Thu Bui

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EDUCATION

Purdue University, West Lafayette, IN   08/2021 – Present
Ph.D. in Computer Science

Trinity College, Hartford, CT   09/2017 – 05/2021
B.S. in Computer Science and Mathematics, *Magna Cum Laude* with Honors

PUBLICATIONS

1. **Thu Bui**, Anugunj Naman, Carola-Bibiane Schönlieb, Bruno Ribeiro, Beatrice Bevilacqua, Moshe Eliasof, *Random Propagations in GNNs*, UniReps Workshop, NeurIPS 2024 (Extended Abstract), Under review, 2024 (Full Paper)
2. **Thu Bui**, S Chandra Mouli, Raymond A. Yeh, Bruno Ribeiro, *Towards OOD Robustness for API-access Pretrained Models with Test-Time Adaptation*, Under review, 2024
3. Mai Elkady, **Thu Bui**, Bruno Ribeiro, David I. Inouye, *Vertical Validation: Evaluating Implicit Generative Models for Graphs on Thin Support Regions*, Uncertainty in Artificial Intelligence (UAI), 2024
4. Eunseob Kim, **Thu Bui**, Junyi Yuan, S Chandra Mouli, Bruno Ribeiro, Raymond A. Yeh, Michael P. Fassnacht, Martin B.G. Jun, *Online real-time machining chatter sound detection using convolutional neural network by adopting expert knowledge*, Manufacturing Letters Journal, 41.

RESEARCH INTERESTS

Machine Learning: Graph Learning, Random Propagation, Out-Of-Distribution Robustness
Generative AI: Graph Generative Models, Diffusion Models

WORK EXPERIENCE

Graduate Research Assistant, Purdue University, West Lafayette, IN   08/2021 – Present
Advisor: Professor Bruno Ribeiro

- Random Graph Propagation: Develop a random propagation method avoiding end-to-end training, *reducing runtime* by up to *6 times* and *memory usage* by up to *3 times* while maintaining or even surpassing performance by using randomness in message-passing, offering an efficient alternative to end-to-end trained GNNs.
- Color Invariance: Develop a test-time adaptation method for API-access models targeting out-of-distribution challenges, focusing on color transformations, achieving up to *10% improvement* over baselines.
- Audio classification: Collaborate with Mechanical Engineers to develop a real-time model classifying Chatter events from CNC machines, *96% accuracy* in known conditions and *94.51%* in unknown conditions.
- Generative Graph Model Evaluation: Propose a novel metric and data-splitting method for evaluating generative graph models that distinguishes meaningful models from those that merely memorize the training set or produce non-meaningful graphs.

Research Assistant, Trinity College, Hartford, CT   05/2019 – 05/2021
Advisor: Professor Ryan Pellico, Professor Ewa Syta, Professor Takunari Miyazaki

- Math Thesis: Develop spectral graph theory-based method for shortest paths in graphs, with theoretical proofs on trees and graphs with exact one cycle. Analyze patterns in graphs' spectrum and vibration modes.
- Computer Science Capstone: Validate hash functions on diverse expander graphs, compare with existing non-cryptographic hashes, and emphasize superiority on Random Method graphs, noting optimization possibilities.

Data Analysis Intern, Shinhan Bank, Ho Chi Minh City, Vietnam   05/2018 – 08/2018
- Retail products analysis: Conduct monthly market surveys and competitive analyses to identify trends, boost profitability, reduce costs, and grow market share.

HONORS and AWARDS

Marjorie V. Butcher Actuarial Studies and Applied Mathematics Prize   05/2021
Department of Mathematics, Trinity College, Hartford, CT
The Phi Gamma Delta Prizes in Mathematics   2019, 2020
Department of Mathematics, Trinity College, Hartford, CT

TECHNICAL SKILLS

Programming Languages	Python, Java, C
Deep Learning Framework	PyTorch, TensorFlow, Scikit learn
Others	OpenCV, Pandas, Matplotlib, Numpy, Matplotlib
Tools	Git, Docker

PROFESSIONAL SERVICES

Reviewer: ICLR 2025, UniReps Workshop 2024
Invited Speaker: Purdue University's SMART Films Consortium 2023, Mathematical Association of America Northeastern Section Fall 2019 Conference
Teaching Assistant at Purdue University: Problem Solving And Object-Oriented Programming (CS 180)