

Luke Bhan

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Education

University of California, San Diego

Ph.D. in Computer Science

Advisor: Yuanyuan Shi

Studying intersection of control theory and learning

San Diego, CA

Sept 2022 - Current

Vanderbilt University

Masters of Science

Advisor: Gautam Biswas

Accelerated MS/BS in Computer Science

Thesis: Deep Reinforcement Learning for Adaptive Control in Robotics

Nashville, TN

August 2018 - May 2022

Vanderbilt University

Bachelor of Science

Majored in Computer Science, Physics and Applied Math

Nashville, TN

August 2018 - May 2022

Achievements

- 2023 **Department of Energy Computational Science Graduate Fellowship (DOE CSGF)**, Full funding for a Ph.D. student for up to 4 years.
- 2022 **Underwood Memorial Award for Most Outstanding Senior**, Vanderbilt Department of Physics and Astronomy *Nashville, TN*
- 2021 **Best Student Paper Award**, 32nd Workshop Principle of Diagnosis *Germany*
- 2020 **Best Undergraduate Publication**, Vanderbilt Department of Physics and Astronomy *Nashville, TN*

Publications

Peer-Reviewed Conference Publications

- [7] **Luke Bhan**, Yuanyuan Shi, Iasson Karafyllis, Miroslav Krstic, and James Rawlings
Moving-Horizon Estimators for Hyperbolic and Parabolic PDEs in 1-D
In Submission, American Control Conference (ACC), 2024
- [6] **Luke Bhan**, Yuanyuan Shi, Miroslav Krstic
Neural Operators for Hyperbolic PDE Backstepping Kernels
Conference on Decision and Control (CDC), 2023
- [5] **Luke Bhan**, Yuanyuan Shi, Miroslav Krstic
Neural Operators for Hyperbolic PDE Backstepping Feedback Laws
Conference on Decision and Control (CDC), 2023
- [4] **Luke Bhan**, Yuanyuan Shi, Miroslav Krstic
Operator Learning for Nonlinear Adaptive Control
Learning for Dynamics and Control (L4DC, In Journal of Machine Learning Research), 2023

- [3] **Luke Bhan**, Marcos Quinones-Grueiro, Gautam Biswas
Concurrent Policy Blending and System Identification for Generalized Assistive Control
IEEE International Conference on Robotics and Automation (ICRA), 2022
- [2] **Luke Bhan**, Marcos Quinones-Grueiro, Gautam Biswas
Fault Tolerant Control Combining Reinforcement Learning and Model-based Control
IEEE Systems of Fault Tolerant Control (SysTol), 2021
- [1] Adam Stager, **Luke Bhan**, Andreas Malikopoulos, Liuhui Zhao
A Scaled Smart City for Experimental Validation of Connected and Automated Vehicles
Control in Transportation Systems (CTS), 2018

Journal Publications

- [5] Miroslav Krstic, **Luke Bhan**, Yuanyuan Shi
Neural Operators of Backstepping Controller and Observer Gain Functions for
Reaction-Diffusion PDEs
In Submission, Automatica, 2023
- [4] **Luke Bhan**, Yuanyuan Shi, Miroslav Krstic
Neural Operators for Bypassing Gain and Control Computations in PDE Backstepping
Accepted, Not Public, IEEE Transactions of Automatic Control (TAC), 2023
- [3] **Luke Bhan**, Cody Covington, Kálmán Varga
Laser-Driven Petahertz Electron Ratchet Nanobubbles
Nano Letters, 2022
- [2] **Luke Bhan**, Cody Covington, Kálmán Varga
Signatures of Atomic Structure in Subfemtosecond Laser-Driven Electron Dynamics
in Nanogaps
Physics Review B, 2022
- [1] **Luke Bhan**, Cody Covington, Kálmán Varga
Simulation of Photo-electron Spectrum and Electron Scattering by Dual Time
Propagation
The Journal of Chemical Physics, 2021

Work Experience

Teaching Assistant, Vanderbilt University

Software Design Patterns. Taught by Prof. Graham Hemmingway.
Introduction to Probability and Statistics. Taught by Prof. Dylan Domel-White.
Introduction to Numerical Analysis. Taught by Prof. Larry Schumaker.

Software Engineering Intern, Mongo DB

Developed Compression Algorithms for their Timeseries Database.
Mentored by Henrik Edin.

Software Engineering Intern, T-Mobile

Developed an Internal Analytics Dashboard for Visualizing Network Loads.
Mentored by Ryan Rembert.