

NAN JIANG

CONTACT

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EDUCATION

PhD, Computer Science and Engineering 2011 – 2017
University of Michigan, Ann Arbor, MI, USA
Division: Artificial Intelligence Advisor: Satinder Singh

Bachelor of Engineering, Department of Automation 2007 – 2011
Tsinghua University, Beijing, China
Division: Control Theory and Application Graduate with Distinction

EMPLOYMENT

University of Illinois at Urbana-Champaign 2018 – present
Position: Assistant Professor. Department of Computer Science

Microsoft Research, New York City 2017 – 2018
Position: Postdoctoral Researcher. Machine Learning Group

Microsoft Research, New York City Summer 2016
Position: Research Intern. Mentor: John Langford

Microsoft Research, Redmond Summer 2015
Position: Research Intern. Mentor: Lihong Li

RESEARCH INTERESTS

Machine Learning, with focus on **Reinforcement Learning**.

PUBLICATIONS

On Oracle-Efficient PAC Reinforcement Learning with Rich Observations. ([pdf](#))
Christoph Dann, Nan Jiang, Akshay Krishnamurthy, Alekh Agarwal, John Langford, Robert E. Schapire.

(NIPS'18) *32nd Neural Information Processing Systems*, with *spotlight presentation*; also presented at: *12th NYAS Machine Learning Symposium*.

Completing State Representations Using Spectral Learning.

Nan Jiang, Alex Kulesza, Satinder Singh.

(NIPS'18) *32nd Neural Information Processing Systems*.

Open Problem: The Dependence of Sample Complexity Lower Bounds on Planning Horizon. ([pdf](#))

Nan Jiang, Alekh Agarwal.

(COLT'18) *31st Annual Conference on Learning Theory*.

Hierarchical Imitation and Reinforcement Learning. ([pdf](#))

Hoang M. Le, Nan Jiang, Alekh Agarwal, Miroslav Dudík, Yisong Yue, Hal Daumé III.
(ICML'18) *35th International Conference on Machine Learning*.

Markov Decision Processes with Continuous Side Information. ([pdf](#))

Aditya Modi, Nan Jiang, Satinder Singh, Ambuj Tewari.
(ALT'18) *29th International Conference on Algorithmic Learning Theory*.

PAC Reinforcement Learning with an Imperfect Model. ([pdf](#))

Nan Jiang.
(AAAI'18) *32nd AAAI Conference on Artificial Intelligence*.

Repeated Inverse Reinforcement Learning. ([pdf](#))

Kareem Amin*, Nan Jiang*, Satinder Singh. (*Equal contribution.)
(NIPS'17) *31st Neural Information Processing Systems*, with *spotlight presentation*; also presented at *Reinforcement Learning and Decision Making 2017*.

Contextual Decision Processes with Low Bellman Rank are PAC-Learnable. ([pdf](#))

Nan Jiang, Akshay Krishnamurthy, Alekh Agarwal, John Langford, Robert E. Schapire.
(ICML'17) *34th International Conference on Machine Learning*; also presented at *11th NYAS Machine Learning Symposium (with presentation award)*.

Doubly Robust Off-policy Value Evaluation for Reinforcement Learning. ([pdf](#))

Nan Jiang, Lihong Li.
(ICML'16) *33rd International Conference on Machine Learning*; also presented in *Workshop "Machine Learning for eCommerce" in Neural Information Processing Systems 2015*.

On Structural Properties of MDPs that Bound Loss due to Shallow Planning. ([pdf](#))

Nan Jiang, Satinder Singh, Ambuj Tewari.
(IJCAI'16) *25th International Joint Conference on Artificial Intelligence*.

Improving Predictive State Representations via Gradient Descent. ([pdf](#))

Nan Jiang, Alex Kulesza, Satinder Singh.
(AAAI'16) *30th AAAI Conference on Artificial Intelligence*.

Abstraction Selection in Model-based Reinforcement Learning. ([pdf](#))

Nan Jiang, Alex Kulesza, Satinder Singh.
(ICML'15) *32nd International Conference on Machine Learning*.

The Dependence of Effective Planning Horizon on Model Accuracy. ([pdf](#))

Nan Jiang, Alex Kulesza, Satinder Singh, Richard Lewis.
(AAMAS'15 **best paper**) *14th International Conference on Autonomous Agents and Multiagent Systems*; also presented in *Workshop "From Bad Models to Good Policies" in Neural Information Processing Systems 2014*.

Low-Rank Spectral Learning with Weighted Loss Functions. ([pdf](#))

Alex Kulesza, Nan Jiang, Satinder Singh.
(AISTATS'15) *18th International Conference on Artificial Intelligence and Statistics*.

Spectral Learning of Predictive State Representations with Insufficient Statistics. ([pdf](#))
Alex Kulesza, Nan Jiang, Satinder Singh.
(AAAI'15) *29th AAAI Conference on Artificial Intelligence*.

Improving UCT Planning via Approximate Homomorphisms. ([pdf](#))
Nan Jiang, Satinder Singh, Richard Lewis.
(AAMAS'14) *13th International Conference on Autonomous Agents and Multiagent Systems*.

INVITED TALKS

Seminar on Decision, Optimization, and Learning (DOL) at Caltech June 2018
Host: Yisong Yue.

Machine Learning Seminar at UIUC Apr. 2018
Host: Girish Chowdhary.

Conference on Information Sciences and Systems Mar. 2018
Session: Algorithmic Reinforcement Learning. Host: Mengdi Wang

DARPA Workshop: *Diverse Ways of Inferring Missions* Oct. 2017
Invited to present the work on repeated inverse RL.

Job Talk: *New results in statistical reinforcement learning* Feb. – Mar. 2017
University of Illinois Urbana-Champaign Host: Matus Telgarsky
University of California, Santa Barbara Host: Xifeng Yan
University of Maryland, College Park Host: Marine Carpuat
McGill University Host: Joelle Pineau
University of Massachusetts Amherst Host: Akshay Krishnamurthy
Toyota Technological Institute at Chicago Host: Matthew Walter
University of Minnesota Twin Cities Host: Arindam Banerjee

Carnegie Mellon University, Machine Learning Department Nov. 2016
Host: Emma Brunskill.

IBM Thomas J. Watson Research Center Aug. 2016
Host: Kartik Talamadupula.

International Joint Conference on Artificial Intelligence July 2016
Invited to present the AAMAS 2015 paper at the Sister Conference Best Paper track.

International Conference on Robotics and Automation May 2015
Invited to present the AAAI 2015 paper at the 50th Anniversary of Shakey.

Carnegie Mellon University, Machine Learning Department Mar. 2015
Host: Emma Brunskill.

AWARDS

Rackham Predoctoral Fellowship	Mar. 2016
CSE Honor Competition, 2nd Place Representing AI Division in CSE's annual research competition at UMich.	Nov. 2015
AAMAS 2015 Best Paper Award	May 2015

REVIEWING

Meta-reviewer	AAAI'19, AISTATS'19
Reviewer	ICML'16-18, IJCAI'16, AAAI'17-18, AISTATS'17-18, NIPS'17-18, JMLR
Auxiliary Reviewer	ALT'15'17, COLT'16, ICLR'18

TEACHING

—At UIUC—	
CS 598 Special Topics: Statistical Reinforcement Learning (F18)	
—At MSR NYC—	
COMS E6998.001 Bandits and RL @ Columbia University (F17)	Project Advisor
—At University of Michigan—	
STATS 710 Sequential Decision Making with mHealth Applications (F16)	Guest Lecturer
EECS 545 Machine Learning (W14)	Graduate Student Instructor
EECS 574 Computational Complexity (F13)	Graduate Student Instructor