DUY-TUNG PHAM

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EDUCATION

Hanoi University of Science and Technology (HUST)   2020 - 2024
Bachelor of Science in Computer Science (Honors Program), CPA: 3.91/4.00, ranked 2nd in .

High School for Gifted Students, Hanoi University of Education   2017 - 2020
Mathematics Gifted Class, GPA: 9.6/10.0.

RESEARCH EXPERIENCE

AI Research Resident   Jun 2024 - Present
FPT Software AI Center   *Hanoi, Vietnam*

- Advisors: [Prof. Thieu Vo](.), [Prof. Tan Nguyen](.)
- Research topic: Properties of Foundation Model (Transformer, Mixture of Experts, Mamba), Optimal Transport.
- 4 accpeted papers at ICLR, ICML, and NeurIPS.

Undergraduate Research Student   Dec 2021 - Jul 2024
DSLab, SoICT, HUST   *Hanoi, Vietnam*

- Advisors: [Dr. Linh Ngo Van](.), [Prof. Khoat Than](.)
- Research topic: Variational Inference, Bayesian Neural Network, Topic Modeling.
- 3 accepted papers at EMNLP and Neurocomputing journal.

PUBLICATIONS

- [Dynamical Properties of Tokens in Self-Attention and Effects of Positional Encoding](.)
  Thieu Vo*, **Duy-Tung Pham***, An Nguyen The*, Viet-Hoang Tran, Nhan-Phu Chung, Xin T. Tong, Tan Minh Nguyen.
  Conference on Neural Information Processing Systems (NeurIPS, rank A*), 2025.

- [TopiCOT: Neural Topic Model Aligning with Pre-trained Clustering and Optimal Transport](.)
  Tung Nguyen*, **Duy-Tung Pham***, Quang Duc Nguyen, Linh Ngo Van, Anh Nguyen Duc, Sang Dinh Viet.
  Neurocomputing (Q1 journal, IF 5.5), 2025.

- [Equivariant Polynomial Functional Networks](.)
  Thieu N. Vo*, Viet-Hoang Tran*, Tho Tran Huu, An Nguyen The, Thanh Tran, Minh-Khoi Nguyen-Nhat, **Duy-Tung Pham**, Tan Minh Nguyen.
  International Conference on Machine Learning (ICML, rank A*), 2025.

- [Demystifying the Token Dynamics of Deep Selective State Space Models](.)
  Thieu Vo, **Duy-Tung Pham**, Xin T. Tong**, Tan Minh Nguyen**.
  International Conference on Learning Representations (ICLR, rank A*), 2025 (**spotlight** - top 5.1%).

- [Equivariant Neural Functional Networks for Transformers](.)
  Hoang V. Tran*, Thieu Vo*, An Nguyen The*, Tho Tran Huu, Minh-Khoi Nguyen-Nhat, Thanh Tran, **Duy-Tung Pham**, Tan Minh Nguyen.
  International Conference on Learning Representations (ICLR, rank A*), 2025.

- [Out-of-Vocabulary Handling and Topic Quality Control Strategies in Streaming Topic Models](.)
  Tung Nguyen*, **Duy-Tung Pham***, Linh Ngo Van, Ha-Bang Ban, and Khoat Than.
  Neurocomputing (Q1 journal, IF 5.5), 2025.

- [NeuroMax: Enhancing Neural Topic Modeling via Maximizing Mutual Information and Group Topic Regularization](.)
  Duy-Tung Pham*, Trang Nguyen*, Tung Nguyen*, Linh Ngo Van, Duc Anh Nguyen, Thien Huu Nguyen.
  Findings of The Conference on Empirical Methods in Natural Language Processing (EMNLP, rank A*), 2024.

(*) denotes equal contribution, (**) denotes equal advising.

SCHOLARSHIPS

- **Academic Achievement Scholarship - HUST** (6/7 semesters): Awarded to the top 3% of students with outstanding academic performance each semester.
- **Scholarship from the National Key Program for Mathematical Development** (2018): Awarded by the Vietnam Institute for Advanced Studies in Mathematics (VIASM) to high school students demonstrating exceptional excellence and strong potential in mathematics.

PROFESSIONAL SERVICES

Reviewer at ICLR 2025.

RELEVANT COURSES AND CERTIFICATES

- **University Courses**: Calculus 1, 2, 3; Algebra; Optimization Methods; Discrete Mathematics; Probability and Statistics; Introduction to AI; Machine Learning (all achieved 4.0/4.0).
- **Coursera Certificates**: Structured Machine Learning Projects, Sequence Models.
- **Languages**: English (TOEIC 935/990, issued by IIG Vietnam), Vietnamese (Native).

TECHNICAL SKILLS

Programming Languages	Python, C++, R, Java, SQL
Frameworks	Scikit-learn, PyTorch, TensorFlow, Wandb, Numba, Matplotlib
Tools	LaTeX, MS Office

HONORS AND AWARDS

- **SOICT Hackathon**, Routing Optimization Track (Oct 2023) - Finalist, Top 7.
- **ACM-ICPC**, Asia Hanoi Regional Contest (Mar 2022) - Third Prize.
- **Vietnam Olympiad of Informatics** for Undergraduate Students (Dec 2020) - Second Prize.
- **Hanoi Math Modeling Online Contest** (Jul 2020) - First Prize.
- **Vietnam Mathematical Olympiad** for High School Students (Jan 2019) - Third Prize.

ACTIVITIES

- **Mentor, MaSSP, Applied Mathematics**   Jul 2023 - Aug 2023
  Guided 4 high school students in a financial math project on fraud detection, covering data handling, modeling, evaluation, and presentation.
- **Academic Assistant, Hanoi Math Modeling Competition**   Jun 2021 - May 2022
  Supported teams in real-world problem modeling using linear/integer programming and time series methods, assisting in formulation, analysis, and presentations.
- **Mentee, PiMA Research Summer Camp**   Jul 2021 - Aug 2021
  Researched and implemented Locally Linear Embedding (LLE) for image compression, exploring theory and variants.
- **Mentee, MaSSP, Data Science and Machine Learning**   Jun 2021
  Completed intensive coursework and applied skills analyzing COVID-19 patient data.
- **Participant, VIASM Mathematical Summer School**   Jul 2019
  Attended advanced problem-solving training for Mathematics Olympiad preparation.

REFERENCES

- Prof. Tan Nguyen, Assistant Professor, Department of Mathematics, National University of Singapore.
- Prof. Thieu Vo, Professor, University of Bath, United Kingdom.
- Dr. Linh Ngo Van, Lecturer, Hanoi University of Science and Technology, Vietnam.
- Prof. Khoat Than, Associate Professor, Hanoi University of Science and Technology, Vietnam.