Thu Bui

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EDUCATION

Purdue University, West Lafayette, IN — 08/2021 – now

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: 2nd Edition of the Workshop on Unifying Representations in Neural Models
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: Relational Learning, GNNs, Out-Of-Distribution Robustness, Supervised Learning

Generative AI: Graph Generative Models, Diffusion Models

WORK EXPERIENCE

Research Assistant, Purdue University, West Lafayette, IN — 08/2021 – now

Advisor: Professor Bruno Ribeiro

- Random Graph Propagation Develop a random propagation method avoiding end-to-end training, reducing runtime and memory usage 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: Proposed 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)