

Exponent®
Engineering & Scientific Consulting

Tyler Wiest, Ph.D.

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Professional Profile

Dr. Wiest specializes in utilizing statistical methods, modeling, and decision analysis to improve the functionality and efficiency of engineered systems. His technical expertise has been applied to mechanical and procedural failure analysis, industrial risk management, design and manufacturing of advanced materials, vibration analysis, optimization of finite element analysis studies, and computer vision.

Dr. Wiest has experience with a broad range of industries and technologies that allow him to swiftly deploy his technical abilities to address many different challenges. The majority of his work has been applied to petroleum processing facilities, additive and conventional manufacturing, consumer product design, and underwater acoustics. Dr. Wiest supports technical investigations in the industries listed above among others.

Prior to joining Exponent, Dr. Wiest completed his Ph.D. in Mechanical Engineering at the University of Texas at Austin. During this time, he also held a complementary appointment as a Graduate Research Assistant at Applied Research Laboratories. His research focused on developing design automation and optimization methods for acoustic metamaterials with many features and sensitive response behavior. As part of his work on directionally asymmetric acoustic metamaterials, he designed for — and built parts with — multiple additive manufacturing methods. In particular, he is experienced with powder bed fusion, fused deposition modeling, and stereolithography.

Before beginning graduate studies, Dr. Wiest worked as a production and facilities engineer for an independent petroleum exploration and production company. He optimized field wide production and led the redesign and upgrade of multiple oil stabilization facilities during this time. Dr. Wiest is trained in OSHA's Process Safety Management program and has experience with a wide variety of process equipment. A significant portion of his work included developing methods to utilize large volumes of data with geospatial and temporal features. Most notably, he built and distributed process surveillance and visualization dashboards to help other engineers manage their assets. This experience motivated him to pursue a graduate degree and improve his skills as a modeler and data scientist.

Academic Credentials & Professional Honors

Ph.D., Mechanical Engineering, University of Texas, Austin, 2021

B.S., Mechanical Engineering, Rice University, 2013

Graduate Teaching Fellow at University of Texas at Austin

Virginia and Ernest Cockrell, Jr. Fellowship

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Rice Scholar-Athlete Award

Academic Appointments

Graduate Research Assistant, J. Mike Walker Dept. of Mechanical Engineering, University of Texas at Austin, 2017-2022

Graduate Teaching Fellow, University of Texas at Austin, 2017-2020

Prior Experience

Product Engineer, Gembah, 2020-2022

Graduate Research Assistant, Applied Research Laboratories, 2017-2022

Facilities Engineer, Anadarko Petroleum, 2015-2016

Production Engineer, Anadarko Petroleum, 2013-2015

Professional Affiliations

American Society of Mechanical Engineers (ASME)

Publications

Wiest T, Seepersad C C, Haberman M. Robust Design of an Asymmetrically Absorbing Willis Acoustic Metasurface Subject to Manufacturing-induced Dimensional Variations. Journal of the Acoustical Society of America 2022; 151(1): 216-231.

Wiest T, Seepersad C C, Haberman M. Efficient Design of Acoustic Metamaterials with Design Domains of Variable Size Using Graph Neural Networks. Proceedings of ASME IDETC/CIE Design Automation Conference 2022, Paper Number: DETC2022-89722.

Wiest T, Sharpe C, Wang PF, Seepersad C C. A Comparative Evaluation of Supervised Machine Learning Classification Techniques for Engineering Design Applications. Journal of Mechanical Design 2019; 141(12):121404.

Wiest T, Seepersad C C, Haberman M. Design space exploration in sparse, mixed continuous/discrete spaces via synthetically enhanced classification. Proceedings of ASME IDETC/CIE Design Automation Conference 2018, Paper Number: DETC2018-85274.

Presentations

Wiest T, Seepersad C C, Haberman M. Efficient metamodeling of acoustic metasurfaces with variable sized design domains. Journal of the Acoustical Society of America, Denver, CO, 2022; 151(4): A253-A253.

Wiest T, Seepersad C C, Haberman M. Manufacturing-aware design of multi-material asymmetric acoustic absorbers. Journal of the Acoustical Society of America, Seattle, WA, 2021; 150(4): A168-A169.

Wiest T, Seepersad C C, Haberman M. Multi-material AM Aware Design of Asymmetric Acoustic Absorbers. Solid Freeform Fabrication Conference, Austin, TX, 2021.

Wiest T. Analysis of Directionally Asymmetric Acoustic Absorbers Utilizing a Subwavelength Metasurface. Poster presentation, Launch Event at UT Center for Additive Manufacturing and Design Innovation, Austin, TX, 2021.