Minh Phu Vuong

San Marcos, TX | cty13@txstate.edu | 737-303-2625 | https://www.linkedin.com/in/phuvuongg/

Education

Texas State University, Ph.D. in Computer Science   Sep 2022 – Present
- **Relevant courseworks:** Network Analysis, Data Mining, Deep Learning, High Performance Computing, Advanced Parallel Processing, Scientific Computing.

Technical Skills

Programming: Python • C++ • MATLAB • Shell• Markdown• Latex

Libraries: PyTorch• TensorFlow • PyG • DGL • NetworkX • cuGraph • Scikit-Learn • Matplotlib • Pytest

Machine Learning: Graph Neural Networks • Deep Neural Networks • Diffusion Models • Federated Learning • Transformers • Clustering • Classification • Regression • Supervised/Unsupervised Learning • Computer Vision

Research Projects

Effective Delayed Patching for Transient Malware Control on Networks
- Propose a novel patching policy that incorporates the influence of patching delay in a susceptible-infected epidemic model, formulated as a constrained graph partitioning problem to identify which nodes to vaccinate.
- Demonstrate through extensive simulations on synthetic and real-world networks that the proposed policy significantly outperforms baseline strategies in minimizing the number of infected nodes, especially under longer patching delays and limited patching resources.

FairAD: Computationally Efficient Fair Graph Clustering via Algebraic Distance
- Introduce a novel fair graph clustering method via algebraic distance that imposes fairness constraints in the affinity matrix and leverages graph coarsening to convert the optimization problem into a simpler graph cut problem, which is solved efficiently.
- Achieve up to $40\times$ speedup over state-of-the-art fair spectral clustering methods while maintaining competitive fairness and clustering quality on synthetic and six real-world datasets.

Personalized Federated Learning with Multivariate Time-series Data
- Develop deep learning models in a decentralized manner for solar power prediction, utilizing weather conditions, temporal factors, and historical data.
- Design a graph-based personalized federated learning to leverage both fine-grained level data dependencies and relationships between different clients to further enhance model performance.

Publications

FairAD: Computationally Efficient Fair Graph Clustering via Algebraic Distance   November 2025
M.P. Vuong, Y.-J. Lee, I. Ojeda-Ruiz, C.-H. Lee.
ACM International Conference on Information and Knowledge Management (CIKM)

Effective Delayed Patching for Transient Malware Control on Networks   October 2025
M.P. Vuong, C.-H. Lee, D. Y. Eun.
IEEE International Conference on Mobile Ad-Hoc and Smart Systems (MASS)

SDT-GNN: Streaming-based Distributed Training Framework for Graph Neural Networks   August 2025
X. Huang, W. Zhuo, **M.P. Vuong**, S. Li, J. Kim, B. Rees, C.-H. Lee.
To be appear in IEEE International Conference on Big Data 2025

Trapping Malicious Crawlers in Social Networks   April 2025
S. Li, **M.P. Vuong**, C.-H. Lee, D. Y. Eun.
Under review

CATGNN: Cost-Efficient and Scalable Distributed Training for Graph Neural Networks   April 2024

X. Huang, W. Zhuo, **M.P. Vuong**, S. Li, J. Kim, B. Rees, C.-H. Lee.

https://arxiv.org/abs/2404.02300

Synthesizing Challenging Pose Images for 2D Human Pose Estimation.   Jun 2022

M.P. Vuong, D. Lim, H. Lee, S. Kim.

https://www.dbpia.co.kr/Journal/articleDetail?nodeId=NODE11113444

Teaching Experience and Professional Services

Teaching Assistant, Texas State University – San Marcos, TX   Fall 2022, Spring – Fall 2023

- Hold office hours for students to improve their understanding of course materials and programming skills in Computer Networks, Data Structures and Algorithms, and Introduction to Network Science courses.
- Grade quizzes, exams, coding assignments, and provide debugging assistance along with invaluable feedback to 40-70 students.

Awards

MASS 2025 Student Travel Grant – U.S. National Science Foundation
Dotoral Merit Fellowship – Texas State University
Computer Science Research Excellence Award – Texas State University
Graduate Research Assistant Tuition Scholarship – Texas State University, Jeonbuk National University