# Tengyang Xie

https://tengyangxie.github.io Email: tx10@illinois.edu

## RESEARCH INTERESTS

My interests lie broadly in **interactive learning**, **statistical machine learning**, and **high-dimensional probability**. My current research focuses on **batch reinforcement learning** (off-policy/offline RL) and **exploration**.

## EDUCATION

**University of Illinois at Urbana-Champaign** Urbana, IL
*Ph.D. Student* – Computer Science Aug. 2019 – Sept. 2022 (expected)
*Advisor:* Nan Jiang

**University of Massachusetts Amherst** Amherst, MA
*Ph.D. Student* – Computer Science Sept. 2016 – Aug. 2019
*Master of Science* – Computer Science Sept. 2016 – Feb. 2019

**University of Science of Technology of China** Hefei, Anhui, China
*Bachelor of Science* – Physics Sept. 2011 – Jun. 2015

## PUBLICATIONS

[1]. Tengyang Xie, Nan Jiang.
**Q* Approximation Schemes for Batch Reinforcement Learning: A Theoretical Comparison.**
In *Thirty-sixth Conference on Uncertainty in Artificial Intelligence (**UAI 2020**)*.

[2]. Tengyang Xie, Yifei Ma, Yu-Xiang Wang.
**Towards Optimal Off-Policy Evaluation for Reinforcement Learning with Marginalized Importance Sampling.**
In *Thirty-third Conference on Neural Information Processing Systems (**NeurIPS 2019**)*.
Spotlight presentation at the NeurIPS 2018 Workshop on Causal Learning.

[3]. Yu Bai, Tengyang Xie, Nan Jiang, Yu-Xiang Wang.
**Provably Efficient Q-Learning with Low Switching Cost.**
In *Thirty-third Conference on Neural Information Processing Systems (**NeurIPS 2019**)*.

[4]. Tengyang Xie*, Bo Liu*, Yangyang Xu, Mohammad Ghavamzadeh, Yinlam Chow, Daoming Lyu, Daesub Yoon.
**A Block Coordinate Ascent Algorithm for Mean-Variance Optimization.**
In *Thirty-second Conference on Neural Information Processing Systems (**NeurIPS 2018**)*.

## PREPRINTS

[5]. Philip Amortila*, Nan Jiang*, Tengyang Xie*.
**A Variant of the Wang-Foster-Kakade Lower Bound for the Discounted Setting.**
arxiv:2011.01075.

[6]. Tengyang Xie, Nan Jiang.
**Batch Value-function Approximation with Only Realizability.**
arxiv:2008.04990.

[7]. Tengyang Xie, Philip S. Thomas, Gerome Miklau.
**Privacy Preserving Off-Policy Evaluation.**
arxiv:1902.00174.

(* indicates equal contribution or alphabetic ordering)

## EXPERIENCE

**University of Illinois at Urbana-Champaign** Urbana, IL
*Research Assistant* Aug. 2019 – Present
*Advisor:* Nan Jiang

- I am currently working on batch RL (off-policy/offline RL) and exploration.

**Microsoft Research Lab** New York City, NY
*Research Intern (Remote)* May 2020 – Aug. 2020
*Mentors:* Alekh Agarwal, Ching-An Cheng, John Langford, Paul Mineiro, Ida Momennejad

- Conducted research on:
  (1) Batch reinforcement learning with non-exploratory data;
  (2) A novel and more general form of interactive learning.

**Amazon AI** Palo Alto, CA
*Research Intern* May 2018 – Aug. 2018
*Mentors:* Yu-Xiang Wang, Yifei Ma

- Proposed marginalized importance sampling (MIS) for off-policy evaluation (OPE). This is the first of OPE estimator which could attain the Markov property to reduce the variance. We also proved that the variance of the marginalized estimators could match the existed variance lower bound for the episodic MDPs.

**University of Massachusetts Amherst** Amherst, MA
*Research Assistant* Sept. 2016 – May 2019
*Advisors:* Gerome Miklau, Philip S. Thomas

- I worked with Prof. Gerome Miklau and Phil Thomas, on the problems in differential privacy and reinforcement learning.

## PROFESSIONAL SERVICES

- Conference Reviewer/Program Committee: NeurIPS (2020 2019), ICML (2020 2019), AISTATS (2020), AAAI (2020 2019).
- Journal Reviewer: Machine Learning Journal.
- Workshop Program Committee:
  NeurIPS 2019 Optimization Foundations of Reinforcement Learning Workshop.
  ICML 2020 Theoretical Foundations of Reinforcement Learning Workshop.
  NeurIPS 2020 Offline Reinforcement Learning Workshop.

## SELECTED HONORS AND AWARDS

| | |
|---|---|
| Wing Kai Cheng Fellowship | 2019 |
| University Fellowship | 2019 |
| NeurIPS Travel Award | 2018, 2019 |
| The Mathematical Contest in Modeling (MCM), Honorable Mention | 2014 |
| Outstanding Student Scholarship | 2012, 2013, 2014 |
| Outstanding Freshmen Scholarship | 2011 |
| China National Physics Olympiad, First Prize | 2010 |
| China National Physics Olympiad, Second Prize | 2009 |
| China National Mathematical Olympiad, Second Prize | 2009 |

## SKILLS

***Proficient***: Python, PyTorch, TensorFlow, MXNet, Matlab, LaTeX
***Experienced***: C, C++, Java, SQL, Mathematica