NICHOLAS GALIOTO

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EDUCATION

University of Michigan, Ann Arbor   Ann Arbor, MI
PhD and MSE in Aerospace Engineering   *September 2018 - July 2023*
Defense date: May 15, 2023
GPA: 3.970/4.0

Vanderbilt University   Nashville, TN
BE in Mechanical Engineering   *August 2014 - May 2018*
summa cum laude (GPA: 3.943/4.0)

EXPERIENCE

University of Michigan, Ann Arbor   July 2023 - Present
Postdoctoral Research Fellow   *Ann Arbor, MI*

· Conducts research on system identification of dynamical systems using Bayesian inference/uncertainty quantification resulting in publications/talks
· Formulates and implements statistical learning algorithms that can outperform popular methods under high uncertainty
· Communicates with other researchers how to utilize work in pursuit of their research interests

Sandia National Laboratories   May 2022 - August 2022
R&D Graduate Summer Intern   *Livermore, CA*

· Independently researched the applicability of functional tensor networks and variational inference for scalable Bayesian estimation of dynamical systems
· Implemented tensor-train and sampling algorithms and integrated them with pre-existing code
· Composed a summer-end technical report detailing research findings, conclusions, and future work

Vanderbilt Aerospace Design Lab   January 2017 - May 2018
Simulations Lead   *Nashville, TN*

· Collaborated within a team of 12 to build a rocket capable of target identification for competition in the NASA Student Launch Initiative
· Developed simulations to predict the max acceleration and altitude of the rocket within 1% error
· Authored technical documents and presented technical designs before a panel of NASA engineers

AWARDS AND HONORS

Michigan Institute for Computational Discovery & Engineering Fellowship   September 2021

Academic Achievement Award   May 2018

NASA Student Launch Champion   May 2018

PUBLICATIONS

Galioto, Nicholas, and Alex Arkady Gorodetsky. "Likelihood-based generalization of Markov parameter estimation and multiple shooting objectives in system identification." *arXiv preprint arXiv:2212.13902* (2023).

Sharma, Harsh, et al. "Bayesian identification of nonseparable Hamiltonian systems using stochastic dynamic models." *2022 IEEE 61st Conference on Decision and Control (CDC)*. IEEE, 2022.

Galioto, Nicholas, and Alex Arkady Gorodetsky. "A new objective for identification of partially observed linear time-invariant dynamical systems from input-output data." *Learning for Dynamics and Control*. PMLR, 2021.

Galioto, Nicholas, and Alex Arkady Gorodetsky. "Bayesian identification of Hamiltonian dynamics from symplectic data." *2020 59th IEEE Conference on Decision and Control (CDC)*. IEEE, 2020.

Galioto, Nicholas, and Alex Arkady Gorodetsky. "Bayesian system ID: Optimal management of parameter, model, and measurement uncertainty." *Nonlinear Dynamics*, vol. 102, no. 1, 2020, pp. 241-267.

CONFERENCE AND WORKSHOP PRESENTATIONS

"Learning partially observed stochastic dynamical systems." SIAM Conference on Mathematics of Data Science, 26 Sept. 2022, San Diego, CA. Conference presentation.

"Accounting for model uncertainty in the identification of partially known models." 8th European Congress on Computational Methods in Applied Sciences and Engineering, 9 June 2022, Oslo, Norway. Conference presentation.

"Bayesian learning of stochastic dynamical models for quantities of interest." SIAM Conference on Uncertainty Quantification, 15 April, 2022, Atlanta, GA. Conference presentation.

"Enforcing physical phenomena in system identification using Bayesian inference and stochastic models." Mechanistic Machine Learning and Digital Twins for Computational Science, Engineering & Technology, 29 Sept. 2021, San Diego, CA. Conference presentation.

"Accounting for model errors in probabilistic linear identification of nonlinear PDE systems." 16th U.S. National Congress on Computationl Mechanics, 27 July 2021, Virtual. Conference presentation.

"A new objective function for identification of partially observed LTI dynamical systems from input-output data." Learning for Dynamics & Control Conference, 8 June 2021, Virtual. Poster presentation.

"Robust Bayesian inference by accounting for model error: with applications to Hamiltonian systems." SIAM Conference on Computational Science and Engineering, 4 March 2021, Virtual. Conference presentation.

"Bayesian identification of Hamiltonian dynamics from symplectic data." 59th IEEE Conference on Decision and Control, 14 Dec. 2020, Virtual. Conference presentation.

"Bayesian approaches for data-driven learning of dynamical systems." 3rd Physics Informed Machine Learning, 13 Jan. 2020, Santa Fe, NM. Poster presentation.

TEACHING ASSISTANTSHIPS

University of Michigan, Ann Arbor *Ann Arbor, MI*

· AEROSP 567: Statistical inference, estimation and learning Fall 2020, 2021

Vanderbilt University *Nashville, TN*

· ME 3224: Fluid mechanics Fall 2017
· ME 4267: Aerospace propulsion Spring 2018

PROFESSIONAL MEMBERSHIPS

United States Association for Computational Mechanics (USACM) 2021 - Present

Society for Industrial and Applied Mathematics (SIAM) 2021 - Present

Institute of Electrical and Electronics Engineers (IEEE) 2020 - Present