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. Mai Elkady, **Thu Bui**, Bruno Ribeiro, David I. Inouye, *Vertical Validation: Evaluating Implicit Generative Models for Graphs on Thin Support Regions*, Under submission, 2024
2. 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 black-box pretrained models, focusing on transformational out-of-distribution challenges, with a specific emphasis on color transformations. Achieve a 2-3% 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. 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. Create library for analyzing patterns and symmetries 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)