Tengyang Xie

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

RESEARCH INTERESTS

My research interests lie broadly in **reinforcement learning (RL)**, **nonconvex optimization**, and **statistical machine learning**. My current work focuses on off-policy RL and exploration. I am also interested in the intersection between theory of deep neural networks and reinforcement learning.

EDUCATION

University of Illinois at Urbana-Champaign Urbana, IL
Ph.D. Student – Computer Science Aug. 2019 – Present
Advisor: Nan Jiang

University of Massachusetts Amherst Amherst, MA
Ph.D. Student – Computer Science (GPA: 4.0/4.0) Sept. 2016 – Aug. 2019
Master of Science – Computer Science (GPA: 4.0/4.0) Sept. 2016 – Feb. 2019

University of Science of Technology of China Hefei, Anhui, China
Bachelor of Science – Physics (Major GPA: 4.0/4.3) Sept. 2011 – Jun. 2015

PUBLICATIONS

[1]. **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**)*.

[2]. 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**)*.

[3]. **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**)*.

(* indicates equal contribution or alphabetic ordering)

PREPRINTS

[4]. **Tengyang Xie**, Nan Jiang. $Q^\star$ Approximation Schemes for Batch Reinforcement Learning: A Theoretical Comparison. arxiv:2003.03924.

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

EXPERIENCE

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

- I am currently working on batch RL (i.e. off-policy RL) and exploration in RL, advised by Prof. Nan Jiang.

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

- Proposed a novel marginalized framework for designing the estimators of off-policy evaluation (OPE). This is the first series of OPE estimators which could utilize 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

Reviewer or Program Committee: NeurIPS 2019, ICML 2020 2019, AISTATS 2020, AAAI 2020 2019
Program Committee for NeurIPS 2019 Optimization Foundations of Reinforcement Learning Workshop

TEACHING

Teaching Assistant at University of Massachusetts Amherst:

- Programming with Data Structures (CS187). Spring 2019
- Introduction to Simulation (CS590M). Spring 2018
- Introduction to Programming with Python (CS119). Fall 2017

SELECTED COURSEWORKS

Computer Science: Deep Learning Theory, Machine Learning, Probabilistic Graphic Model, Reinforcement Learning, Data Structures and Algorithm, Advanced Algorithm, More Advanced Algorithms, Interactive Machine Learning, Database Design and Implementation

Mathematics & Physics: Mathematical Analysis, Linear Algebra, Probability Theory, Mathematical statistics, Real Analysis, Complex Analysis, Functional Analysis, Statistical Physics, Quantum Mechanics, Advanced Quantum Mechanics, Computational Physics (Monte Carlo Methods)

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, Silver Medalist (Top 10%)	2013, 2014
Outstanding Student Scholarship, Bronze Medalist (Top 20%)	2012
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

REFERENCE

Available upon request.