosystem, with productization and commercialization continuing to accelerate.

After years of commercial exploration, Baidu has formed a comprehensive AI ecosystem and is now at the forefront of the AI industry in terms of fundamental technological capability, speed of productization and commercialization, and "open" strategy. In the future, Baidu will continue to enhance user experience and accelerate the development of AI applications. Baidu's vision is to become a global leading technology company that understands its users and helps them grow.

MACNICA

Since it was established in 1972, Macnica has provided leading-edge semiconductors, electronic devices, networks and cyber security products with high value-added technology. More recently, Macnica has been actively developing new businesses in the fields of AI, IoT, automated driving and robotics, based on its strength in global sourcing and strategic planning for world-leading technologies. With its slogan "Co.Tomorrowing", Macnica connects leading-edge technologies with 'Macnica' intelligence to provide unique services and solutions, *creating social value and contributing to the betterment of future societies. Headquartered in Yokohama, Macnica's global business spans 24 countries and 81 locations worldwide. For more information, please visit https://www.macnica.co.jp/en/.

ALIBABA GROUP

Alibaba Group's mission is to make it easy to do business anywhere.

We enable businesses to transform the way they market, sell and operate and improve their efficiencies. We provide the technology infrastructure and marketing reach to help merchants, brands and other businesses to leverage the power of new technology to engage with their users and customers and operate in a more efficient way. Our businesses are comprised of core commerce, cloud computing, digital media and entertainment, and innovation initiatives. In addition, Ant Financial, an unconsolidated related party, provides payment and financial services to consumers and merchants on our platforms. A digital economy has developed around our platforms and businesses that consists of consumers, merchants, brands, retailers, third-party service providers, strategic alliance partners and other businesses.

PANASONIC

Panasonic Corporation is a worldwide leader in the development of diverse electronics technologies and solutions for customers in the consumer electronics, housing, automotive, and B2B businesses. The company, which celebrated its 100th anniversary in 2018, has expanded globally and now operates 582 subsidiaries and 87 associated companies worldwide, recording consolidated net sales of US$72.10 billion for the year ended March 31, 2019. Committed to pursuing new value through innovation across divisional lines, the company uses its technologies to create a better life and a better world for its customers. To learn more about Panasonic: http://www.panasonic.com/global.

LINE

Under its corporate mission "Closing the Distance," LINE is dedicated to create a world that seamlessly connects people, information, content, and services – both offline and online – anywhere, anytime, and at the most comfortable distance. In doing so, LINE has developed and operated various businesses and services in a wide range of fields, such as AI, fintech, entertainment, and ads.

Above all, AI is a strategically important area for LINE. The company heavily invests in and allocates resources to this domain to accelerate organization-wide R&D efforts in collaboration with NAVER, the Korea's largest search engine operator. With these initiatives, a variety of deep learning-based AI technologies have been developed and adopted to LINE's own services, including its messenger app and the AI assistant Clova. In addition, LINE BRAIN, a BtoB AI business, offers corporate clients the AI technologies that LINE has developed, such as chatbot, OCR, voice recognition, voice synthesis, and image recognition.

LINE also actively engages in basic research in machine learning-based technologies mainly for processing voice, language, and image. While already conducting joint projects with universities across Japan, LINE seeks to partner with overseas research institutes in the near future.

NEC

NEC Corporation has established itself as a leader in the integration of IT and network technologies while promoting the brand statement of "Orchestrating a brighter world." NEC enables businesses and communities to adapt to rapid changes taking place in both society and the market as it provides for the social values of safety, security, fairness and efficiency to promote a more sustainable world where everyone has the chance to reach their full potential.

NEC has R&D bases in 7 locations across the world, Japan, America, Europe, China, Singapore, Israel and India.

For more information, visit https://www.nec.com/en/global/rd/.

FUJITSU

Fujitsu is the leading Japanese information and communication technology (ICT) company, offering a full range of technology products, solutions, and services. Approximately 132,000 Fujitsu people support customers in more than 100 countries. We use our experience and the power of ICT to shape the future of society with our customers. Fujitsu Limited reported consolidated revenues of 4.0 trillion yen (US $36 billion) for the fiscal year ended March 31, 2019. For more information, please see www.fujitsu.com.

NTT DOCOMO

NTT DOCOMO, Japan's leading mobile operator with over 79 million subscriptions, is one of the world's foremost contributors to 3G, 4G and 5G mobile network technologies. Beyond core communications services, DOCOMO is challenging new frontiers in collaboration with a growing number of entities ("+d" partners), creating exciting and convenient value-added services that change the way people live and work. Under a medium-term plan toward 2020 and beyond, DOCOMO is pioneering a leading-edge 5G network to facilitate innovative services that will amaze and inspire customers beyond their expectations. For more information, please see https://www.nttdocomo.co.jp/english/.

TOSHIBA

For over 140 years, Toshiba Group has contributed to a sustainable future by applying innovative technologies to value creation. Today, our business domains center on energy, social infrastructure, electronic devices, and digital solutions (including IoT/AI), all essential supports for modern life and society based on the Cyber Physical Systems (CPS). By taking full advantage of CPS technology, we will complete the transition to become an infrastructure services company. Guided by the principles of The Basic Commitment of the Toshiba Group, "Committed to People, committed to the Future", Toshiba Group promotes global operations that contribute to the realization of a world where generations to come can live better lives.

ATTENDING

How to attend: Virtual Chair

The IJCAI – PRICAI 2020 Conference will be held at a virtual venue created by Virtual Chair on the gather.town platform. Like in a real life event you will be able to mingle in the lobby, visit sponsor booths and join conference rooms for workshops, technical sessions and plenary talks. Events that are happening on zoom will be linked to virtual rooms so you only have to walk into the right room to join the zoom session. Videos of pre-recorded talks, Q&As, poster sessions and general social interaction will all happen in the virtual venue.

More info:
https://ijcai20.org/how-to-attend/

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Enjoy!

RECEPTION PROGRAMMING
Opening Ceremony

January 11th at 22.15 JST through January 12th at 1.15 JST

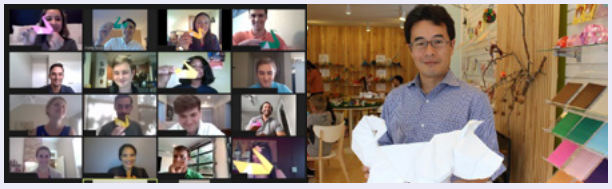
Four reception activities will happen in 30 minute increments with 15 minute breaks:

Round 1
TEA CEREMONY
8:30-9:00 EST/22:30- 23:00 JST

A performed tea ceremony and talk-through. Guests follow along with their own cup of tea

Enjoy a "Virtual Tea Experience" with an expert! The host will share information about tea differences, together guests will learn how to make a perfect cup of green tea at home, and also get some Arigato Japan hidden gem information for future travels to Japan. Of course, you can also ask questions and get delicious tea shopping recommendations!

Round 2
ORIGAMI ACTIVITY
9:15-9:45 EST/23:15- 23:45 JST



An origami expert takes the spotlight to show how to fold an origami piece, guests follow along with their own paper An email will be sent to make sure people are prepared with some nice paper!

Taro's Origami Studio is a space dedicated to the art and expression of origami folding. By folding origami one at a time with focus and care, one can enjoy the beauty of the process itself while your creativity is expressed from a sheet of paper to something completely new. Taro's Origami Studio offers Hands-on corners, classes and workshops for all levels of children and adults.
People can order their paper online from Taro's Origami paper store. https://www.tarosorigami.com/

Round 3
ART TOUR
10:00- 10:30 EST/ 24:00-24:30 JST

Art educators wait by digital Japanese art to explain the history and significance. Attendees will visit a virtual gallery displaying 5-7 selected pieces of art from the Japanese collection of the The Isabella Stewart Gardner Museum, Boston MA

About the Museum
The Isabella Stewart Gardner Museum is an art museum in Boston, Massachusetts, which houses significant examples of European, Asian, and American art. Its collection includes paintings, sculpture, tapestries, and decorative arts. It is originally the home of Isabella Stewart Gardner, whose will called for her art collection be permanently exhibited "for the education and enjoyment of the public forever". https://www.gardnermuseum.org Educators from the museum will be explaining selected pieces from their Japanese collection.

Round 4
ANIME WATCHING PARTY
10:45-11:15 EST/ 24:45- 1:15(+1) JST

5 anime shorts will be played on loop with a 15 min break Hiroo, an anime enthusiast will be in the watch-party room to answer any questions

Arigato Tours has a regular tour about Japanese Anime and food but for the IJCAI-PRICAI 2020 conference, tour leader, Hiroo, will build us our own custom talk and anime shorts watch party. Hiroo is a huge fan of Anime and will explain a little about each piece we're about to see, its history and significance before letting us watch about five short films lasting 30 mins total.

Terms and conditions disclaimer

(To be accepted at registration time)

Cancellation and Changes

All cancellations must be sent to registration@ijcai.org via e-mail. Any change of name will be dealt with as a cancellation and a new registration. In case of cancellations until January 6, 2021, payments will be refunded less U$ 50 processing fee. The processing fee of U$ 50 shall apply to any and all cancellations!

WARNING TO STUDENTS APPLYING FOR A GRANT/ VOLUNTEERING:

DO NOT register before you are notified! Otherwise, the processing fee shall apply!

No refund will be made for cancellations received after January 6, 2021 or to the registrants who fail to attend.

In case of conference cancellation for reasons beyond the control of IJCAI-PRICAI-20 organizers, the liability of the IJCAI-PRICAI-20 organizers is limited to the fees already paid by the registrants. IJCAI-PRICAI-20 organizers will not be responsible for any personal inconvenience that may arise.

General Disclaimer for Service providers:

In offering the Virtual Chair, the Gather.town, Zoom, Whova software and solutions, and all other service providers (hereinafter referred to as "Supplier(s)") for the IJCAI-PRICAI-20, the IJCAI-PRICAI-20 organizers act only in the capacity of agent for the Suppliers and have no control over personnel, equipment, servers, clouds or operations or other services included as part of the IJCAI-PRICAI-20 program. The IJCAI-20 organizers assume no responsibility for and will not be liable for any personal delay, inconvenience or other damage suffered by conference participants which may arise by reason of (1) any wrongful or negligent acts or omissions on the part of any Supplier or its employees, (2) any defect in or failure of any server, equipment or instrumentality owned, operated or otherwise used by any Supplier, or (3) any wrongful or negligent acts or omissions on the part of any other party not under control, direct or otherwise, of the IJCAI-PRICAI-20 organizers.

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The processing of personal data, such as the name, address, e-mail address, affiliation and payment information of a data subject shall always be in line with the General Data Protection Regulation (GDPR), and in accordance with the country-specific data protection regulations applicable to the IJCAI Organization.

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I am of legal age and have read the foregoing and fully understand the contents thereof.
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I agree to be bound to IJCAI-PRICAI-20 Code of Conduct. Any breach thereof may lead to the removal from the virtual conference without notice refund.

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IJCAI 2021 MONTREAL

The 30th International Joint Conference on Artificial Intelligence (IJCAI) will be held jointly in Montreal, Canada, from August 21st to August 26th, 2021.

Conference Chair
Maria Gini, University
of Minnesota Twin Cities, USA

Program Chair
Zhi-Hua Zhou,
Nanjing University, China

Local Arrangements
Committee Chairs
Joëlle Pineau
McGill University and Facebook, Canada

Doina Precup
McGill University, Canada
Irina Rish, Université
de Montréal, Canada

Bernhard Nebel
IJCAI Secretary-Treasurer Institut für Informatik Albert-Ludwigs-Universität Freiburg, Germany
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