Trang H. Tran

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(Updated March 4, 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

PUBLICATIONS

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 **Nesterov Accelerated Shuffling Gradient Method for Convex Optimization.**
Trang H. Tran, Lam M. Nguyen, Katya Scheinberg
Technical report, arXiv preprint, 2022

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

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)
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 EXPERIENCES

2021 – Present **Stochastic Zeroth-order/First-order Oracles in Optimization**
Working under the supervision of Prof. Katya Scheinberg
– Analyze the stochastic methods for continuous optimization problems.
– Investigate some fundamental properties of various probabilistic zeroth-order/first-order oracles with the aim to utilize that information to design effective optimization methods.

2020 – 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.

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

INDUSTRY EXPERIENCE

Summer 2022 **AI Research Intern (upcoming)**
IBM Research, Thomas J. Watson Research Center, Yorktown Heights, NY
Supervisor: Dr. Lam M. Nguyen

HONORS & AWARDS

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)

INVITED TALKS

10 – 2021 **Shuffling Gradient-Based Methods**
INFORMS Annual Meeting 2021, Anaheim, CA

OTHER EXPERIENCES

Research Assistant
Fall 2021 Cornell University
Supervisor: Prof. Katya Scheinberg

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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School of Operations Research and Information Engineering, Cornell University
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