

Thu Bui

West Lafayette, IN, 47906

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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**, S Chandra Mouli, Raymond A. Yeh, Bruno Ribeiro, *Towards OOD Robustness for API-access Pretrained Models with Test-Time Adaptation*, Under review, 2024
2. 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
3. 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*, North American Manufacturing Research Conference (NAMRC), 52.

RESEARCH INTERESTS

Machine Learning: Supervised learning, Out-Of-Distribution Robustness

Generative AI: Graph Generative Models, Diffusion Models

WORK EXPERIENCE

Research Assistant, Purdue University, West Lafayette, IN

08/2021 – now

Advisor: [Professor Bruno Ribeiro](#)

- Color Invariance: Develop a test-time adaptation method for any API-access pretrained models, focusing on transformational out-of-distribution challenges, with a specific emphasis on color transformations. Achieve a 2-3% improvement over baselines.
- OCR: Develop a generative graph-based method for reading sentences in out-of-distribution images.
- 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. Unlike traditional cross-validation, our method effectively distinguishes meaningful and novel models from mere memorization of the training set or production of 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.
- Analysis of digital natives' attitudes: Study digital natives' evolving awareness of security and privacy regarding mobile usage, noting improved awareness over the past decade alongside persistent gaps in tech-savviness.

Data Analysis Intern, Shinhan Bank, Ho Chi Minh City, Vietnam

05/2018 – 08/2018

- Retail products analysis: Conduct monthly market surveys of interest rates, retail products and competitive analyses to identify trends and enhance profitability, reduce costs, and increase 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

Excellent Intern

2018

Shinhan Bank, Ho Chi Minh City, Vietnam

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

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), Foundations of Computer Science (CS 182)