

# Awards and Distinguished Papers

The IJCAI-16 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-16 Awards Selection Committee, which consists this year of Hector Levesque, University of Toronto (Canada); Joelle Pineau, McGill University (Canada); Peter Stone, University of Texas at Austin (USA); Sebastian Thrun, Udacity and Stanford University (Chair) (USA); and Qiang Yang, Hong Kong University of Science and Technology (Hong Kong, China)

The IJCAI Awards Selection Committee receives advice from members of the IJCAI-16 Awards Review Committee, who comment on the accuracy of the nomination material and provide additional information about the nominees. The IJCAI-16 Awards Review Committee is the union of the former Trustees of IJCAI, the IJCAI-16 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-16 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 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), and Barbara Grosz (2015).

The winner of the 2016 Award for Research Excellence is

Michael I. Jordan, Pehong Chen Distinguished Professor at the Department of Electrical Engineering and Computer Science, University of California, Berkeley.

Professor Jordan is recognized for his groundbreaking and impactful research in both the theory and application of statistical machine learning.

## IJCAI-16 John McCarthy Award

The Trustees of the International Joint Conferences on Artificial Intelligence (IJCAI) are pleased to announce the second IJCAI John McCarthy research award. This award is intended to recognize established mid-career researchers that have built up a major track record of research excellence in artificial intelligence. Recipients 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.

The winner of the 2015 inaugural John McCarthy Award was Bart Selman, Professor at the Department of Computer Science, Cornell University.

The winner of the 2016 John McCarthy Award is

Moshe Tennenholtz, Professor at the William Davidson Faculty of Industrial Engineering and Management Technion - Israel Institute of Technology.

Professor Tennenholtz is recognized for his research and leadership in multiagent systems and the interaction between AI and game theory.

## IJCAI-16 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) and Ariel Procaccia (2015).

The winner of the 2016 IJCAI Computers and Thought Award is

Percy Liang, Assistant Professor at the Artificial Intelligence Lab, Stanford University.

Professor Liang is recognized for his contributions to both the approach of semantic parsing for natural language understanding and better methods for learning latent-variable models, sometimes with weak supervision, in machine learning.

## 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) and Anthony G. Cohn (2015).

At IJCAI-16, the Donald E. Walker Distinguished Service Award will be given to Erik Sandewall, Professor of Computer Science (retired) at the Department of Computer and Information Science at Linköping University. Professor Sandewall is recognized for his substantial contributions, as well as his extensive service to the field of artificial intelligence throughout his career. He is one of the founders of IJCAI and he served as the editor-in-chief of the *Artificial Intelligence Journal* for many years and made significant contributions to the success of the journal and to the wider dissemination of AI into the scientific community.

## Distinguished Papers

The IJCAI-16 Distinguished Paper Award goes to

Hierarchical Finite State Controllers for Generalized Planning by Javier Segovia-Aguas, Sergio Jimenez and Anders Jonsson

Finite State Controllers (FSCs) are an effective way to represent sequential plans compactly. By imposing appropriate conditions on transitions, FSCs can also represent generalized plans that solve a range of planning problems from a given domain. This paper introduces the concept of hierarchical FSCs for planning by allowing controllers to call other controllers. It is shown that hierarchical FSCs can represent generalized plans more compactly than individual FSCs. Moreover, the call mechanism makes it possible to generate hierarchical FSCs in a modular fashion, or even to apply recursion. The paper also introduces a compilation

that enables a classical planner to generate hierarchical FSCs that solve challenging generalized planning problems. The compilation takes as input a set of planning problems from a given domain and outputs a single classical planning problem, whose solution corresponds to a hierarchical FSC.

The IJCAI-16 Distinguished Student Paper Award goes to

Using Task Features for Zero-Shot Knowledge Transfer in Lifelong Learning by David Isele, Eric Eaton and Mohammad Rostami

Knowledge transfer between tasks can improve the performance of learned models, but requires an accurate estimate of the inter-task relationships to identify the relevant knowledge to transfer. These inter-task relationships are typically estimated based on training data for each task, which is inefficient in lifelong learning settings where the goal is to learn each consecutive task rapidly from as little data as possible. To reduce this burden, the paper develops a lifelong reinforcement learning method based on coupled dictionary learning that incorporates high-level task descriptors to model the inter-task relationships. It is shown that using task descriptors improves the performance of the learned task policies, providing both theoretical justification for the benefit and empirical demonstration of the improvement across a variety of dynamical control problems. Given only the descriptor for a new task, the lifelong learner is also able to accurately predict the task policy through zero-shot learning using the coupled dictionary, eliminating the need to pause to gather training data before addressing the task.