

Bassel Saleh

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Education

Doctor of Philosophy December 2024 (Expected)
Computational Science, Engineering, and Mathematics (CSEM)
The University of Texas at Austin, Oden Institute

Master of Science December 2020
Computational Science, Engineering, and Mathematics (CSEM)
The University of Texas at Austin, Oden Institute

Bachelor of Science, Physics May 2018
The University of Texas at Austin, College of Natural Sciences

Bachelor of Science, Computer Science May 2018
The University of Texas at Austin, College of Natural Sciences

Research Experience

Graduate Research Assistant, The University of Texas at Austin August 2018 - Present
Oden Institute for Computational Engineering and Sciences
OPTIMUS Group
Advisor: Omar Ghattas, Ph.D.

Undergraduate Research Assistant, Cornell University June 2017 – August 2017
Laboratory for Accelerator-based Sciences and Education (CLASSE)
NSF Research Experience for Undergraduates
Advisor: Gennady Shvets, Ph.D.

Undergraduate Research Assistant, The University of Texas at Austin June 2016 – May 2018
Oden Institute for Computational Engineering and Sciences
Moncrief Summer Internship, Extended
Advisor: Omar Ghattas, Ph.D.

Undergraduate Research Assistant, The University of Texas at Austin. January 2015 – April 2016
Department of Computer Science
Advisor: Etienne Vouga, Ph.D.

Teaching and Mentorship Experience

Instructor, Activateen March 2019 – May 2019
Workshop on Machine Learning Basics for Teens

Instructor, Activateen July 2018 – July 2018
Workshop on Introduction to Python and Programming Basics

Instructor, GT Learning Academy July 2015 – August 2015
Summer courses on algebra II, precalculus, chemistry, and physics for high schoolers

Publications and Technical Reports

Preprint (on arxiv soon)

B. Saleh, A. Zimmerman, P. Chen, O. Ghattas. “Tempered Multifidelity Importance Sampling for Gravitational Wave Parameter Estimation.” (2024)

Preprint (on arxiv soon)

B. Saleh, T. O’Leary-Roseberry, B. Keith, O. Ghattas. “Noise Aware Neural Operators for Bayesian Inverse Problems.” (2024)

Technical Report for Turing Honors Thesis

B. Saleh, O. Ghattas. “Scientific Machine Learning: A Neural Network-based Estimator for Forward Uncertainty Quantification.” UTCS Technical Reports. (2018) [Link to report](#)

Final Report for Cornell CLASSE REU

B. Saleh, G. Shvets, V. Khudik, T. Wang. “Modeling Bubble Formation in Plasma-Based Particle Accelerators.” CLASSE REU Reports. (2017) [Link to report](#)

Presentations and Posters

Oral Presentation

April 2024

American Physical Society April Meeting

Session on Gravitational Wave Parameter Estimation I: Methods

B. Saleh, A. Zimmerman, P. Chen, O. Ghattas. “Tempered Multifidelity Importance Sampling for Gravitational Wave Parameter Estimation.”

Poster

April 2023

American Physical Society April Meeting

B. Saleh, T. O’Leary-Roseberry, O. Ghattas, B. Keith. “Goal-Oriented Neural Network Surrogates for Gravitational Wave Models”

Oral Presentation

April 2022

SIAM Conference on Uncertainty Quantification

Mini-symposium on Physics-Informed and Data-Driven Predictive Models with Quantified Uncertainty

B. Saleh, T. O’Leary-Roseberry, B. Keith, O. Ghattas. “Parametric Machine Learning Surrogates for Gravitational Wave Signals.”

Poster

November 2021

IPAM Workshop on Source Inference and Parameter Estimation in Gravitational Wave Astronomy

B. Saleh, A. Zimmerman, P. Chen, O. Ghattas. “Multifidelity Importance Sampling for Gravitational Wave Inference.”

Oral Presentation

March 2021

SIAM Conference on Computational Science and Engineering

Mini-symposium on Computational Strategies for High Dimensional Stochastic Problems

B. Saleh, A. Zimmerman, P. Chen, O. Ghattas. “Multifidelity Importance Sampling for Gravitational Wave Inference.”

Oral Presentation

April 2020

American Physical Society April Meeting
Session on Gravitational Wave Analysis

A. Leviyev, B. Saleh, J. Chen, P. Chen, O. Ghattas, A. Zimmerman. “Stein Variational Inference for Gravitational Wave Likelihood Estimation.”

Oral Presentation

March 2020

SIAM Conference on Uncertainty Quantification*

Mini-symposium on Reduced Order Methods for Uncertainty Quantification in CFD Parametric Problems

B. Saleh, T. O’Leary-Roseberry, O. Ghattas. “Neural Networks as Control Variates for UQ in Ice Sheet Flow.”

**Cancelled due to Covid-19 pandemic*

Poster

March 2017

SIAM Conference on Computational Science and Engineering

B. Saleh, U. Villa, O. Ghattas. “Neural Networks as Reduced Models for Physical Systems and Inverse Problems.”

Oral Presentation

August 2017

CLASSE REU

B. Saleh, G. Shvets, V. Khudik, T. Wang. “Modeling Bubble Formation in Plasma-based Particle Accelerators.”

Poster

August 2016

UT Summer Research Scholars Poster Session

B. Saleh, U. Villa, O. Ghattas. “A Neural Network Approach to Modeling Inverse Problems.”

Organizational Experience

Organized mini-symposium at SIAM Texas-Louisiana Sectional Meeting

November 2023

Mathematical and Computational Foundations of Predictive Digital Twins

Co-organized with L. Cao, D. Luo

Awards and Honors

CNS Catalyst Grant, 2023-2024

CSEM Graduate Student Fellowship 2018-2022

Turing Honors Scholar 2014-2018

Dean’s Honors Scholar 2014-2018

Recipient, College of Natural Sciences Scholarship 2014

Recipient, Siemens Foundation Scholarship 2014

University Honors 2014-2018

College of Natural Sciences Honors 2015-2018

Regional Finalist at Siemens Competition in Math, Science, and Technology 2013

Professional Societies and Campus Organizations

Society for Industrial and Applied Mathematics (SIAM)

American Physical Society (APS)

SIAM Applied Math Mentorship Program: Spring 2021, Fall 2021, Spring 2022

STEM MUSE Mentorship Program: Fall 2023, Spring 2024