Thang M. Pham

Doctor of Philosophy

Computer Science ⋄ Auburn University, AL, USA

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Biography: Thang obtained a Ph.D. from Auburn University advised by Prof. Anh Nguyen. His research interests include Large Vision/Language Modeling, and eXplainable Artificial Intelligence (XAI). The results of his research have significantly impacted the NLP community (Twitter, Facebook, Linkedin) and also been covered by MIT Technology Review. He completed an Honors Bachelor's Degree in Computer Science at the University of Science (HCMUS) in Vietnam advised by Dr. Son Tran. His bachelor's thesis focused on Image Processing to extract texts from scene images and translate them to a target language. Prior to the Ph.D. endeavor, he had been working in the IT industry for 6 years as a software engineer (∼3.5 years) and research engineer (∼2.5 years) focusing on Natural Language Processing (NLP).

EDUCATION

Auburn University, Auburn, Alabama, United States — August 2019 - August 2024
M.S. and Ph.D. in Computer Science — Advisor: Dr. Anh Nguyen
Cumulative GPA: 3.91/4.0

University of Science, Ho Chi Minh City, Vietnam — September 2009 - September 2013
B.S. (Honours) in Computer Science — Software Engineering — Advisor: Dr. Son Tran
Thesis: *Scene Text Detection and Recognition* (Distinction, GPA: 3.39/4.0)

WORK EXPERIENCE

Creative Intelligence Lab, Adobe Inc. — June 2024 - present
Research Scientist Intern — *San Jose, CA*

- Quantizes and deploys LLMs (∼0.1–7 billion parameters) locally on mobile devices for benchmarking.
- Proposes SlimLM models (∼0.05–3 billion parameters), pre-trained from scratch on ∼1–5 trillion tokens using datasets such as SlimPajama, FineWeb, DCLM or SmolLM.
- Finetunes and evaluates SlimLM and baseline models for question answering, question suggestion and summarization for documents.
- Develops a mobile application for PDF reader with AI assistant to demonstrate the efficiency of SlimLM on users' uploaded documents.

Artificial Intelligence Lab, Auburn University — August 2019 - August 2024
Teaching and Research Assistant — *Auburn, AL*

- ***Teaching***: Software Construction, Introduction to Algorithms, Software Modeling and Design.
- ***Research***: Large Vision/Language Modeling and Understanding.
- Proposed novel explainable AI methods to enhance the interpretability of language models, while also improving their robustness and efficacy in natural language understanding.
- Proposed a novel image classification system that achieves state-of-the-art performance among explainable methods by grounding an object's textual descriptors to specific image regions.

Creative Intelligence Lab, Adobe Inc. — September 2023 - January 2024
Research Scientist Intern — *San Jose, CA*

- Crawled Reddit data and analyzed trends from image editing requests.
- Constructed an instruction-following dataset and a human preference data to teach large language models (LLMs) to use visual foundation models for handling image editing requests.

- Fine-tuned open-source LLMs (e.g., LLaMA-2, Mistral, Zephyr, Falcon, MPT) across different versions (7B, 13B, 70B) to correctly generate and execute a plan including a sequence of image editing tools to handle simple, complex and implicit user requests for Adobe products (e.g., Photoshop).

Creative Intelligence Lab, Adobe Inc. May 2021 - November 2021
Research Scientist Intern *San Jose, CA*

- Developed a deep neural model for learning phrase representation.
- Designed a human annotation guideline and led the team (∼15 people) to construct a dataset and benchmark to enhance and evaluate the representation of in-context phrases for semantic search.
- Fine-tuned and evaluate small and large language models in understanding phrases in context.
- Developed a smart phrase search system that is potentially utilized in the Acrobat product.

National Inst. of Advanced Industrial Science & Technology June 2017 - August 2019
ML/AI Research Engineer *Tokyo, Japan*

- Investigated state-of-the-art deep learning models for named entity recognition (NER), relation and event extraction in biomedical domain.
- Implemented novel deep neural networks for NER task with Dr. Sohrab (EMNLP 2018) and Dr. Ju (NAACL 2018).
- Developed the DeepEventMine system with Dr. Trieu in the first phase of the project.
- Fine-tuned hyper-parameters with greedy search and Bayesian optimization methods.
- Pre-processed biomedical corpora (JNLPBA2004, GENIA, ACE2005, CG2013, MLEE, PHAEDRA).
- Optimized parallel computing with multiple GPUs for speeding up a model training process.
- Collaborated with Dr. Nagano to develop and evaluate the EzCat database.
- Implemented new modules and developed pipelines to evaluate NER and EventMine systems for NaCTeM (University of Manchester).

OPSWAT (now Beowulf) January 2014 - May 2017
Senior Software Engineer *Ho Chi Minh, Vietnam*

- Developed over-the-top mobile applications (VoxyPAD, Tutorica, Victoria and Hana).
- Worked directly with CEO and other team leaders to design APIs for the whole systems.
- Supported clients in the United States and in Japan (Toshiba corporation) to deploy our products.

VoxyPAD (now Beowulf) August 2013 - December 2013
Software Engineer *Ho Chi Minh, Vietnam*

- Developed a back-end system using Spring framework to provide user account management for virtual RADIUS servers.
- Developed a socket server for an over-the-top application to send and receive messages via socket.

PUBLICATIONS https://scholar.google.com/citations?user=eNrX3mYAAAAJ&hl=en

Conference papers

- Thang M. Pham, Trung Bui, Long Mai, Anh Nguyen. Out of Order: How important is the sequential order of words in a sentence in Natural Language Understanding tasks? *Findings of ACL: Annual Conference of the Association for Computational Linguistics (**ACL 2021**).* (acceptance rate: 1,212/3,350 ≈ 36.2%) [pdf][code][slides][video]
- Thang M. Pham, Trung Bui, Long Mai, Anh Nguyen. Double Trouble: How to not explain a text classifier's decisions using counterfactuals synthesized by masked language models? *Proceedings of the 2nd Conference of the Asia-Pacific Chapter of the Association for Computational Linguistics and the 12th International Joint Conference on Natural Language Processing (**AACL-IJCNLP 2022**).* **Oral presentation** (acceptance rate: 63/554 ≈ 11.4%)[pdf][code][slides][video]

- Thang M. Pham, Seunghyun Yoon, Trung Bui, Anh Nguyen. PiC: A Phrase-in-Context Dataset for Phrase Understanding and Semantic Search. *Proceedings of the 17th Conference of the European Chapter of the Association for Computational Linguistics (**EACL 2023**).* (acceptance rate: 281/1166 ≈ 24.1%) [pdf][code][video]
- Thang M. Pham*, Peijie Chen*, Tin Nguyen*, Seunghyun Yoon, Trung Bui, Anh Nguyen. PEEB: Part-based Bird Classifiers With an Explainable and Editable Language Bottleneck. *Findings of NAACL: Annual Conference of the North American Chapter of the Association for Computational Linguistics (**NAACL 2024**).* (acceptance rate: 869/2434 ≈ 35.7%) [pdf][code[slides][video][demo]

Workshop papers

- M. Sohrab, Thang M. Pham, Makoto Miwa (2019). A Generic Neural Exhaustive Approach for Entity Recognition and Sensitive Span Detection. *IberLEF Workshop at Spanish Society for Natural Language Processing (SEPLN).* [pdf]
- M. Sohrab, Thang M. Pham, Makoto Miwa, H. Takamura (2019). A Neural Pipeline Approach for the PharmaCoNER Shared Task using Contextual Exhaustive Models. *Workshop on BioNLP Open Shared Tasks at Empirical Methods in Natural Language Processing (EMNLP).* [pdf][video]

E-print articles

- Thang Minh Pham, Phat Thinh Nguyen, Seunghyun Yoon, Viet Dac Lai, Franck Dernoncourt and Trung Bui (2024). SlimLM: An Efficient Small Language Model for On-Device Document Assistance. *(Under review at COLING 2025).*
- Chien Van Nguyen, Huy Huu Nguyen, Thang M. Pham, Ruiyi Zhang, Hanieh Deilamsalehy, Puneet Mathur, Ryan A. Rossi, Trung Bui, Viet Dac Lai, Franck Dernoncourt, Thien Huu Nguyen (2024). Taipan: Efficient and Expressive State Space Language Models with Selective Attention. *(Under review at ICLR 2025).*
- Viet H. Pham, Thang M. Pham*, Giang Nguyen*, Long Nguyen, Dien Dinh (2023). Semi-supervised Neural Machine Translation with Consistency Regularization.

SELECTED PRESS COVERAGE

- 2021: **MIT Technology Review**. Jumbled-up sentences show that AIs still don't really understand language.
- 2021: **Montreal.AI**. (by Vincent Boucher on LinkedIn, Facebook or Twitter)
- 2021: **Livechat** AI Still Can't Understand Language, but There's an Easy Way To Teach It To
- 2021: **Medium** Understanding complex language patterns is still a trouble-spot for AIs

PROFESSIONAL SERVICES

Reviewer

- ML/AI Conferences:
  - Conference on Neural Information Processing Systems (**NeurIPS**): 2022, 2023, 2024
  - International Conference on Learning Representations (**ICLR**): 2023
  - Association for Computational Linguistics (**ACL**): 2023, 2024
  - Conference on Empirical Methods in Natural Language Processing (**EMNLP**): 2022, 2023, 2024
  - North American Chapter of the Association for Computational Linguistics (**NAACL**): 2024, 2025
  - European Chapter of the Association for Computational Linguistics (**EACL**): 2023

*Equal contribution

Youth Program Personnel

· K-6 Artificial Intelligence Club [details]

FELLOWSHIPS & ASSISTANTSHIPS

· 2023: Graduate Student Council Travel Fellowships
· 2019 – 2024: Auburn University Graduate Research Assistantship (funded by NSF and Adobe Inc.).
· 2009 – 2013: University of Science Faculty of Information Technology Excellence Fellowship

AWARDS

· 2023: Diversity and Inclusion (D&I) Awards in EACL 2023.
· 2013: Quarter Finalist in "Challenge" competition of Faculty of Information Technology.
· 2012: Finalist Hackathon mobile competition.
· 2009: Top-3 highest university entrance exam award from high school.

TECHNICAL STRENGTHS

Programming Languages	Python, Java, C++, C#, PHP, Javascript
Deep Learning Frameworks	Pytorch, Tensorflow, Chainer
NLP Tools and Frameworks	NLTK, SciPy, spaCy, Pandas, Brat Annotation, Argo, EventMine
Databases	SQL, MySQL, MongoDB, PostgreSQL
Version Control	Git, SVN

LANGUAGES

Vietnamese	Native speaker
English	Fluent

REFERENCES

More available upon requests

Dr. Anh Nguyen: Associate Professor, Auburn University	anhnguyen at auburn.edu
Dr. Makoto Miwa: Professor, Toyota Tech Institute	makoto-miwa at toyota-ti.ac.jp
Dr. Trung Bui: Research Manager, Adobe Research	bui at adobe.com
Dr. Seunghyun Yoon: Research Scientist, Adobe Research	syoon at adobe.com
Dr. Son Thai Tran: Head of Academic Affairs, University of Science	ttson at fit.hcmus.edu.vn