Thang M. Pham

Doctoral Candidate

Computer Science ⋄ Auburn University, AL, USA

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Biography: Thang is a Ph.D. candidate at Auburn University advised by Prof. Anh Nguyen. His research interests are Large Vision/Language Modeling, and eXplainable Artificial Intelligence (XAI). The results of his research have a great impact on 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 - present
Ph.D. in Computer Science   Advisor: Dr. Anh Nguyen
Cumulative GPA: 3.91/4.0

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

WORK EXPERIENCE

Auburn University   August 2019 - present
Research and Teaching Assistant   *Auburn, AL*

· Research focus: Large Vision/Language Modeling and Understanding.
· Teaching: Software Construction (COMP 2710), Introduction to Algorithms (COMP 3270), Software Modeling and Design (COMP 3700).

Adobe Inc.   September 2023 - January 2024
Research Scientist Intern (Full-time + Part-time)   *San Jose, CA*

· Construct an instruction-following dataset to teach large language models (LLMs) to use tools.
· Fine-tune open-source LLMs (e.g., LLaMA-2, Mistral, Zephyr) to select image editing tools based on simple, complex and implicit user requests for Adobe products (e.g., Creative Copilot, Photoshop).

Adobe Inc.   May 2021 - November 2021
Research Scientist Intern (Full-time + Part-time)   *Remote Auburn, AL*

· Develop a deep neural model for learning phrase representation.
· Construct phrase-level datasets for fine-tuning and evaluating machine/deep learning models in understanding phrases in context.

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

· Investigate state-of-the-art deep learning models for named entity recognition (NER), relation and event extraction in biomedical domain.
· Implement novel deep neural networks for NER task with Dr. Sohrab (EMNLP2018) and Dr. Ju (NAACL2018).
· Develop the DeepEventMine system with Dr. Trieu in the first phase of the project.

- Fine-tune hyper-parameters with greedy search and Bayesian optimization methods.
- Pre-process biomedical corpora (JNLPBA2004, GENIA, ACE2005, CG2013, MLEE, PHAEDRA).
- Optimize parallel computing with multiple GPUs for speeding up a model training process.
- Collaborate with Dr. Nagano to develop and evaluate the EzCat database.
- Implement new modules and developed pipelines to evaluate NER and EventMine systems for NaCTeM (University of Manchester).

OPSWAT (now Beowulf)   January 2014 - May 2017
Team Leader   *Ho Chi Minh, Vietnam*

- Develop over-the-top applications (VoxyPAD, Tutorica, Victoria and Hana).
- Work directly with CEO and other team leaders to design APIs for the whole systems.
- Support 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*

- Develop a back-end system using Spring framework to provide user account management for virtual RADIUS servers.
- Implement 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][demo]
- 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]

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]

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*Equal contribution

E-print articles

· Viet H. Pham, <u>Thang M. Pham</u>*, 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

· Conferences:

– 2024: North American Chapter of the Association for Computational Linguistics (**NAACL**), Association for Computational Linguistics (**ACL**).

– 2023: International Conference on Learning Representations (**ICLR**), European Chapter of the Association for Computational Linguistics (**EACL**), Association for Computational Linguistics (**ACL**), Conference on Empirical Methods in Natural Language Processing (**EMNLP**), Conference on Neural Information Processing Systems (**NeurIPS**).

– 2022: Conference on Neural Information Processing Systems (**NeurIPS**), Conference on Empirical Methods in Natural Language Processing (**EMNLP**).

Youth Program Personnel

· K-6 Artificial Intelligence Club [details]

FELLOWSHIPS & ASSISTANTSHIPS

· 2023: Graduate Student Council Travel Fellowships
· 2019 – present: 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.

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*Equal contribution

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: Assistant Professor, Auburn University	anhnguyen at auburn.edu
Dr. Makoto Miwa: Associate 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