

# Trang H. Tran

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(Updated February 10, 2023)

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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

2015 – 2019 [Hanoi National University of Education](#)

Honor Class, Faculty of Mathematics

Degree of Bachelor, Classification: Excellent

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## RESEARCH EXPERIENCE

05/2023 – 08/2023 [AI Research Intern \(upcoming\)](#)

IBM Research, Thomas J. Watson Research Center, Yorktown Heights, NY

05/2022 – 08/2022 [AI Research Intern](#)

IBM Research, Thomas J. Watson Research Center, Yorktown Heights, NY

Supervisor: Dr. Lam M. Nguyen

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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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## TECHNICAL REPORTS

2022 [An End-to-End Time Series Model for Simultaneous Imputation and Forecast](#)

**Trang H. Tran**, Lam M. Nguyen, Kyongmin Yeo, Nam Nguyen, Dzung Phan, Roman Vaculin, Jayant Kalagnanam

Technical report, 2022 (*Under Review*)

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

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

- 02 – 2023 [Workshop Organizer](#)  
*When Machine Learning meets Dynamical Systems: Theory and Applications.*  
Lam M. Nguyen, **Trang H. Tran**, Wang Zhang, Subhro Das and Tsui-Wei Weng.  
Workshop at the 37th Conference on Artificial Intelligence (AAAI 2023)
- 2020 – Present [Program Committee – Reviewer \(peer-reviewed conferences\)](#)  
International Conference on Machine Learning (ICML 2020 - 2023)  
Conference on Neural Information Processing Systems (NeurIPS 2021 - 2022)  
International Conference on Learning Representations (ICLR 2021 - 2023)  
Conference on Artificial Intelligence (AAAI 2022)  
International Conference on Artificial Intelligence and Statistics (AISTATS 2021 - 2023)  
Conference on Uncertainty in Artificial Intelligence (UAI 2022 - 2023)  
Conference on Computer Vision and Pattern Recognition (CVPR 2023)
- 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)
- 2022 – Present [Member](#)  
Editorial Board, Machine Learning Journal
- 2021 – Present [Session Chair / Organizer](#)  
INFORMS Annual Meeting 2022 – "Optimization for Machine Learning"  
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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## PATENTS APPLICATIONS

- [1] [Time Series Forecasting Using Multivariate Time Series Data With Missing Values.](#)  
Filed on February 1st, 2023.  
Lam M. Nguyen, **Trang H. Tran**, Kyongmin Yeo, Nam Nguyen, Dzung Phan, Roman Vaculin, Jayant Kalagnanam.
- [2] [Training A Neural Network Using an Accelerated Gradient with Shuffling.](#)  
Filed on July 14th, 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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## RESEARCH PROJECTS

- 2022 – Present [Adaptive Framework for Time Series: Forecasting with Missing Data](#)  
*Summer intern project at IBM - working under the supervision of Dr. Lam M. Nguyen*  
– Propose an adaptive multi-task framework for time series data, which simultaneously imputes the missing entries and makes a multiple-step ahead prediction.  
– Perform experiments with our framework and show good performance of our method over existing approaches in both tasks.
- 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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## TALKS

- 01/2023 [Shuffling Gradient Methods for Finite-sum Optimization.](#)  
Institute of Mathematics, Vietnam Academy of Science and Technology, Hanoi, Vietnam
- 10/2022 [Nesterov Accelerated Shuffling Gradient Method.](#)  
INFORMS Annual Meeting 2022, Indianapolis, IN
- 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 - Cornell University

- Fall 2022 MATH 2940 Linear Algebra for Engineers  
Spring 2021 ORIE 3510 Introduction to Engineering Stochastic Processes  
Holding discussion sections, grading and other duties.

### Mentorship

- 06/2022 – 05/2023 [Angelos Assos](#)  
Undergraduate student, Computer Science and Mathematics, Massachusetts Institute of Technology. (co-advise with Dr. Lam Nguyen and Prof. Luca Daniel)

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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.

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