Artificial Intelligence (AI)

Overview

Work in Artificial Intelligence in the EECS department at Berkeley involves foundational research in core areas of knowledge representation, reasoning, learning, planning, decision-making, vision, robotics, speech and language processing. There are also significant efforts aimed at applying algorithmic advances to applied problems in a range of areas, including bioinformatics, networking and systems, search and information retrieval. There are active collaborations with several groups on campus, including the campus-wide vision sciences group, the information retrieval group at the I-School and the campus-wide computational biology program. There are also connections to a range of research activities in the cognitive sciences, including aspects of psychology, linguistics, and philosophy. Work in this area also involves techniques and tools from statistics, neuroscience, control, optimization, and operations research. Berkeley Artificial Intelligence Research Lab (BAIR) (http://bair.berkeley.edu/).

Topics

Learning and Probabilistic Inference:

Graphical models. Kernel methods. Nonparametric Bayesian methods. Reinforcement learning. Problem solving, decisions, and games.

Knowledge Representation and Reasoning:

First order probabilistic logics. Symbolic algebra.

Search and Information Retrieval:

Collaborative filtering. Information extraction. Image and video search. Intelligent information systems.

Speech and Language:

Parsing. Machine translation. Speech Recognition. Context Modeling. Dialog Systems.

Vision:

Object Recognition. Scene Understanding. Human Activity Recognition. Active Vision. Grouping and Figure-Ground. Visual Data Mining.

Robotics:

Motion Planning, Computational Geometry. Computer assisted surgical and medical analysis, planning, and monitoring. Unmanned Air Vehicles

Research Centers

- Berkeley Artificial Intelligence Research Lab (http://bair.berkeley.edu/)
- Berkeley Laboratory for Information and System Sciences (http://wifo.eecs.berkeley.edu/)
- Center for Human Compatible Artificial Intelligence (http://humancompatible.ai/)
- CITRIS People and Robots (http://citris-uc.org/initiatives/robotics-2/)
- FHL Vive Center for Enhanced Reality (https://vivecenter.berkeley.edu/)
- International Computer Science Institute (https://www.icsi.berkeley.edu/icsi/about)
- VeHICaL: Verified Human Interfaces, Control, and Learning for Semi-Autonomous Systems (http://vehical.org)
- Video and Image Processing Lab (http://www-video.eecs.berkeley.edu)

Faculty

Primary

- Pieter Abbeel (/Faculty/Homepages/abbeel.html)
- Peter Bartlett (/Faculty/Homepages/bartlett.html)
- John DeNero (/Faculty/Homepages/denero.html)
- Anca Dragan (/Faculty/Homepages/anca.html)
- Alexei (Alyosha) Efros (/Faculty/Homepages/efros.html)
- Joseph Gonzalez (/Faculty/Homepages/jegonzal.html)
- Jiantao Jiao (/Faculty/Homepages/jiantao.html)
- Michael Jordan (/Faculty/Homepages/jordan.html)
- Daniel Klein (/Faculty/Homepages/klein.html)
- Sergey Levine (/Faculty/Homepages/svlevine.html)
- Michael Lustig (/Faculty/Homepages/mlustig.html)
- Yi Ma (/Faculty/Homepages/yima.html)
- Jitendra Malik (/Faculty/Homepages/malik.html) (coordinator)
- Gireeja Ranade (/Faculty/Homepages/gireeja.html)
- Jaijeet Roychowdhury (/Faculty/Homepages/jr.html)
- Stuart J. Russell (/Faculty/Homepages/russell.html)
- S. Shankar Sastry (/Faculty/Homepages/sastry.html)
- Dawn Song (/Faculty/Homepages/song.html)
- Martin Wainwright (/Faculty/Homepages/wainwright.html)

Secondary

- Venkat Anantharam (/Faculty/Homepages/anantharam.html)
- Ruzena Bajcsy (/Faculty/Homepages/bajcsy.html)
- Alexandre Bayen (/Faculty/Homepages/bayen.html)
- John F. Canny (/Faculty/Homepages/canny.html)
- Thomas Courtade (/Faculty/Homepages/courtade.html)
- Trevor Darrell (/Faculty/Homepages/darrell.html)
- Laurent El Ghaoui (/Faculty/Homepages/elghaoui.html)
- Richard J. Fateman (/Faculty/Homepages/fateman.html)
- Jerome A. Feldman (/Faculty/Homepages/feldman.html)
- Gerald Friedland (/Faculty/Homepages/friedland.html)
- Ken Goldberg (/Faculty/Homepages/goldberg.html)
- Marti Hearst (/Faculty/Homepages/hearst.html)
- Jennifer Listgarten (/Faculty/Homepages/listgarten.html)

- Ren Ng (/Faculty/Homepages/yirenng.html)
- Benjamin Recht (/Faculty/Homepages/brecht.html)
- Anant Sahai (/Faculty/Homepages/sahai.html)
- Alberto L. Sangiovanni-Vincentelli (/Faculty/Homepages/sangiovanni-vicentelli.html)
- Somayeh Sojoudi (/Faculty/Homepages/sojoudi.html)
- Avideh Zakhor (/Faculty/Homepages/zakhor.html)

Faculty Awards

- MacArthur Fellow: Dawn Song, 2010.
- Okawa Prize: Avideh Zakhor, 2004.
- National Academy of Sciences (NAS) Member: Jitendra Malik, 2015. Michael Jordan, 2010.
- National Academy of Engineering (NAE) Member: Jitendra Malik, 2011. Michael Jordan, 2010. S. Shankar Sastry, 2001. Alberto L. Sangiovanni-Vincentelli, 1998. Ruzena Bajcsy, 1997.
- American Academy of Arts and Sciences Member: Jitendra Malik, 2013. Michael Jordan, 2010. Ruzena Bajcsy, 2007. S. Shankar Sastry, 2003.
- Berkeley Citation: S. Shankar Sastry, 2018. Jerome A. Feldman, 2009.
- UC Berkeley Distinguished Teaching Award: John DeNero, 2018. Daniel Klein, 2010. Alberto L. Sangiovanni-Vincentelli, 1981.
- Sloan Research Fellow: Anca Dragan, 2018. Ren Ng, 2017. Michael Lustig, 2013. Benjamin Recht, 2011. Pieter Abbeel, 2011. Alexei (Alyosha) Efros, 2008. Dawn Song, 2007. Daniel Klein, 2007. Martin Wainwright, 2005.

Related Courses

- CS 188. Introduction to Artificial Intelligence (/Courses/CS188)
- CS 189/289A. Introduction to Machine Learning (/Courses/CS189)
- CS C280. Computer Vision (/Courses/CSC280)
- CS C281A. Statistical Learning Theory (/Courses/CSC281A)
- CS C281B. Advanced Topics in Learning and Decision Making (/Courses/CSC281B)
- CS 287. Advanced Robotics (/Courses/CS287)
- EE 290P. Advanced Topics in Electrical Engineering: Advanced Topics in Bioelectronics (/Courses/EE290P)

Academics (https://eecs.berkeley.edu/academics)

Undergrad Admissions & Programs (https://eecs.berkeley.edu/academics/undergraduate)

Graduate Admissions & Programs (https://eecs.berkeley.edu/academics/graduate)

Courses (https://eecs.berkeley.edu/academics/courses)

Prospective Women Students (https://eecs.berkeley.edu/academics/prospective-women)

Current Students (https://eecs.berkeley.edu/resources/students)

Research (https://eecs.berkeley.edu/research)

Areas (https://www2.eecs.berkeley.edu/Research/Areas/)

Centers & Labs (https://www2.eecs.berkeley.edu/Research/Areas/Centers/)

Projects (https://www2.eecs.berkeley.edu/Research/Projects/)

Technical Reports (https://www2.eecs.berkeley.edu/Pubs/TechRpts/)

PhD Dissertations (https://www2.eecs.berkeley.edu/Pubs/Dissertations/)

BEARS Symposium (https://eecs.berkeley.edu/research/bears/2019)

Joint Colloquium (https://eecs.berkeley.edu/research/colloquium)

People (https://eecs.berkeley.edu/people)

Directory (https://www2.eecs.berkeley.edu/Directories/directory-nostudents.html)

Leadership (https://eecs.berkeley.edu/people/leadership)

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Room Reservations (https://eecs.berkeley.edu/resources/facilities/room-reservations)

My EECS Info (https://www2.eecs.berkeley.edu/deptinfo)

For Students (https://eecs.berkeley.edu/resources/students)

For Grads (https://eecs.berkeley.edu/resources/grads)

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GSIs/Readers/Tutors (https://eecs.berkeley.edu/resources/gsis)

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(https://www.instagram.com/ucb_eecs/)

- Privacy Policy (https://eecs.berkeley.edu/privacy-policy)