Shuo YANG

Department of Computer Science, University of Texas at Austin

Email: yangshuo_ut@utexas.edu   Website: yangshuo-ut.github.io

EDUCATION EXPERIENCE

Department of Computer Science, University of Texas, Austin   *08/2018 – Now*
➢   GPA: 4.0   Ph.D. student. Advisor: Sujay Sanghavi; Co-advisor: Inderjit Dhillon.

Department of Electrical Engineering, Tsinghua University, Beijing   *08/2014 – 07/2018*
➢   Major GPA: 92.35   Top 3 out of 140 in the department.

School of Economics and Management, Tsinghua University, Beijing   *09/2015 – 07/2018*
➢   Double Major in Economics

Electrical and Computer Engineering, University of Texas, Austin   *01/2017 – 05/2017*
➢   GPA: 4.0   International Exchange Student Program.

RLAI Lab, University of Alberta   *07/2017 – 09/2017*
➢   Summer internship, supervised by Richard Sutton.

INDUSTRY EXPERIENCE

Google   *06/2020 – 09/2020*
Student Researcher. Manager: Xiaodan Song & Denny Zhou   *Austin, TX (Remote)*
➢   Fast training of large-scale deep learning model (BERT).

Amazon   *06/2019 – 09/2019*
Applied Scientist Intern. Manager: Dan Hill   *Berkeley, CA*
➢   Customer search query understanding and inline search suggestion.

RESEARCH INTEREST

My research interest lies in theoretical machine learning, optimization and sequential decision making under uncertainty. My research goal is to build machine learning algorithms that are theoretical sound and efficient in runtime/space/sample complexity.

RESEARCH EXPERIENCE

Achieving Sublinear Time Complexity for Linear Bandit Problem   *08/2020 – 01/2021*
Advisor: Professor Sujay Sanghavi, Professor Inderjit Dhillon. University of Texas   *Austin, US*
➢   Extended existing solutions of one-time approximated Maximum Inner Product Search (MIPS) and provided theoretical guarantee for a sequence of adaptive queries.
➢   Combined the new MIPS solution with linear UCB/TS algorithms and achieved per-step time complexity sublinear to the number of arms, with regret bound the same as the original algorithms.

Online Assortment Optimization without Strict Preference Order   *01/2020 – 08/2020*
Advisor: Professor Sujay Sanghavi, Professor Inderjit Dhillon. Universty of Texas   *Austin, US*
➢   Studied the online assortment optimization problem without assuming the users to have strict preference order for all available items.
➢   Proposed a weak preference assumption that covers commonly seen models including multinomial logit model/random utility model, etc.
➢   Proved the regret lower bound and proposed an algorithm that achieves a matching regret bound.

[NeurIPS 2019]   *09/2018 – 05/2019*

Consistent Sparse Quadratic Regression in Sub-quadratic Time and Space   *Austin, US*

Advisor: Professor Sujay Sanghavi, University of Texas

➢ Developed a sub-quadratic time gradient estimation method for quadratic model.

➢ Combining the sketching method with iterative hard threshold, obtained a provable linear convergence rate and consistent parameter estimation for solving quadratic regression.

Electrical Market Equilibrium Analysis with Accelerated Gradient Descent   *09/2017 – 07/2018*

Advisor: Professor Qixin CHEN, Chongqing KANG, Tsinghua University   *Beijing, CN*

➢ The new method framed the electrical market bidding in a reduced form, gives a simple and accurate market model for equilibrium calculation.

➢ Integrated accelerated gradient descent algorithm to solve for the market equilibrium.

Reinforcement Learning: Fast Planning with Linear Dyna   *07/2017 – 09/2017*

Advisor: Professor Richard Sutton, University of Alberta   *Edmonton, CA*

➢ Developed a new planning method under the linear Dyna architecture.

➢ New method achieved the same data efficiency as previous Dyna method with linear time complexity and constant per-step computation. Suitable for large scale, long-term learning.

Automatic Curriculum Generation in Reinforcement Learning   *02/2017 – 07/2017*

Advisor: Professor Peter Stone, University of Texas   *Austin, US*

➢ Designed a method to generate agent-specific curriculum automatically. Empirical results have demonstrated a 40% learning efficiency increase.

➢ Improved the experiment environment setting, which extends the previous experiment to a complex domain and allows for a more flexible configuration of tasks.

GRADUATE COURSES

Fall, 2020

➢ Advanced Probability (Prof. Sanjay Shakkottai)

➢ Sublinear Algorithm (Prof. Eric Price)

➢ Wireless Networking (Prof. Lili Qiu)

Spring, 2020

➢ Markov Chains/Mixing Time (Prof. Joe Neeman)

➢ Statistical Machine Learning (Prof. Haris Vikalo)

Fall, 2019

➢ Online Learning (Prof. Sanjay Shakkottai)

➢ Randomized Algorithm (Prof. Eric Price)

➢ Natural Language Process (Prof. Greg Durrett)

➢ Deep Learning Seminar (Prof. Philipp Krahenbuhl)

Spring, 2019

➢ Large-Scale Optimization II (Prof. Constantine Caramanis)

➢ Algorithm: Techniques and Theory (Prof. Greg Plaxton)

➢ Theoretical Statistics (Prof. Purnamrita Sarkar)

Fall, 2018

➢ Large-Scale Optimization I (Prof. Sujay Sanghavi)

➢ Probability and Stochastic Process (Prof. Sanjay Shakkottai)