Nguyen HK. Do, Ph.D.

AI Researcher – Dreamer – Believer

nguyen.do@ufl.edu
https://www.linkedin.com/in/nguyen-do-48547323a/
https://www.facebook.com/nguyen.do.9256
https://nguyendo1801.github.io/
US +1 (352) 246 0980

Education

2025 – Present — **Ph.D. in Computer Science**, University of Florida, Gainesville, USA.
Advisor: Prof. My T. Thai.
Main research areas: Reinforcement Learning, Generative AI, Mixture of Experts, Optimal Transport, Influence Maximization, and Unsupervised Learning.

2016 – 2021 — **B.E. in Information Systems**, Posts and Telecommunications Institute of Technology (PTIT), Hanoi, Vietnam.
GPA: 3.83/4.0 (Top 1%). Degree classification: *Very Good*.

Main Vision

As a theory-oriented researcher, my long-term vision is to develop a scalable foundation model that bridges optimization theory with modern AI. I am deeply interested in solving complex combinatorial optimization problems through the integration of Generative AI and Reinforcement Learning, guided by provable theoretical guarantees. My ultimate goal is to advance explainable and mathematically grounded AI systems that are not only powerful and generalizable, but also transparent in how they reason and optimize.

Research Publications

Conference Proceedings (name*: co-first author)

1. H. Nguyen, H. Dam, Nguyen Do*, C. Tran, and C. Pham, "Rem: A scalable reinforced multi-expert framework for multiplex influence maximization," in ***AAAI Conference on Artificial Intelligence (AAAI)***, A* conference; Top 7%, 2025.
2. Nguyen Do, B. Ngo, Y. Kashuv, C. V. Pham, H. Tong, and M. T. Thai, "Hephaestus: Mixture generative modeling with energy guidance for large-scale qos degradation," in ***Advances in Neural Information Processing Systems (NeurIPS)***, A* conference, 2025.
3. Nguyen Do, T. Nguyen, M. Hassanaly, R. Alharbi, J. T. Seo, and M. T. Thai, "Swift hydra: Self-reinforcing generative framework for anomaly detection with multiple mamba models," in ***International Conference on Learning Representations (ICLR)***, A* conference; Top 9%, 2025.
4. Nguyen Do* and B. Ngo, "Hexaïssa: Standing on giants' shoulders—routing the best chess engines with mixture-of-experts and latent reward learning," in ***AAAI Conference on Artificial Intelligence (AAAI)***, A* conference; Co-first author, 2025.
5. Nguyen Do, T. Chowdhury, C. Ling, L. Zhao, and M. T. Thai, "Mim-reasoner: Learning with theoretical guarantees for multiplex influence maximization," in ***International Conference on Artificial Intelligence and Statistics (AISTATS)***, A* conference, 2024.

6. H. T. Duy, D. N. T. Hang, T. T. T. Thanh, Nguyen Do, C. D. Cuong, and C. D. Truong, "1×2 switchable mode exchange using controllable phase shifters based on silicon waveguides for high-speed optical interconnects," in *IEEE International Conference on Communications and Electronics (ICCE)*, 2020.

7. Nguyen Do, H. V. Tran, P. V. Cuong, and C. D. Truong, "Multi-objective exploration for proximal policy optimization," in *IEEE Applying New Technology in Green Building (ATiGB)*, Oral presentation; Best Paper Award, 2020.

Journal Articles (name*: co-first author)

1. Nguyen Do and M. T. Thai, "Deductive exploration in deep reinforcement learning," ***Nature Machine Intelligence***, 2025, In preparation; Q1 ISI Journal; Impact Factor: **25**.

2. Nguyen Do*, H. N. Minh, M. N. Vu, and M. T. Thai, "A chain-based reinforcement learning approach for the minor embedding problem," ***IEEE/ACM Transactions on Quantum Engineering***, vol. x, no. x, 2025, Q1 ISI Journal; Co-first author; Impact Factor: **7.0**.

3. Nguyen Do, D. Vo, H. Nguyen, *et al.*, "Deepchaos+: Signal detection quality enhancement of high-speed dp-16qam optical fiber communication based on chaos masking technique with deep generative models," ***Photonics***, vol. 11, no. 10, p. 967, 2024, Q1 ISI Journal; Impact Factor: **8**.

4. D. N. T. Hang, H. T. Duy, T. T. T. Thanh, Nguyen Do, and C. D. Truong, "Compact, highly efficient, and controllable simultaneous 2×2 three-mode silicon photonic switch in the continuum band," *IEEE Access*, 2021, Q1 ISI Journal; Impact Factor: 3.9.

5. Nguyen Do, M. Hoai, D. N. T. Hang, P. V. Cuong, and C. D. Truong, "Self-controlling photonic-on-chip networks with deep reinforcement learning," ***Nature Scientific Reports***, vol. x, 2021, Q1 ISI Journal; Impact Factor: **5.1**.

6. H. Ta, D. Nguyen, T. Tran, Nguyen Do, H. Nguyen, and D. Truong, "1×2 switchable dual-mode optical 90° hybrid device based on thermo-optic phase shifters and 2×2 mmi couplers on soi platform," *IEEE Photonics Journal*, vol. 13, no. 1, pp. 1–16, 2021, Q1 ISI Journal; Impact Factor: 2.8.

Skills

Programming	Python, PyTorch, TensorFlow, JAX, NumPy, SciPy, OpenAI Gym, CUDA, C/C++, MATLAB.
Machine Learning	Deep Reinforcement Learning, Mixture-of-Experts, Generative Modeling (VAE, GAN, Diffusion), Graph Neural Networks, Optimal Transport, Probabilistic Graphical Models.
Mathematical Tools	Convex Optimization, Variational Inference, Bayesian Learning, Stochastic Processes, Differential Geometry, Information Theory.
Software & Systems	Linux, Git, Docker, ChromaDB, LangChain, FastAPI, HuggingFace, VS Code, Colab, Jupyter.
Data Science	Pandas, Scikit-learn, Seaborn, Matplotlib, NetworkX, SQL, Neo4j.
Academic & Communication	Scientific writing, Peer reviewing (NeurIPS, ICLR, AAAI, AISTATS), LaTeX typesetting, Research presentation, Academic mentoring.

Miscellaneous Experience

Honors and Awards

2026 **Top Reviewer**, Association for the Advancement of Artificial Intelligence (AAAI 2026).

2025 **Scholar Award**, Neural Information Processing Systems (NeurIPS 2025).

Travel Award, International Conference on Learning Representations (ICLR 2025).

Scholar Award, AAAI Conference on Artificial Intelligence (AAAI 2025).

Doctoral Fellowship, University of Florida, USA.

2024 **Registration Grant**, International Conference on Artificial Intelligence and Statistics (AISTATS 2024).

2023 **First Prize**, Innovation and Entrepreneurship Competition, Posts and Telecommunications Institute of Technology (PTIT), Vietnam.

2021 **Best Paper Award**, IEEE Applying New Technology in Green Building (ATiGB 2021).

2020 **Excellent Research Award**, PTIT — "Smart Control via Speech Recognition using Time-Series Data Model."

Excellent Research Award, PTIT — "DeepNet for Smart Routing and Optimization via Reinforcement Learning."

2019 **Ranked 8/400**, ACM International Collegiate Programming Contest (ICPC) – Regional.

Professional Service

2025–2026 **Program Committee Member**, NeurIPS, ICLR, ICML, AISTATS, AAAI.

Community Engagement

2020–Present Active participant and volunteer in annual charity campaigns supporting education for underprivileged children in mountainous regions of Vietnam.

2020 Organized a fundraising event for upland students, promoting educational access and awareness.

Employment History

2025 – Present **Researcher, Optimization Lab, University of Florida, USA.**
Develop reinforcement learning algorithms and probabilistic graphical models for Multiplex Influence Maximization and Quantum Minor Embedding. Design graph-based and theoretically guaranteed models for scalable optimization in networked systems.

Employment History (continued)

2021 – 2024 **AI Researcher, Connected Brain Corporation, Vietnam.**
Developed NLP and Computer Vision models, multilingual machine translation systems, and GPT-based domain chatbots. Led research on optimization of large language models for Vietnamese applications.

2020 – 2021 **Research Intern, Naver AI Lab, Korea (Remote).**
Implemented generative models (VAE, GAN) for unsupervised object detection. Evaluated generative frameworks compared to state-of-the-art baselines.

2019 – 2020 **AI Intern, MobiFone Telecommunications Corporation, Vietnam.**
Developed liveness and fire detection models for low-quality camera systems. Prototyped AI-assisted human resource monitoring tools.

2018 – 2019 **Research Assistant, Samsung Vietnam Mobile R&D Center (SVMC).**
Built projects on advanced graphics and autonomous driving simulation. Designed and tested algorithms for practical autonomous systems.

2017 – 2018 **Research Assistant, AI Photonics Lab, Posts and Telecommunications Institute of Technology (PTIT), Vietnam.**
Conducted research on integrated photonic chips and optical interconnects. Developed early prototypes combining deep learning with photonic signal processing for high-speed communication systems.

References

Prof. My T. Thai
Department of Computer Science, University of Florida, Gainesville, Florida, USA
Email: mythai@cise.ufl.edu

Prof. Cuong Pham Van
Department of Computer Science, Posts and Telecommunications Institute of Technology (PTIT), Vietnam
Senior Researcher, Qualcomm AI
Email: pcuongcntt@gmail.com

Prof. Minh Tuan Trinh
Department of Physics, Utah State University, Logan, Utah, USA
Email: t.trinh@usu.edu

Prof. Minh Hoai Nguyen
Department of Computer Science, University of Adelaide, Adelaide, Australia
Senior Research Scientist, VinAI Research
Email: minhhoai@gmail.com

Prof. Cao Dung Truong
Department of Electronics Engineering, Posts and Telecommunications Institute of Technology (PTIT), Vietnam
Email: tcdung@ptit.edu.vn