

The-Anh Vu-Le

Urbana, IL – 447-902-1892

✉ vltanh@illinois.edu • 🌐 vltanh.github.io • in vltanh • 🌐 vltanh

Education

University of Illinois Urbana-Champaign

Ph.D. in Computer Science

Advisor: Professor Tandy Warnow

Research Focus: Network Science, Community Detection, Graph Algorithms

Urbana, IL

Aug 2022 – May 2027 (expected)

University of Illinois Urbana-Champaign

Master in Computer Science

Selected Coursework: Deep Learning Theory, Statistical Reinforcement Learning, Deep Generative and Dynamical Models, Network Science, Applied Parallel Programming, Algorithmic Game Theory, Algorithmic Genomic Biology, Formal Methods in Software Development, Abstract Algebra, Real Analysis, Probability Theory .

Urbana, IL

May 2025

University of Science, VNU-HCM

B.S. in Computer Science

Valedictorian (top 1/500), Honors Program

Relevant Coursework: Statistical Learning, Big Data, Advanced Probability and Statistics, Computer Vision, Natural Language Processing, Information Retrieval

Vietnam

May 2020

Technical Skills

Languages: Python (7 yrs), C++ (4 yrs), CUDA, Lean, Julia

Libraries: PyTorch (6 yrs), transformers, numpy, pandas, matplotlib

Tools: git, slurm, docker, L^AT_EX

Research Experience

University of Illinois Urbana-Champaign

Graduate Research Assistant

Supervised by Professor Tandy Warnow on Scalable Network Science.

- **Generation of large graphs with community structure** that ensures desired cluster properties [EC-SBM] [RECCS]
- **Community detection** based on topological information, such as the implementation of algorithms for extracting dense and/or well-connected subgraphs [DSC]
- **Refinement of community detection** results, which includes cluster ensembling techniques and post-processing steps (e.g., splitting clusters to ensure connectivity) [WCC]

Urbana, IL

Jan 2024 – Present

University of Illinois Urbana-Champaign

Graduate Research Assistant

Supervised by Professor Hari Sundaram on Causal Inference.

- Studied **stochastic variational inference** techniques for causal inference [Report]

Urbana, IL

Jan 2024 – May 2024

University of Illinois Urbana-Champaign

Graduate Research Assistant

Supervised by Professor Arindam Banerjee on Probabilistic Machine Learning.

- **Stochastic Localization:** Implemented sampling and training of energy-based models. [Code]
- **SGLD:** Developed a framework for noisy gradient descent using stochastic gradient Langevin dynamics.

Urbana, IL

Jan 2023 – Dec 2023

University of Illinois Urbana-Champaign

Graduate Research Assistant

Supervised by Professor Bo Li on Trustworthy Federated Learning.

- Assisted in developing **UniFed**, a benchmark for Federated Learning systems, by modifying FedML to inject testing protocols. [Code]

Urbana, IL

Aug 2022 – May 2023

VinAI Research

Research Resident

Vietnam

Jan 2022 – Aug 2022

Supervised by Professor Nhat Ho and Professor Tung Pham on Machine Learning.

- o Developed **Active Learning Benchmark Toolkit**, a PyTorch benchmark of active learning algorithms. [Code]
- o Developed **Computational Optimal Transport**, a collection of OT techniques in PyTorch. [Code]

VinAI Research

Research Intern

Vietnam

Aug 2021 – Dec 2021

Supervised by Professor Minh Hoai Nguyen on Probabilistic Computer Vision.

- o Developed **trackun**, a Python package for multiple object tracking using Bayesian filters. [Code]

SELab, University of Science, VNU-HCM

Research Assistant

Vietnam

2019 – 2021

Supervised by Professor Minh-Triet Tran on Computer Vision.

- o Developed **RingViewNet**, a neural 3D-model embedding system; achieved 1st place in SHREC'21. [Code]
- o Developed a codebase for **semantic segmentation** problems [Code] and worked on Video Object Segmentation challenges.
- o Developed a codebase for **re-identification** problems [Code]

Selected Publications

* indicates equal contribution

2025: The-Anh Vu-Le, J.A.C. Lamy, T. Alessi, I. Chen, M. Park, E. Harb, G. Chacko, T. Warnow. "Dense Subgraph Clustering and a New Cluster Ensemble Method." *International Conference on Complex Networks and their Applications*. [Paper] [Code]

2025: The-Anh Vu-Le*, M. Park*, I. Chen, T. Warnow. "Using Stochastic Block Models for Community Detection." *Applied Network Science*. [Paper] [Code]

2025: The-Anh Vu-Le, L. Anne, G. Chacko, T. Warnow. "EC-SBM Synthetic Network Generator." *Applied Network Science*. [Paper] [Code]

2025: L. Anne, The-Anh Vu-Le, M. Park, T. Warnow, G. Chacko. "RECCS: Realistic Cluster Connectivity Simulator for Synthetic Network Generation." *Advances in Complex Systems*. [Paper] [Code]

2023: The-Anh Vu-Le*, C.D. Nguyen*, T. Nguyen, T. Quan, A.T. Luu. "Expand BERT Representation with Visual Information via Grounded Language Learning with Multimodal Partial Alignment." *ACM International Conference on Multimedia (ACMMM)*. [Paper]

2022: K. Nguyen*, D. Nguyen*, **The-Anh Vu-Le**, T. Pham, N. Ho. "Improving Mini-batch Optimal Transport via Partial Transportation." *International Conference on Machine Learning (ICML)*. [Paper] [Code]

Personal Projects

2025: Neural Phylogenetic Tree Estimation (PyTorch): Applied metric learning for DNA sequence processing. [Code]

2025: LeNet (CUDA): Optimized forward convolution kernels via memory tiling/parallelization [Code]

2025: Math Formalization (Lean, mathlib4): Formalized math textbooks in Lean. [Code]

2022: Pseudo-Random Number Sampling (Python): A collection of pseudo-random number generators. [Code]

2020: Battleship Botwar (Unity): A visualization for an AI-based adversarial game. [Code]

2019: torchan (PyTorch): Modular training and evaluation framework for deep neural networks. [Code]

Professional Experience

University of Illinois Urbana-Champaign

Teaching Assistant

2022 – Present

Machine Learning (CS 446), Applied Machine Learning (CS 441), Discrete Structures (CS 173), Reinforcement Learning (CS 443), Probability & Statistics (CS 361).

International Conference on Artificial Intelligence and Statistics (AISTATS)

Reviewer

2023