

YIFAN YANG

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EDUCATION

University of California, Santa Barbara (UCSB)

Sep 2021-Present

Ph.D. in Computer Science, advised by Prof. Zheng Zhang

Huazhong University of Science and Technology (HUST)

Aug 2017-Jun 2021

B.E. in Electric and Information Engineering

RESEARCH INTEREST

My research interest is in the field of Machine Learning, with a focus on Stochastic/Online Optimization, Bayesian Inference and Trustworthy AI (fairness & robustness).

PUBLICATIONS

Vflh: A Following-the-Leader-History Based Algorithm for Adaptive Online Convex Optimization with Stochastic Constraints

Yifan Yang, Lin Chen, Pan Zhou, Xiaofeng Ding Yang. Available at SSRN: <http://dx.doi.org/10.2139/ssrn.4040704>

Quantile context-aware social IoT service big data recommendation with D2D communication

Yifan Yang, Jie Xu, Zichuan Xu, Pan Zhou and Tie Qiu, *IEEE Internet Things J.*, vol. 7, no. 6, pp. 5533-5548.

RESEARCH PROJECT

Online Bayesian Sampling based on Stein Variational Gradient Descent (SVGD)

Supervisor: Prof. Zheng Zhang (UCSB), Dr. Chang Liu (MSR, Asia)

- Developing the online SVGD with an incremental stochastic gradient descent rule considering the likelihood and prior distribution.
- Explore a sub-linear increasing batch-size method to stabilize the gradient noise under the online stochastic optimization setting
- Analyzing the regret of online SVGD algorithm from the geometry of the Wasserstein space.
- Conducting Bayesian Neural Network experiment on both synthetic and image classification tasks.
- Plan to submit the paper to ICML 2023

Online Gradient-based Sample Selection for Fair and Robust Training

Supervisor: Prof. Zheng Zhang (UCSB), Dr. Alec Koppel (JP Morgan AI Research)

- Developing the first gradient-based sample selection algorithm with a linear time complexity compared with the $\mathcal{O}(N \log N)$ sorting method
- Considering the fairness and robustness constraints when doing the online sample selection
- Employing the online sample selection algorithm on both Logistic Regression and Neural Network (NN) model.
- Analyze the selection algorithm from the local regret perspective

Adaptive Online Convex Optimization with Stochastic Constraints

Supervisor: Prof. Pan Zhou (HUST)

- Developing an algorithm considering the adaptive problem with stochastic constraints.
- Theoretical analysis of the bound for the regret and constraints by bringing in multi-objective drift analysis.
- By definition the loss function as a linear function, we give the first regret lower bound for the adaptive algorithm based on the following-the-leading-history framework.
- Simulate the performance of the algorithm with Python.

IoT Service Recommendation System by Contextual Multi-armed Bandits Algorithm

Supervisor: Prof. Pan Zhou (HUST)

- Propose the first tree-based quantile bandits algorithm to deal with both quantifiable and unquantifiable big data in the IoT network.
- Design a personalized service data retrieval system to solve the recommendation problem.
- Propose a novel quantile concentration inequity to analyze our algorithm and prove a sublinear regret bound for the algorithm.
- Collecting real-world services data and verifying our system on the data on the MATLAB platform.

HONORS AND AWARDS

Academic Excellence Fellowship, UCSB	2021
Outstanding Graduate, HUST	2021
Learning Merit Scholarship, HUST	2017, 2018, 2019
National Encouragement Scholarship of China	2018

SERVICES

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TEACHING EXPERIENCE

Teaching Assistant, Introduction to Computer Science (CS 8W) at UCSB	Winter 2023
Teaching Assistant, Data Structures and Algorithms (CS 130A) at UCSB	Winter 2022
Reader, Data Structures and Algorithms (CS 130A) at UCSB	Fall 2021

TECHNICAL STRENGTHS

Programming Languages:	Python(PyTorch & TensorFlow), Matlab, C, \LaTeX
Languages:	Mandarin Chinese (native), English (proficient)