

# NAN JIANG

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## CONTACT

Office: 3322 Siebel Center, 201 N Goodwin Ave, Urbana, IL 61801

Email: nanjiang@illinois.edu

Website: <http://nanjiang.cs.illinois.edu>

## 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**.

## PREPRINTS

**Model-based Reinforcement Learning in Contextual Decision Processes.** ([pdf](#))

Wen Sun, Nan Jiang, Akshay Krishnamurthy, Alekh Agarwal, John Langford.

## PUBLICATIONS

**On Oracle-Efficient PAC Reinforcement Learning with Rich Observations.** ([pdf](#))

Christoph Dann, Nan Jiang, Akshay Krishnamurthy, Alekh Agarwal, John Langford, Robert E. Schapire.

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

**Completing State Representations Using Spectral Learning.** ([pdf](#))

Nan Jiang, Alex Kulesza, Satinder Singh.

(NeurIPS'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.)  
(NeurIPS'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**

**AI Seminar at CSE, University of Michigan**

Nov. 2018

Host: Satinder Singh

**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

**Microsoft Research, NYC**

Jan. 2017

Host: John Langford

**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** Nov. 2015  
Representing AI Division in CSE's annual research competition at UMich.

**AAMAS 2015 Best Paper Award** May 2015

## REVIEWING

Meta-reviewer AAAI'19, AISTATS'19, ICML'19

Reviewer ICML'16-18, IJCAI'16, AAAI'17-18, AISTATS'17-18, NeurIPS'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