CUONG PHAM (Phạm Anh Cường)

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PROFILE

Master's student in Machine Learning with research interests in **optimization in different settings**. In detail, I am working on **efficiency fine-tuning** in the intersection of **federated learning** and **large models**, and **optimization for machine learning**.
I am going to join the 2026 PhD application cycle.

EDUCATION

Mohamed bin Zayed University of Artificial Intelligence (MBZUAI), UAE 2024 - 2026 (expected)
Master of Science in Machine Learning GPA: 3.72/4.0 ($\sim$ 94%)

- Selected courses: Mathematics for AI, Advanced Machine Learning, Probabilistic and Statistical Inference, Optimization [Transcript].
- Research topics: Optimization for Machine Learning, Federated Learning.
- Supervisor: Prof. Samuel Horváth.

VNU University of Engineering and Technology (VNU-UET), Vietnam 2019 - 2023
Bachelor in Information Technology (Honors Program) GPA: 3.71/4.0 (8.77/10)

- Graduated with High Distinction, top 5% of CS Department. [Transcript].
- Thesis: "Building a Vietnamese image captioning dataset and developing a visual-text transformation model for generating image captions" (9.5/10).
- Supervisors: Assoc. Prof. Quang-Thuy Ha, Dr. Van-Quang Nguyen, MS. Thi-Hong Vuong.

PUBLICATIONS AND REPORTS

(Denote: P = preprint, W = workshop, C = conference, J = journal, R = project reports)

(Conferences and Pre-prints)

[P4] Farshed Abdukhakimov, **Cuong Anh Pham**, Samuel Horváth, Martin Takáč, Slavomir Hanzely. "Polyak Stepsize: Estimating Optimal Functional Values Without Parameters or Prior Knowledge" (preprint '25, under review).

[P3] Quang P.M. Pham, Khoi T. N. Nguyen, Nhi H. Doan, **Cuong A. Pham**, Kentaro Inui, Dezhen Song. "SmallPlan: Leverage Small Language Models for Sequential Path Planning with Simulation-Powered, LLM-Guided Distillation" (preprint '25, under review).

[P2] **Anh-Cuong Pham**, Van-Quang Nguyen, Thi-Hong Vuong, Quang-Thuy Ha. "KTVIC: A Vietnamese Image Captioning Dataset on the Life Domain" (preprint '24, short version of Bachelor's thesis).

[C1] Quynh-Trang Pham Thi, **Anh-Cuong Pham,** Ngoc-Huyen Ngo and Duc-Trong Le. "Memory-Based Method using Prototype Augmentation for Continual Relation Extraction" (IEEE RIVF '22).

(Reports)

[R3] "Decoder-only Foundation Model applications on Time Series Forecasting with Air Quality Datasets". Solo Project for ML703 course - Probabilistic and Statistical Inference (Spring '25) at MBZUAI.

[R2] "Kernel Two-Sample Tests". Group Project (3 persons) for ML702 course - Advanced Machine Learning (Spring '25) at MBZUAI.

[**R1**] "ThinkPlan: Towards Multimodal for Low-resource Long-Horizontal Semantic Path-planning in Robotics". Group Project (3 persons) for AI701 course - Foundations of AI (Fall '24) at MBZUAI.

EXPERIENCE (Research)

MBZUAI, Abu Dhabi, UAE 10/2024 - Present
Graduate Research Assistant

- **Project:** Parameter-Efficient Fine-Tuning in general setting and Federated Learning setting (ongoing)
  Supervisors: Prof. Samuel Horváth and Prof. Praneeth Vepakomma
  Skills: Python, Pytorch, LLMs
- **Project:** Parameter-free SGD Optimization with Polyak stepsize (ongoing) (Coauthored paper [P4])
  Supervisors: Prof. Samuel Horváth and Prof. Martin Takáč
  (Supported senior student to) Develop an adaptive stepsize, motivated by Polyak stepsize but does not require approximation for SGD Optimization, with the target to reduce the need for hyperparameter tuning during the training process.
  Skills: Python, Scikit-learn, Pytorch, Optimization.
- **Project:** Small Language Models application for edge-device Robot Learning (extended from the course-work project at MBZUAI, Coauthored paper [P3])
  Utilizing LLMs to enable efficient and adaptive real-time inference on edge devices for autonomous robotics path-planning tasks.
  Skills: Python, LLMs.

DSKT Laboratory at UET-VNU, Hanoi, Vietnam 09/2021 - 09/2023
Student Research Intern

- **(Thesis) Project:** Image Captioning (in Vietnamese context) (Coauthored paper [P2])
  Mentors: Dr. Van-Quang Nguyen and Prof. Quang-Thuy Ha
  Created a new image-caption dataset in Vietnamese and developed a tiny Image Captioning model based on the Transformer framework. The proposed dataset and tiny model were evaluated with variants of Deep Learning-based models.
  Skills: Python, Computer Vision, NLP, Transformer, OpenCV.
- **Project:** Applying Prototype Augmentation for Continual Relation Extraction (Coauthored paper [C1])
  Mentors: MS. Quynh-Trang Thi Pham and Dr. Duc-Trong Le
  (Supported seniors to) Apply a prototype augmentation mechanism to consistent representation learning to reduce saving data for the next phase of continual learning, but still alleviate the forgetting problem.
  Skills: Python, Continual Learning, NLP.

EXPERIENCE (Industry)

Viettel Networks, Hanoi, Vietnam 10/2023 - 07/2024
Data Scientist

- Researched and applied **Computer Vision** (image processing, segmentation, classification) for tasks with telecommunication images to automate processes instead of using manual work for network maintenance.
- Solved **Big Data** problems: using Machine Learning with GPUs with large-scale telecommunication data (100M to 10B records), optimizing and automating processes by predicting users' usage and assisting in the allocation of network bandwidth to improve network users' experience.

GHTK Joint Stock Company, Hanoi, Vietnam
R&D Engineer 08/2022 - 08/2023

- Researched and developed (team of 2 persons) a mail spam filtering based on **Deep Learning** models, and **NLP** frameworks (BERT, DeBERTa, PhoBERT), achieving the f1-score of 90% after training with 50k emails, it was then deployed to the company's internal email system.
- Participated in building an internal chatbot using rule-based techniques.

R&D Engineer Intern 05/2022 - 08/2022

- MasterDev Season 4 Internship Program in Research and Development domain. Training about Probability & Statistics, Natural Language Processing, and Big Data (Hadoop and Spark).
- Final Project about building a text classification for Vietnamese documents using doc2vec.

HONORS AND AWARDS

Full scholarship for 2 years of the Master of Science program at MBZUAI 2024
Third Prize (5th place) in Linear Algebra, VNU-UET Mathematical Olympiad 2023
Third Prize (6th place) in Linear Algebra, VNU-UET Mathematical Olympiad 2022
Yamada Scholarship 2022
Third Prize (5th place) in Linear Algebra, VNU-UET Mathematical Olympiad 2021
Excellent Scholarship for top highest GPA from VNU-UET (rank 5th) 2021
Attended Vietnam Mathematical Olympiad for high school students (9th place in provincial selection test) 2019

SKILLS

Programming: Python, Java, C, C++, HTML/CSS, JavaScript, MySQL.
Technologies: PyTorch, Scikit-learn, Linux, Docker, Hadoop, Spark, Laravel.
Additional: Microsoft Office, LaTeX, Git.
Language: English (with TOEIC LR 855, IELTS 7.0), Vietnamese (native).

REFERENCES

Dr. Samuel Horvath, Assistant Professor at MBZUAI (UAE): (samuel.horvath@mbzuai.ac.ae)
Dr. Nguyen Van Quang, Researcher at RIKEN AIP (Japan): (quang@vision.is.tohoku.ac.jp)
Dr. Ha Quang Thuy, Associate Professor at VNU-UET (Vietnam): (thuyhq@vnu.edu.vn)