

Trang H. Tran

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(Updated June 20, 2022)

FIELDS OF INTEREST

Optimization, and Machine Learning/Deep Learning

EDUCATION

- 2020 – Present [School of Operations Research and Information Engineering, Cornell University](#)
Doctor of Philosophy, Major: Operations Research
PhD advisor: Prof. Katya Scheinberg
PhD co-advisor: Dr. Lam M. Nguyen
- 2019 – 2020 [Institute of Mathematics, Vietnam Academy of Science and Technology](#)
Graduate Study in Applied Mathematics (Dropped)
- 2015 – 2019 [Hanoi National University of Education](#)
Honor Class, Faculty of Mathematics
Degree of Bachelor, Classification: Excellent

RESEARCH EXPERIENCE

- 05/2022 [AI Research Intern](#)
- 08/2022 IBM Research, Thomas J. Watson Research Center, Yorktown Heights, NY
Supervisor: Dr. Lam M. Nguyen
[Research Assistant](#)
- 08/2021 Cornell University
- 05/2022 Supervisor: Prof. Katya Scheinberg

PUBLICATIONS

- 2022 [Nesterov Accelerated Shuffling Gradient Method for Convex Optimization.](#)
Trang H. Tran, Katya Scheinberg, Lam M. Nguyen
International Conference on Machine Learning (**ICML 2022**) (21.9% acceptance rate)
- 2021 [SMG: A Shuffling Gradient-Based Method with Momentum](#)
Trang H. Tran, Lam M. Nguyen, Quoc Tran-Dinh
International Conference on Machine Learning (**ICML 2021**) (21.47% acceptance rate)

PREPRINTS

- 2022 [On the Convergence to a Global Solution of Shuffling-Type Gradient Algorithms](#)
Lam M. Nguyen*, **Trang H. Tran***
Technical report, arXiv preprint, 2022 (*Under Review*)
- 2022 [New Perspective on the Global Convergence of Finite-Sum Optimization](#)
Lam M. Nguyen*, **Trang H. Tran***, Marten van Dijk
Technical report, arXiv preprint, 2022 (*Under Review*)

WORKING PAPERS

- 2022 [Finding Optimal Policy for Queueing Models: New Parameterization](#)
Trang H. Tran, Lam M. Nguyen, Katya Scheinberg
(*Under Review*)

PROFESSIONAL ACTIVITIES

- 2020 – Present **Program Committee – Reviewer (peer-reviewed conferences)**
International Conference on Machine Learning (ICML 2020 - 2022)
Conference on Neural Information Processing Systems (NeurIPS 2021 - 2022)
International Conference on Learning Representations (ICLR 2021 - 2022)
Conference on Artificial Intelligence (AAAI 2022)
International Conference on Artificial Intelligence and Statistics (AISTATS 2021 - 2022)
Conference on Uncertainty in Artificial Intelligence (UAI 2022)
- 2021 – Present **Reviewer (peer-reviewed journal)**
Machine Learning
Neural Networks
IEEE Transactions on Signal Processing
IEEE Transactions on Neural Networks and Learning Systems
- 2021 **Session Chair / Organizer**
INFORMS Annual Meeting 2021 – "Recent Advances in Stochastic Gradient Algorithms"
- 2021 **Program Committee – Reviewer (workshops)**
Optimization for Machine Learning: Beyond Worst-case Complexity (OPT 2021 – NeurIPS 2021 Workshop)
New Frontiers in Federated Learning: Privacy, Fairness, Robustness, Personalization and Data Ownership (NFFL 2021 – NeurIPS 2021 Workshop)

RESEARCH PROJECTS

- 2022 – Present **On the Convergence to a Global Solution of Shuffling-Type Gradient Algorithms**
Working under the supervision of Dr. Lam M. Nguyen
– Investigate a class of non-convex function called star- M -smooth-convex, which is more general than the class of star-convex smooth functions with respect to the minimizer (in the over-parameterized settings).
– Propose a new framework for the convergence of a shuffling-type gradient algorithm to a global solution, with a relaxed set of assumptions than the PL condition on the objective function.
- 2021 – Present **Nesterov Accelerated Shuffling Gradient Method for Convex Optimization**
Working under the supervision of Dr. Lam M. Nguyen and Prof. Katya Scheinberg
– Propose a new algorithm for the convex finite-sum problems, which integrates the traditional Nesterov's acceleration momentum with different shuffling sampling schemes.
– Prove an improved convergence rate in term of epochs, which is better than that of any other shuffling gradient methods in convex regime.
Published as a conference paper at ICML 2022
- 2020 – Present **Optimization for Queueing Models in Reinforcement Learning**
Working under the supervision of Prof. Katya Scheinberg and Dr. Lam M. Nguyen
– Investigate the optimization aspects of the queueing model as a Reinforcement Learning environment.
– Use the intrinsic properties of queueing network systems to optimize with probabilistic zeroth-order/first-order oracles
- 2020 – Present **New Perspective on the Global Convergence of Finite-Sum Optimization**
Working under the supervision of Dr. Lam M. Nguyen
– Present an alternative formulation for the finite-sum nonconvex optimization problems.
– Propose a novel framework that guarantees global convergence and exploits the structure of machine learning problems where the loss functions are convex.

2020 – 2021 [SMG: A Shuffling Gradient-Based Method with Momentum](#)

Working under the supervision of Dr. Lam M. Nguyen

– Develop a new shuffling gradient algorithm with momentum for solving the finite-sum minimization problems.

– Establish the state-of-the-art convergence rate for our method under standard assumptions using different learning rates and shuffling strategies.

Published as a conference paper at ICML 2021

HONORS & AWARDS

2022 [Top Reviewer](#)

Conference on Uncertainty in Artificial Intelligence (UAI 2022)

2021 [Outstanding Reviewer](#)

International Conference on Learning Representations (ICLR 2021)

Reviewer Award (Top 10%)

2020 [ORIE Field Fellowship](#)

Eleanor and Howard Morgan PhD'68 Graduate Fellowship, Fall 2020

2019 [Young Talent Scholarship Programme 2019](#)

From the Vingroup Innovation Foundation (VINIF) for outstanding students who are pursuing the domestic postgraduate study programmes

2016 – 2018 [Students Scholarship in National Program](#)

for the Development of Mathematics until 2020

2016 [First Prize on Algebra](#)

In Vietnam Mathematics Competition for University Students (nationwide award)

TALKS

10/2022 [Nesterov Accelerated Shuffling Gradient Method.](#)

INFORMS Annual Meeting 2022, Indianapolis, IN (upcoming)

07/2022 [Nesterov Accelerated Shuffling Gradient Method for Convex Optimization.](#)

International Conference on Machine Learning (ICML 2022), Baltimore, MD

10/2021 [Shuffling Gradient-Based Methods](#)

INFORMS Annual Meeting 2021, Anaheim, CA

07/2021 [SMG: A Shuffling Gradient-Based Method with Momentum](#)

International Conference on Machine Learning (ICML 2021), virtual conference

OTHER EXPERIENCES

[Teaching Assistant](#)

Spring 2021 Cornell University

ORIE 3510 Introduction to Engineering Stochastic Processes

SKILLS

[Technical](#) Python, MATLAB, PyTorch, TensorFlow, Keras, Gurobi.

[Language](#) Vietnamese (native), English (proficient)

REFERENCES

Katya Scheinberg, Ph.D.

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