

# Trang H. Tran

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(Updated August 20, 2022)

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## FIELDS OF INTEREST

Optimization, and Machine Learning/Deep Learning

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## 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

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## 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

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## 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)

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

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## 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)**  
Journal of Machine Learning Research (2022 – Present)  
Journal of Optimization Theory and Applications (2022 – Present)  
Machine Learning (2021 – Present)  
Neural Networks (2022 – Present)  
IEEE Transactions on Signal Processing (2021 – Present)  
IEEE Transactions on Neural Networks and Learning Systems (2022 – Present)
- 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)

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## 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*

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PATENTS APPLICATIONS

[1] [Training A Neural Network Using an Accelerated Gradient with Shuffling.](#)

Filed on July 14, 2022.

Lam M. Nguyen, **Trang H. Tran.**

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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)

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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

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OTHER EXPERIENCES

[Teaching Assistant](#)

Spring 2021 Cornell University

ORIE 3510 Introduction to Engineering Stochastic Processes

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SKILLS

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

Language Vietnamese (native), English (proficient)

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## REFERENCES

Katya Scheinberg, Ph.D.

Professor,

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<https://www.orie.cornell.edu/faculty-directory/katya-scheinberg>

Lam M. Nguyen, Ph.D.

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