DEYI LIU

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EDUCATION

University of North Carolina at Chapel Hill (UNC) Aug. 2017 - Jun. 2022
Ph.D. in Operations Research *Advisor: Quoc Tran-Dinh*

Zhejiang University (ZJU) Sept. 2013 - Jun. 2017
B.S. in Mathematics and Applied Mathematics *Major GPA: 3.92/4*

PUBLICATION & PREPRINT

[1] An Optimal Hybrid Variance-Reduced Algorithm for Stochastic Composite Nonconvex Optimization

Deyi Liu, Quoc Tran-Dinh, Lam M. Nguyen.
arXiv Preprint 2008.09055

[2] A New Randomized Primal-Dual Algorithm for Convex Optimization with Optimal Last Iterate Rates

Q Tran-Dinh, **Deyi Liu**.
Optimization Methods and Software, 2022.

[3] New Primal-Dual Algorithms for A Class of Nonsmooth and Nonlinear Convex-Concave Minimax Problems

Yuzixuan Zhu*, **Deyi Liu***, Quoc Tran-Dinh.
SIAM Journal on Optimization, 2022.

[4] Robust and Generalizable Visual Representation Learning via Random Convolutions

Zhenlin Xu, **Deyi Liu**, Junlin Yang, Marc Niethammer.
International Conference on Learning Representations, ICLR 2021

[5] A Newton Frank-Wolfe Method for Constrained Self-Concordant Minimization

Deyi Liu, Volkan Cevher, Quoc Tran-Dinh.
Journal of Global Optimization, 2021

[6] Hybrid variance-reduced SGD algorithms for nonconvex-concave minimax problems

Quoc Tran-Dinh, **Deyi Liu**, Lam M. Nguyen.
34th Conference on Neural Information and Processing Systems, NeurIPS 2020

[7] An Inexact Interior-Point Lagrangian Decomposition Algorithm with Inexact Oracles

Deyi Liu, Quoc Tran-Dinh.
Journal of Optimization Theory and Applications, 2019.

EXPERIENCE

Research Scientist, Bytedance Aug. 2022 - Present
Train large-scale distributed machine learning model to help Douyin/TikTok video and ad recommendation systems. The machine learning technique we use include SGD, Adam, NAS, MMOE, and Transformer.

Research Assistant, University of North Carolina at Chapel Hill Sep. 2018 - Jun. 2022
Thesis: *Efficient and provable algorithms for convex optimization problems beyond Lipshitz continuous gradients.*

Work with Prof. Quoc Tran-Dinh to develope algorithms for large-scale optimization problems. My research area include self-concordance optimization, nonconvex-concave problems, stochastic algorothms, inexact Newton method, Frank-Wolfe method and robustic computer vision.

Research Assistant, North Carolina State University Jul. 2016 - Aug. 2016
Designe a numerical method to solve unbounded parabolic PDE in Financial Mathematics.

ACADEMIC SERVICE

Conference/Journal Reviewer: AISTATS (2019, 2022), ICML (2019, 2021, 2022), NIPS (2019, 2021, 2022), IEEE Conference on Decision and Control (2019), Computational Optimization and Applications (2019).

AWARDS

Outstanding Achievement Award (Top 1 in Ph.D. qualifying exam), UNC, USA 2017-2018

The Second-Prize of the National Talents Training, ZJU, China 2014-2015

The Second-class Scholarship for Outstanding Merits, ZJU, China 2013-2014

TEACHING ACTIVITIES

Teaching Assistant of STOR 415: Introduction to Optimization (*senior undergraduate level*), 2020 Fall

Teaching Assistant of STOR 641: Stochastic Models in Operations Research I (*graduate level*) 2018 Fall

Teaching Assistant of STOR 155: Introduction to Data Models (*fresh undergraduate level*) 2018 Spring

Teaching Assistant of STOR 445: Stochastic Modeling (*senior undergraduate level*) 2017 Fall