Yisong Yue

Research Interests

Theory and application of statistical machine learning, with a particular focus on developing novel methods for interactive machine learning and structured machine learning.

Work History

Latitude AI
February 2023 - Present
Position: Principal Scientist

California Institute of Technology
September 2014 - Present
Position: Professor (May 2020 - Present)
Previously: Assistant Professor (September 2014 - May 2020)

Argo AI
January 2022 - February 2023
Position: Principal Scientist

Disney Research
August 2013 - August 2014
Position: Research Scientist

Carnegie Mellon University
September 2010 - August 2013
Position: Postdoctoral Researcher
Supervisors: Carlos Guestrin and Ramayya Krishnan

Cornell University
May 2006 - August 2010
Position: Research Assistant
Supervisors: Thorsten Joachims and Robert Kleinberg

Google
June 2009 - September 2009
Position: Search Quality Analyst Intern
Supervisor: Rajan Patel

Microsoft Research
May 2007 - August 2007
Position: Research Intern
Supervisor: Christopher Burges

Education

Cornell University
Ph.D. January 2011
Ph.D. in Computer Science
Graduate Minor in Statistics
Dissertation: New Learning Frameworks for Information Retrieval
Thesis Committee: Thorsten Joachims (advisor), Robert Kleinberg, Christopher Burges, Ping Li, John Hopcroft

University of Illinois at Urbana-Champaign
B.S. June 2005
Bachelor of Science in Computer Science
Graduated with Highest Honors (Summa Cum Laude)

Illinois Math and Science Academy
1998 - 2001

Selected Honors and Awards	Okawa Foundation Grant Recipient, 2018
	Best Reviewer, ICLR 2018
	Best Paper Award, ICRA 2020, ML4H 2021
	Best Student Paper Award, CVPR 2021
	Best Paper Nomination, WSDM 2011, ICDM 2014, SSAC 2017, R-AL 2020
	Microsoft Research Graduate Fellowship, 2008-2010

Advising

Postdocs Supervised

- Raul Astudillo, active
- Uriah Israel, active
- James Preiss, active
- Kamyar Azizzadenesheli, 2019-2020, Nvidia
- Yuxin Chen, 2017-2019, Faculty at University of Chicago
- Lu Gan, 2022-2023, Faculty at Georgia Tech
- Angie Liu, 2018-2021, Faculty at Johns Hopkins Univeresity
- Taehwan Kim, 2015-2017, Faculty at UNIST
- Ugo Rosolia, 2020-2021, Amazon
- Yanan Sui, 2016-2018, Faculty at Tsinghua University
- Romann Weber, 2015-2016, Disney Research
- Rose Yu, 2017-2018, Faculty at UC San Diego

Ph.D. Students Advised

- Geeling Chau, California Institute of Technology, active
- Alexander Farhang, California Institute of Technology, active
- Yujia Huang, California Institute of Technology, active
- Ivan Jimenez Rodriguez, California Institute of Technology, active
- Francesca-Zhoufan Li, California Institute of Technology, active
- Kejun (Amy) Li, California Institute of Technology, active
- Yiheng Lin, California Institute of Technology, active
- Hao Liu, California Institute of Technology, active
- Sabera Talukder, California Institute of Technology, active
- Guanzhi Wang, California Institute of Technology, active
- Xuefei (Julie) Wang, California Institute of Technology, active
- Fengze Xie, California Institute of Technology, active
- Jason Yang, California Institute of Technology, active
- Christopher Yeh, California Institute of Technology, active
- Hongkai Zheng, California Institute of Technology, active
- Jeremy Bernstein, California Institute of Technology, Ph.D. 2022, Postdoc at MIT
- Victor Dorobantu, California Institute of Technology, Ph.D. 2023, Postdoc at MIT
- Hoang Le, California Institute of Technology, Ph.D. 2019, Latitude AI
- Joseph Marino, California Institute of Technology, Ph.D. 2021, DeepMind

- Ellen Novoseller, California Institute of Technology, Ph.D. 2020, Army Research Laboratory
- Guanya Shi, California Institute of Technology, Ph.D. 2022, Faculty at CMU
- Jialin Song, California Institute of Technology, Ph.D. 2021, Nvidia
- Jennifer Sun, California Institute of Technology, Ph.D. 2023, Faculty at Cornell
- Cameron Voloshin, California Institute of Technology, Ph.D. 2023, Latitude AI
- Eric Zhan, California Institute of Technology, Ph.D. 2021, Latitude AI
- Stephan Zheng, California Institute of Technology, Ph.D. 2018, Salesforce AI

Teaching

Machine Learning & Data Mining. Core machine learning and data mining course offered to graduate students and advanced undergraduates. Taught at Caltech: Winter 2015, Winter 2016, Winter 2017, Winter 2018, Winter 2019, Winter 2020, Winter 2021, Winter 2024

Advanced Topics in Machine Learning. Advanced course on contemporary research topics in machine learning. Taught at Caltech: Spring 2016, Spring 2017, Spring 2018, Spring 2019, Spring 2020, Spring 2021, Spring 2022.

Projects in Machine Learning. Project-based course matching students to mentors on projects of mutual interest. Taught at Caltech: Fall 2016, Fall 2017, Winter 2018, Fall 2018, Winter 2019, Fall 2019, Winter 2020.

Tutorials
- "Neurosymbolic Programming." co-taught with Swarat Chaudhuri and Jennifer Sun, July 2022.
- "Imitation Learning." co-taught with Hoang M. Le, ICML 2018 Tutorial, Stockholm, Sweden, July 2018.
- "Practical Online Retrieval Evaluation." co-taught with Filip Radlinski, SIGIR 2011 Tutorial, Beijing, China, July 2011.
- "Learning to Rank." co-taught with Filip Radlinski, NESCAI 2008 Tutorial, Ithaca, NY, May 2008
- "An Introduction to Structured Output Learning Using Support Vector Machines." Microsoft Research Web Learning Group, Redmond, WA, August 2007.

Selected Professional Activites

Organizing Committee
- Senior Program Chair, ICLR 2024
- Communications Chair, ICML 2023
- Fundraising Chair, AISTATS 2016

Selected Other Service

Neurosymbolic Programming Summer School, 2022

AI for Science Workshop, @Caltech, 2018, 2019

Southern California Machine Learning Symposium, @Caltech, November 2016

Selected Publications

Geeling Chau, Christopher Wang, Sabera Talukder, Vighnesh Subramaniam, Saraswati Soedarmadji, Yisong Yue, Boris Katz, Andrei Barbu (2025) "Population Transformer: Learning Population-level Representations of Neural Activity" International Conference on Learning Representations (ICLR), 2025

Hongkai Zheng, Wenda Chu, Bingliang Zhang, Zihui Wu, Austin Wang, Berthy T. Feng, Caifeng Zou, Yu Sun, Nikola Kovachki, Zachary E. Ross, Katherine L. Bouman, Yisong Yue (2025) "InverseBench: Benchmarking Plug-and-Play Diffusion Models for Inverse Problems in Physical Sciences" International Conference on Learning Representations (ICLR), 2025

Jason Yang, Ravi G. Lal, James C. Bowden, Raul Astudillo, Mikhail A. Hameedi, Sukhvinder Kaur, Matthew Hill, Yisong Yue, Frances H. Arnold (2025) "Active Learning-Assisted Directed Evolution" Nature Communications, 2025

Chu Xin Cheng, Raul Astudillo, Thomas Desautels, Yisong Yue (2024) "Practical Bayesian Algorithm Execution via Posterior Sampling" Neural Information Processing Systems (NeurIPS), 2024

Dan Zhang, Sining Zhoubian, Ziniu Hu, Yisong Yue, Yuxiao Dong, Jie Tang (2024) "ReST-MCTS*: LLM Self-Training via Process Reward Guided Tree Search" Neural Information Processing Systems (NeurIPS), 2024

Michael OConnell*, Guanya Shi*, Xichen Shi, Kamyar Azizzadenesheli, Anima Anandkumar, Yisong Yue, Soon-Jo Chung. (2022) "Neural-Fly Enables Rapid Learning for Agile Flight in Strong Winds." Science Robotics, May 2022

Shreyansh Daftry, Neil Abcouwer, Tyler Del Sesto, Siddarth Venkatraman, Jialin Song, Lucas Igel, Amos Byon, Ugo Rosolia, Yisong Yue, Masahiro Ono. (2022) "MLNav: Learning to Safely Navigate on Martian Terrains." IEEE Robotics and Automation Letters (RA-L), May 2022

Ivan Dario Jimenez Rodriguez, Aaron D. Ames, Yisong Yue. (2022) "LyaNet: A Lyapunov Framework for Training Neural ODEs." International Conference on Machine Learning (ICML), July 2022.

Swarat Chaudhuri, Kevin Ellis, Oleksandr Polozov, Rishabh Singh, Armando Solar-Lezama and Yisong Yue (2021), "Neurosymbolic Programming", Foundations and Trends in Programming Languages: Vol. 7: No. 3, pp 158-243.

Guanya Shi, Kamyar Azizzadenesheli, Michael O'Connell, Soon-Jo Chung, Yisong Yue. (2021) "Meta-Adaptive Nonlinear Control: Theory and Algorithms." Neural Information Processing Systems (NeurIPS), December 2021.

Tianwei Yin, Zihui Wu, He Sun, Adrian V. Dalca, Yisong Yue, Katherine L. Bouman. (2021) "End-to-End Sequential Sampling and Reconstruction for MR Imaging." Machine Learning for Health (ML4H), December 2021.

Jennifer J. Sun, Ann Kennedy, Eric Zhan, David J. Anderson, Yisong Yue, Pietro Perona. (2021) "Task Programming: Learning Data Efficient Behavior Representations." IEEE Conference on Computer Vision and Pattern Recognition (CVPR), June 2021.

Dimitar Ho, Hoang M. Le, John Doyle, Yisong Yue. (2021) "Online Robust Control of Nonlinear Systems with Large Uncertainty." International Conference on Artificial Intelligence and Statistics (AISTATS), April 2021.

Jeremy Bernstein, Arash Vahdat, Yisong Yue, Ming-Yu Liu. (2020) "On the distance between two neural networks and the stability of learning." Neural Information Processing Systems (NeurIPS), December, 2020.

Ameesh Shah, Eric Zhan, Jennifer J. Sun, Abhinav Verma, Yisong Yue, Swarat Chaudhuri. (2020) "Learning Differentiable Programs with Admissible Neural Heuristics." Neural Information Processing Systems (NeurIPS), December, 2020.

Maegan Tucker, Ellen Novoseller, Claudia Kann, Yanan Sui, Yisong Yue, Joel Burdick, Aaron D. Ames. (2020) "Preference-Based Learning for Exoskeleton Gait Optimization." In International Conference on Robotics and Automation (ICRA), May 2020.

Abhinav Verma, Hoang M. Le, Yisong Yue, Swarat Chaudhuri. (2019) "Imitation-Projected Programmatic Reinforcement Learning." In Neural Information Processing Systems (NeurIPS), December 2019.

Hoang M. Le, Cameron Voloshin, Yisong Yue. (2019) "Batch Policy Learning under Constraints." In International Conference on Machine Learning (ICML), June 2019.

Guanya Shi, Xichen Shi, Michael O'Connell, Rose Yu, Kamyar Azizzadenesheli, Anima Anandkumar, Yisong Yue, Soon-Jo Chung. (2019) "Neural Lander: Stable Drone Landing Control using Learned Dynamics." In International Conference on Robotics and Automation (ICRA), Canada, May 2019.

Joseph Marino, Milan Cvitkovic, Yisong Yue. (2018) "A General Method for Amortizing Variational Filtering." In Neural Information Processes Systems (NeurIPS), December 2018.

Joseph Marino, Yisong Yue, Stephan Mandt. (2018) "Iterative Amortized Inference." In International Conference on Machine Learning (ICML), July 2018.

Hoang M. Le, Nan Jiang, Alekh Agarwal, Miroslav Dudk, Yisong Yue, Hal Daume III. (2018) "Hierarchical Imitation and Reinforcement Learning." In International Conference on Machine Learning (ICML), July 2018.

Yanan Sui, Vincent Zhuang, Joel Burdick, Yisong Yue. (2018) "Stagewise Safe Bayesian Optimization with Gaussian Processes." In International Conference on Machine Learning (ICML), July 2018.

Yanan Sui, Vincent Zhuang, Joel Burdick, Yisong Yue. (2017) "Multi-dueling Bandits with Dependent Arms." In Conference on Uncertainty in Artificial Intelligent (UAI), August 2017.

Yisong Yue, Carlos Guestrin. (2011) "Linear Submodular Bandits and their Application to Diversified Retrieval." In Neural Information Processing Systems (NeurIPS), December, 2011.

Yisong Yue, Josef Broder, Robert Kleinberg, Thorsten Joachims. (2012) "The K-armed Dueling Bandits Problem." Journal of Computer and System Sciences (JCSS), Special Issue on Learning Theory, DOI:10.1016/j.jcss.2011.12.028, May, 2012.

Thorsten Joachims, Thomas Hofmann, Yisong Yue, Chun-Nam Yu. (2009) "Predicting Structured Objects with Support Vector Machines." Communications of the ACM (CACM), Research Highlight, 52(11), 97–104, November 2009.