

Hoang Huy Nguyen

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Education

Georgia Institute of Technology

Ph.D. in Algorithms, Combinatorics, and Optimization

Atlanta, GA

2021-2027 (expected)

- Advisor: Professor Siva Theja Maguluri

Minerva Schools at KGI

Bachelor of Science, Computational Sciences

San Francisco, CA

2021

Employment History

Georgia Institute of Technology

Graduate Research Assistant

Atlanta, GA, USA

08/2022 – Present

- Developing mixing time frameworks for discrete space Markov chains with applications to queuing systems.
- Developing finite-time and asymptotic convergence guarantees for Stochastic Approximation methods.

Google DeepMind

Student Researcher

Mountain View, CA, USA

05/2024 – 08/2025

- Developed heuristic models and test-time algorithms for LLMs to solve Math Olympiad problems.
- Developed test-time heuristic algorithms and benchmarks for AlphaGeometry 2.0.
- Our team won a Silver Medal at [IMO 2024](#) and a Gold Medal at [IMO 2025](#).

VinAI Research (now Qualcomm AI)

AI Resident

Hochiminh City, Vietnam

07/2020 – 07/2021

- Researched Domain Adaptation methods and computational methods for Optimal Transport.

Awards and Fellowships

IBM Ph.D. Fellowship	\$40000	Jan. 2026
ACM SIGMETRICS Student Research Contest 2025	Second Prize	Jun. 2025
ARC-ACO Fellowship Award	\$6000	Nov. 2023
Stewart Topper Fellowship Award	\$3000	Feb. 2021
University Physics Modeling Contest	Silver Medal	Nov. 2017
Way to Olympia Peak academic game show broadcasted by VTV	Finalist	Aug. 2015
International Mathematical Olympiad	Silver Medal	Jul. 2015
Sharygin All-Russian Geometry Olympiad	Third-Prize	Aug. 2013

Submitted or Working Papers

- [S4] “Mixing-time of the Join-the-Shortest-Queue system in the Heavy Traffic regime”

Hoang Huy Nguyen, Siva Theja Maguluri

In Preparation

- [S3] “Mixing Time Analysis of Abandonment Queues: A Two-Pronged Attack Via Lyapunov Drift and Bakry-Émery”

Hoang Huy Nguyen, Ijay Narang, Aditya Lonkar, Siva Theja Maguluri

In submission to SIGMETRICS 2027

- [S2] “Almost Sure Convergence of Stochastic Approximation: An Interplay of Noise and Step Size”

Hoang Huy Nguyen*, Quang Dinh Thien Nguyen*, Duc Anh Nguyen, Siva Theja Maguluri

In submission to SIGMETRICS 2027

* Equal contributors

- [S1] “Finite-time Behavior of Erlang-C Model: Mixing Time, Mean Queue Length and Tail Bounds”.
Hoang Huy Nguyen, Sushil Varma, Siva Theja Maguluri
Major Revision at Operations Research.

Journal and Conference Publications

- [P10] "Stochastic Approximation for Nonlinear Discrete Stochastic Control: Finite-Sample Bounds".
Hoang Huy Nguyen, Siva Theja Maguluri
IEEE Transactions on Automatic Control 2026.
- [P9] “Gold-medalist Performance in Solving Olympiad Geometry with AlphaGeometry2”
Trieu Trinh, Yuri Chervonyi, Xiaomeng Yang, Mirek Olsak, **Hoang Huy Nguyen**, Marcelo Menegali,
Junehyuk Jung, Vikas Verma, Thang Luong, Quoc Le
Journal of Machine Learning Research (JMLR), 2025
Part of Google DeepMind’s system that won Silver at IMO 2024 and Gold at IMO 2025.
- [P8] “Creativity or Brute Force? Using Brainteasers as a Window into the Problem-Solving Abilities of Large Language Models”.
Simeng Han, Stephen Xia, Grant Zhang, Howard Dai, Chen Liu, Lichang Chen, **Hoang Huy Nguyen**,
Hongyuan Mei, Jiayuan Mao, R. Thomas McCoy
NeurIPS 2025.
- [P7] “IMO-Bench - Towards Robust Evaluation for Mathematical Reasoning”
Thang Luong, Dawsen Hwang*, **Hoang H. Nguyen***, Golnaz Ghiasi*, Yuri Chervonyi*, Insuk Seo*, Junsu Kim*, Garrett Bingham, Swaroop Mishra, Alex Zhai, Clara Huiyi Hu, Henryk Michalewski, Jimin Kim,
Jeonghyun Ahn, Junhwi Bae, Xingyou Song, Trinh H. Trieu, Quoc V Le, Junehyuk Jung
EMNLP 2025
* Core and equal contributors
Part of Google DeepMind’s system that won Silver at IMO 2024 and Gold at IMO 2025.
- [P6] “Widespread underestimation of rain-induced respiration pulses in global drylands”.
Ngoc B Nguyen, Mirco Migliavacca, Maoya Bassiouni, Dennis D Baldocchi, Laureano A Gherardi, Julia K Green, Dario Papale, Markus Reichstein, Kai-Hendrik Cohrs, Alessandro Cescatti, Tuan Dung Nguyen,
Hoang H. Nguyen, Quang Minh Nguyen, Trevor F Keenan
Nature Geoscience 2025.
2025 FLUXNET paper of the year
- [P5] “Finite-time Behavior of Erlang-C Model: Mixing Time, Mean Queue Length and Tail Bounds”.
Hoang Huy Nguyen, Sushil Varma, Siva Theja Maguluri
ACM SIGMETRICS 2025.
ACM SIGMETRICS 2025 Student Research Contest Second Prize.
Conference version of [S1].
- [P4] “Foundation Model and Temporal Priors-guided Transductive Few-shot Action Recognition”.
Bach Vu, **Hoang Nguyen**, Quang M. Nguyen, Duong Le, Hieu Pham, Phi Le Nguyen, Lam M. Nguyen
ICASSP 2025.
- [P3] "On Partial Optimal Transport: Duality, Gradient Methods and Infeasibility of Sinkhorn".
Duc Anh Nguyen, Dung Tuan Nguyen, Quang Minh Nguyen, **Hoang Huy Nguyen**, Lam Minh Nguyen,
Kim Chuan Toh
Proceedings of the AAAI Conference on Artificial Intelligence 2024.
- [P2] "Stochastic approximation for nonlinear discrete stochastic control: Finite-sample bounds for exponentially stable systems".
Hoang Huy Nguyen, Siva Theja Maguluri
IEEE CDC 2023.
Conference version of [P10].
- [P1] "On Unbalanced Optimal Transport: Gradient Methods, Sparsity, and Approximation Error".

Workshop and Other Publications

- [O4] “Almost Sure Convergence of Nonlinear Stochastic Approximation under General Moment Assumption”
Duc Anh Nguyen, Quang Dinh Thien Nguyen, **Hoang Huy Nguyen**, Siva Theja Maguluri
NeurIPS MLxOR Workshop 2025
Workshop version of [S2].
- [O3] “Gemini 2.5: Pushing the Frontier with Advanced Reasoning, Multimodality, Long Context, and Next Generation Agentic Capabilities”
Gheorghe Comanici, Eric Bieber, Mike Schaekermann, Ice Pasupat, Noveen Sachdeva, Inderjit Dhillon,...,
Hoang Nguyen,...
Technical report. Preprint: [arXiv:2507.06261](https://arxiv.org/abs/2507.06261)
- [O2] “Gemini 1.5: Unlocking Multimodal Understanding Across Millions of Tokens of Context”
Rohan Anil, Sebastian Borgeaud, Jean-Baptiste Alayrac, Jiahui Yu, Radu Soricut, Johan Schalkwyk, Andrew M. Dai,..., **Hoang Nguyen**,...
Technical report. Preprint: [arXiv:2403.05530](https://arxiv.org/abs/2403.05530)
- [O1] “Stochastic Constrained Decentralized Optimization for Machine Learning with Fewer Data Oracles: a Gradient Sliding Approach”
Hoang Huy Nguyen, Yan Li, Tuo Zhao
Preprint: [arXiv:2404.02511](https://arxiv.org/abs/2404.02511)

Patents

- [T1] “Neuro-Symbolic For Solving Reasoning Tasks”
Trieu Trinh, Yuri Chervonyi, Xiaomeng Yang, Mirek Olsak, Hoang Nguyen, Junehyuk Jung, Thang Luong, Quoc Le
Filed.

Books

- [B2] “Tuyển tập đề thi Olympic kinh tế Việt Nam và Quốc Tế” (Selected Vietnamese and International Economic Olympiad problems).
Vinh Anh Le, Tam Thanh Nguyen, **Hoang Huy Nguyen**, Hung Quoc Dang Ho, Hanh Phuong Hoang, Luan Van Vu, Diep Bich Nguyen, Trang Thi Ha Nguyen.
Nhà Xuất Bản Đại Học Quốc Gia Hà Nội (Vietnam National University Publishing House), 2024.
- [B1] “Định hướng bồi dưỡng học sinh năng khiếu toán Hình Học” (Advanced olympiad geometry problems for gifted students).
Vinh Anh Le, Hung Quang Tran, Linh Van Nguyen, **Hoang Huy Nguyen**, Lu Phuc Le, Quy Van Nguyen.
Nhà Xuất Bản Đại Học Quốc Gia Hà Nội (Vietnam National University Publishing House), 2016.

Invited Talks

- [5] **Mixing Time Analysis of Abandonment Queues: A Two-Pronged Attack Via Lyapunov Drift And Bakry-Émery**
 - IOE Rising Star Workshop at the University of Michigan on March 27th 2026.
- [4] **Gold-medalist Performance in Solving Olympiad Geometry with AlphaGeometry2**
 - ACC Invited Research Showcase at Purdue University on March 24th 2026.
 - INFORMS Annual Meeting 2025, Atlanta, Georgia.
 - Seminar at UT Austin on September 11th 2025.

- Invited talk in the Nonlinear PDE seminar series in the Math Department at Texas A&M University on September 8th 2025.
- Georgia Tech ACO Student Seminar Fall 2025, Atlanta, Georgia
- INFORMS APS Conference 2025, Atlanta, Georgia.
- Invited virtual lecture in the course "Reinforcement Learning for Industrial Engineers" taught by Prof. Sajad Khodadadian at Virginia Tech on April 25th 2025.

[3] **Finite-Time Behavior of M/M/n Queue: Mixing Time, Mean Queue Length and Tail Bounds**

- OM Rookiepaloosa, Kellogg School of Management, Northwestern University, April 22nd-23rd, 2026.
- Talk in the Probability Seminar at the University of Wisconsin-Madison on March 5th, 2026.
- INFORMS APS Conference 2025, Atlanta, Georgia.
- IISE Annual Conference 2025, Atlanta, Georgia.
- ACM SIGMETRICS 2025, Long Island, New York.
- Decision and Controls Laboratory (DCL) Student Symposium, 2025, Georgia Tech.
- Georgia Tech ACO Student Seminar Spring 2025, Atlanta, Georgia.
- INFORMS Annual Meeting 2024, Seattle, Washington.

[2] **Stochastic Approximation for Nonlinear Discrete Stochastic Control: Finite-Sample Bounds**

- Decision and Controls Laboratory (DCL) Student Symposium, 2024, Georgia Tech.
- IEEE CDC 2023, Singapore.
- ISyE Student Seminar, 2023, Georgia Tech.

[1] **On Unbalanced Optimal Transport: Gradient Methods, Sparsity, and Approximation Error**

- Special Seminar: Decoding Computational Challenges, 2024, Advanced Institute of Interdisciplinary Science and Technology, Hochiminh City University of Technology.
- ISyE Student Seminar, 2022, Georgia Tech.

Teaching Experience

Georgia Institute of Technology

Graduate Teaching Assistant

Atlanta, GA

Aug. 2021 – Dec. 2022

- Worked as Graduate Teaching Assistant for
 - ISyE 3770 (Statistics and Applications), Fall 2025
 - ISyE 4803 (Online Learning), Fall 2022
 - ISyE 2027 (Probability with Applications), Spring 2022
 - ISyE 3133 (Engineering Optimization), Fall 2021

Saudi Arabia National Olympiad team

Math Olympiad coach

Thuwai, Saudi Arabia

Apr. 2016 - May 2016

- Taught 30 students of the Saudi Arabia national team for the Balkan Mathematical Olympiad (BMO) and International Mathematical Olympiad (IMO) 2016. The Saudi Arabia team won their first-ever gold medal at BMO 2016.

Undergraduate Mentorship

- Huy Duc Pham (Hochiminh City University of Technology → NCSU ISE Ph.D.)
- Hien Gia Nguyen (Hanoi University of Education → Texas A&M University Math Ph.D.)
- Dung Tuan Nguyen (Australian National University → University of Pennsylvania CS Ph.D.)
 - Co-author on [P3], [P6]
- Duc Anh Nguyen (National University of Singapore → Carnegie Mellon University CS Ph.D.)
 - Co-author on [P3], [O4], [S2]
 - *INFORMS 2024 Undergraduate Operations Research Prize recipient*
- Bach Viet Vu (Hanoi University of Science and Technology)

- Co-author on [P4]
- Quang Dinh Thien Nguyen (Hochiminh City University of Information Technology)
 - Co-author on [O4], [S2]
- Son Hoang Pham (University of Massachusetts - Amherst)

Service and Outreach

- **Industry Engagement:** I consulted on matching and vehicle routing schemes for electric vehicles for XanhSM, the largest ride-hailing company in Vietnam.
- **Organization:** I served as the Audio and Visual Chair at APS 2025
- **Reviewer:** I served as a reviewer/program committee member for the following conferences and journals:
 - **Journals:** JMLR, Journal of Optimization Theory and Applications, IEEE Transactions on Automatic Control, IEEE Transactions on Neural Networks and Learning Systems, Queueing Systems, Stochastic Systems
 - **Conferences:** AISTATS, ICLR, ICML, NeurIPS, IEEE CDC
 - **Workshops:** AAAI Workshop MLmDS 2023, NeurIPS MATH-AI Workshop 2024, ICLR Trustworthy AI Workshop 2026.

Skills and Languages

- **Programming:** Python, C++, R, Matlab, HTML/CSS, LaTeX
- **Languages:** English (Fluent), Vietnamese (Native)