

# XIAOSONG DU

[Physical Artificial Intelligence Laboratory](#)  
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Mechanical and Aerospace Engineering  
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## **EDUCATION**

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- Sep. 2014 – May 2019 Iowa State University, Ames, Iowa, United States  
Ph.D, Aerospace Engineering
- Sep. 2011 – Mar. 2014 Beijing Univ. of Aero. & Astro. (BUAA), Beijing, China  
Master's, Aerospace Engineering
- Sep. 2007 – Jun. 2011 Nanjing Univ. of Aero. & Astro. (NUAA), Nanjing, China  
Bachelor's, Aerospace Engineering

## **RESEARCH INTERESTS [GOOGLE SCHOLAR]**

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Artificial Intelligence, Generative Artificial Intelligence, Physical Artificial Intelligence  
Single- / Multi-fidelity Surrogate Modeling, Multidisciplinary Design Optimization

## **RESEARCH EXPERIENCE**

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*Postdoctoral Research Fellow at University of Michigan*

**Deep Inverse Mapping of Optimal Aerodynamic Designs** May 2020 – Aug. 2022

- Deep neural networks (DNN) between design requirements and optimal airfoil / wing
- Parsimonious DNN architecture by sensitivity-guided structure exploitation
- Generalized multi-fidelity DNN to alleviate the total computational cost

**Fast Interactive Airfoil Aerodynamic Optimization Framework** Jun. 2019 – Aug. 2021

- Self-developed b-spline generative adversarial networks for intelligent parameterization
- Gaussian copula dependence sampling on broad ranges of Mach and Reynolds numbers
- Multilayer perceptron networks for the prediction of drag / lift / moment coefficients
- Recurrent neural networks for the prediction of pressure coefficient distribution
- Fast interactive design optimization handling both subsonic and transonic regimes

**Research Advisor of Graduate Students on Predictive Modeling** Dec. 2019 – Aug. 2021

- Multiscale convolutional neural networks on large-scale flow field prediction
- Novel adaptive sampling strategy of reduced order model to predict flow field

*Research Assistant at Iowa State University*

**Bayesian-based Model-Assisted Probability of Detection (MAPOD)** Jul. 2017 – Apr. 2019

- Markov Chain Monte Carlo on damage characterization of structural health monitoring
- MAPOD analysis based on the probabilistic locations and magnitude of the damage

**Fast Calculation of MAPOD & Sobol' Indices** Jan. 2017 – Apr. 2019

- Polynomial chaos expansions (PCE) and PCE-based Kriging surrogate modeling
- Multi-fidelity modeling on nondestructive testing simulation models for the first time
- PCE-based Cokriging proposed as a novel multi-fidelity predictive model
- Fast surrogate-based MAPOD analysis on ultrasonic and eddy current testing systems
- PCE-based Sobol' indices for sensitivity analysis without using Monte Carlo sampling

## **Aerodynamic Robust Design**

Apr. 2016 – Dec. 2017

- PCE surrogate for fast uncertainty quantification on statistics of drag coefficient
- Least angle regression and hyperbolic truncation techniques for sparse-grid PCE
- Transonic airfoil design under uncertainty using utility theory for decision making

## **Aerodynamic Inverse Design**

Jul. 2015 – Jul. 2017

- Transonic-airfoil pressure distributions or subsonic-wing local lift distribution as targets
- Fast optimization using manifold mapping (MM)-based multi-fidelity predictive model
- Optimal infilling for efficient MM modeling with trust-region convergence criteria

*Research Assistant at BUAA*

## **Optimization Design of a Type of Utility Helicopter**

Nov. 2011 – Jun. 2012

- 3000-line C++ code for high-frequency radar cross-section scattering calculation
- User interface and post-processing for the computational code within python

## **SELF-DEVELOPED PYTHON TOOLBOX**

Kriging, Cokriging, PCE, PCE-based Kriging/Cokriging, Sobol' Indices, MAPOD analysis

## **PROFESSIONAL SKILLS**

Skills: Python, Tensorflow, Matlab, C/C++, FORTRAN, SLAM, SQL

Operation Environment: Windows, Linux, High-performance computational cluster

## **TEACHING & WORK EXPERIENCE**

<b>Assistant Professor</b>	Missouri University of Science and Technology	2022 – Present
<b>Research Advisor</b>	University of Michigan	2019 – 2022
<b>Teaching Assistant</b>	Iowa State University, BUAA	2012 – 2019

## **RESEARCH GRANTS**

- Doctoral Research and Training in Advanced Manufacturing for Extreme Environments. NSF Graduate Assistance in Areas of National Need Program. Total Award: **\$1,681.53K**. October 2024 – September 2025. My Role: **Co-PI** of Lead Institution. My Share: **\$117.71K**.
- Physical Artificial Intelligence-enabled Mathematical Modeling for Two-Phase Ferrofluid Flows via Experimentation. Missouri S&T IGI Seed Grant. Total Award: **\$30.0K**. November 2024 – October 2025. My Role: **PI** of Lead Institution. My Share: **\$23.5K**.
- Surrogate-based Physical Constraints on Generative Artificial Intelligence. NASA Missouri Space Grant Consortium Competitive Award. Total Award: **\$10.0K**. August 2024 – May 2025. My Role: **PI** of Lead Institution. My Share: **\$10.0K**.
- Physically Constrained Generative Artificial Intelligence-Enabled Engineering Design Optimization. Missouri S&T Seed Grant. Total Award: **8.7K**. August 2024 – May 2025. My Role: **PI** of Lead Institution. My Share: **\$8.7K**.
- A Multi-Fidelity Scientific Machine Learning Approach for Experiment-Level Engineering Design Optimization. Missouri S&T Seed Grant. Total Award: **\$15.7K**. January 2024 – August 2024. My Role: **PI** of Lead Institution. My Share: **\$15.7K**.
- Robotics-Inspired Local-Search Architecture for Engineering Design Optimization. Missouri S&T Seed Grant. Total Award: **\$2K**. February 2024 – June 2024. My Role: **PI** of Lead Institution. My Share: **\$2K**.

## **AWARDS AND HONORS**

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Editor’s Choice Article of Processes Journal	2025
Title Story of Electronics Journal	2024
Summer Scholars Program Proposal Winner at Missouri S&T	2023
Future Research Pioneers Program Proposal Winner at Missouri S&T	2023
Best Paper Award for ASME Journal of Nondestructive Evaluation	2019
Iowa State University Research Excellence Award	2019
Robert Bruce Thompson Fellowship of Iowa State University	2017
Excellent Creation Award in AVIC Cup – International Drones Innovation Grand Prix	2012
Utility Model Patent Certificate for No-Control-Surface Drones	2012
Voluntary Teacher of Elementary School in Chinese Countryside	2009
Grade A in Jiangsu Computer Rank Examination 2	2009
Champion of College Super Basketball League in Nanjing City	2008
First Grade Postgraduate’s Scholarship, BUAA	2011 – 2012
Excellent Social Activity Scholarship, NUAA	2009 – 2010
Excellent Student Leader Scholarship, NUAA	2009 – 2010
Best Student, NUAA	2008 – 2010

## **PUBLICATIONS**

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### *Peer-Reviewed Journal Papers*

- [J20] **Du, X.**, O’Leary-Roseberry, T., Chaudhuri, A., Martins, J. R. R. A., Willcox, K., and Ghattas, O., “Learning Optimal Aerodynamic Designs via Principal Component Analysis-based Multi-Fidelity Neural Networks”, *to be submitted to AIAA Journal*.
- [J19] Sisk, S., and **Du, X.**, “Physics-Constrained Generative Artificial Intelligence for Rapid Takeoff Trajectory Design”, *arXiv*, 2025.
- [J18] Sisk, S., and **Du, X.**, “Surrogate-Based Multidisciplinary Optimization for the Takeoff Trajectory Design of Electric Drones”, *Processes*, **12**(9), 2024.
- [J17] Wang, J., Martins, J. R. R. A., and **Du, X.**, “Automated Optimal Experimental Design Strategy for Reduced Order Modeling of Aerodynamic Flow Fields”, *Aerospace Science and Technology*, **150**, 2024.
- [J16] Yeh, S., and **Du, X.**, “Transfer-Learning-Enhanced Regression Generative Adversarial Networks for Optimal eVTOL Takeoff Trajectory Prediction”, *Electronics (open access with fee waiver)*, **13**(10), 2024.
- [J15] Yeh, S., and **Du, X.**, “Optimal Tilt-Wing eVTOL Takeoff Trajectory Prediction Using Regression Generative Adversarial Networks”, *Mathematics (open-access with fee waiver)*, **12**(1), 2023.
- [J14] O’Leary-Roseberry, T., **Du, X.**, Chaudhuri, A., Martins, J. R. R. A., Willcox, K., and Ghattas, O., “Learning High-Dimensional Parametric Maps via Reduced Basis Adaptive Residual Networks”, *Computer Methods in Applied Mechanics and Engineering*, **402**, 2022.
- [J13] Li, J., **Du, X.**, and Martins, J. R. R. A., “Machine Learning in Aerodynamic Shape Optimization”, *Progress in Aerospace Sciences*, **134**, 2021.
- [J12] **Du, X.**, He, P., and Martins, J. R. R. A., “Rapid Airfoil Design Optimization via

Neural Network-based Parameterization and Surrogate Modeling,” *Aerospace Science and Technology*, **113**, 2021.

- [J11] Nagawkar, J., Ren, J., **Du, X.**, Leifsson, L., and Koziel, S., “Single- and Multi-Point Aerodynamic Design Using Multifidelity Models and Manifold Mapping,” *Journal of Aircraft*, **58**(3), 2021, pp. 591-608.
- [J10] **Du, X.**, and Leifsson, L., “Multifidelity Modeling by Polynomial Chaos-Based Cokriging to Enable Efficient Model-Based Reliability Analysis of NDT Systems,” *Journal of Nondestructive Evaluation, Springer*, **39**(1), 2020, pp. 1-15.
- [J9] Leifsson, L., **Du, X.**, and Koziel, S., “Efficient Yield Estimation of Multiband Patch Antennas by Polynomial Chaos-based Kriging,” *International Journal of Numerical Modelling: Electronic Networks, Devices and Fields*, 2020.
- [J8] **Du, X.**, Leifsson, L., Meeker, W., Gurralla, P., Song, J., and Roberts, R., “Efficient Uncertainty Propagation via Polynomial Chaos-based Kriging for MAPOD,” *Engineering Computations*, **37**(1), 2019, pp. 73-92.
- [J7] **Du, X.**, and Leifsson, L., “Multifidelity Model-Assisted Probability of Detection via Cokriging,” *NDT & E International*, **108**, 2019.
- [J6] **Du, X.**, Leifsson, L., Meeker, W., Gurralla, P., Song, J., and Roberts, R., “Efficient Model-Assisted Probability of Detection and Sensitivity Analysis for Ultrasonic Testing Simulations using Stochastic Metamodeling,” *ASME Journal of Nondestructive Evaluation*, **2**(4), 2019.
- [J5] **Du, X.**, and Leifsson, L., “Optimum Aerodynamic Shape Design Under Uncertainty by Utility Theory and Metamodeling,” *Aerospace Science and Technology*, **95**, 2019.
- [J4] **Du, X.**, Ren, J., and Leifsson, L., “Aerodynamic Inverse Design Using Multifidelity Models and Manifold Mapping,” *Aerospace Science and Technology*, **85**, 2019, pp. 371-385.
- [J3] Bekasiewicz, A., Koziel, S., Leifsson, **Du, X.**, “Pareto Ranking Bisection Algorithm for EM-Driven Multi-Objective Design of Antennas in Highly-Dimensional Parameter Spaces,” *Procedia Computer Science*, **108**, 2017, pp. 1453-1462.
- [J2] Kurgan, P., Koziel, S., Leifsson, L., and **Du, X.**, “Expedite Design of Variable-Topology Broadband Hybrid Couplers for Size Reduction Using Surrogate-Based Optimization and Co- Simulation Coarse Models,” *Procedia Computer Science*, **108**, 2017, pp. 1483-1492.
- [J1] **Du, X.**, Leifsson, L., Koziel, S., and Bekasiewicz, A., “Airfoil Design Under Uncertainty Using Non-Intrusive Polynomial Chaos Theory and Utility Functions,” *Procedia Computer Science*, **108**, 2017, pp. 1493-1499.

#### *Conference Proceedings*

- [C33] Sisk, S., Khorasani-Gerdehkouhi, F., Abutunis, A., Chandrashekhara, K. and **Du, X.**, “Generative Adversarial Networks for Dimensionality Reduction in eVTOL Aircraft Takeoff Trajectory Optimization”, AIAA SciTech Forum, Orlando, Florida, January 2025.
- [C32] Paramkusham, D., Sisk, S., Wang, J., Yeh, S., **Du, X.** and Roberts, N., “An Adaptive Sampling Strategy on Optimal Takeoff Trajectory Prediction of Electric Drones”, AIAA SciTech Forum, Orlando, Florida, January 2025.
- [C31] Sella, V., O’Leary-Roseberry, T., **Du, X.**, Guo, M., Martins, J. R. R. A., Ghattas, O., Willcox, K. and Chaudhuri, A., “Improving Neural Network Efficiency with Multifidelity

- and Dimensionality Reduction Techniques”, AIAA SciTech Forum, Orlando, Florida, January 2025.
- [C30] Yeh, S., Yan, G. and **Du, X.**, “Inverse Machine Learning Prediction for Optimal Tilt-Wing eVTOL Takeoff Trajectory”, AIAA Aviation Forum, San Diego, California, June 2023.
  - [C29] Wang, L., Martins, J. R. R. A. and **Du, X.**, “Optimal Experimental Design-based Reduced Order Modeling for Learning Optimal Aerodynamic Designs”, AIAA Aviation Forum, San Diego, California, June 2023.
  - [C28] Sisk, S., Yan, G. and **Du, X.**, “Surrogate-based Optimal Multidisciplinary Takeoff Trajectory Design for Electric Drones”, AIAA Aviation Forum, San Diego, California, June 2023.
  - [C27] **Du, X.** and Martins, J. R. R. A., “Super Resolution Generative Adversarial Networks for Multi-Fidelity Pressure Distribution Prediction”, AIAA SciTech Forum, National Harbor, Maryland, January 2023.
  - [C26] **Du, X.**, Martins, J. R. R. A., O’Leary-Roseberry, T., Chaudhuri, A., Ghattas, O. and Willcox, K., “Learning Optimal Aerodynamic Designs through Multi-Fidelity Reduced-Dimensional Neural Networks”, AIAA SciTech Forum, National Harbor, Maryland, January 2023.
  - [C25] Wang, J., Martins, J. R. R. A. and **Du, X.**, “A Fully Automated Adaptive Sampling Strategy for Reduced-Order Modeling of Flow Fields”, AIAA SciTech Forum, National Harbor, Maryland, January 2023.
  - [C24] Wang, J., **Du, X.**, and Martins, J. R. R. A., “Novel Adaptive Sampling Algorithm for POD-based Non-intrusive Reduced Order Model”, AIAA Aviation Forum, Virtual Event, August 2021.
  - [C23] An, Y., **Du, X.**, and Martins, J. R. R. A., “A Convolutional Neural Network Model Based on Multiscale Structural Similarity for the Prediction of Flow Fields,” AIAA Aviation Forum, Virtual Event, August 2021.
  - [C22] **Du, X.**, He, P., and Martins, J. R. R. A., “A B-Spline-based Generative Adversarial Network Model for Fast Interactive Airfoil Aerodynamic Optimization,” AIAA SciTech Forum, Orlando, Florida, January 2020.
  - [C21] Nagawkar, J., Leifsson, L., and **Du, X.**, “Applications of Polynomial Chaos-Based Cokriging to Aerodynamic Design Optimization Benchmark Problems,” AIAA SciTech Forum, Orlando, Florida, January 2020.
  - [C20] **Du, X.**, Leifsson, L., Nagawkar, J., Meeker, W., Gurralla, P., Song, J., Roberts, R., “Metamodel-based Uncertainty Propagation for Model-Assisted Probability of Detection,” *Review of Progress in Quantitative Nondestructive Evaluation*, 2019.
  - [C19] Yan, J., Laflamme, S., Chen, A., Downey, A., **Du, X.**, Leifsson, L., and Hu, C., “Surface Sensing-based Technique for Nondestructive Evaluation,” *Review of Progress in Quantitative Nondestructive Evaluation*, 2019.
  - [C18] **Du, X.**, Leifsson, L., and Koziel, S., “Rapid Multi-Band Patch Antenna Yield Estimation Using Polynomial Chaos-Kriging,” *International Conference on Computational Science*, Faro, Algarve, Portugal, 2019.
  - [C17] **Du, X.**, Leifsson, L., and Koziel, S., “Fast Yield Estimation of Multi-Band Patch Antennas by PC-Kriging,” *IEEE MTT-S International Conference on Numerical*

*Electromagnetic and Multiphysics Modeling and Optimization*, Cambridge, MA, 2019.

- [C16] Yan, J., **Du, X.**, Laflamme, S., Leifsson, L., Hu, C., and Chen, A., “Model-Assisted Validation of a Strain-Based Dense Sensor Network,” *The International Society for Optics and Photonics*, Denver, Colorado, USA, 2019.
- [C15] **Du, X.**, and Leifsson, L., “Fast Uncertainty Propagation of Ultrasonic Testing Simulations for MAPOD and Sensitivity Analysis,” *IEEE MTT-S International Conference on Numerical Electromagnetic and Multiphysics Modeling and Optimization*, Reykjavik, Iceland, 2018.
- [C14] Leifsson, L., and **Du, X.**, “Multifidelity Modeling of Ultrasonic Testing Simulations with Cokriging,” *IEEE MTT-S International Conference on Numerical Electromagnetic and Multiphysics Modeling and Optimization*, Reykjavik, Iceland, 2018.
- [C13] **Du, X.**, and Leifsson, L., “Multifidelity Model-Assisted Probability of Detection via Cokriging,” *45<sup>th</sup> Annual Review of Progress in Quantitative Nondestructive Evaluation*, 2018.
- [C12] **Du, X.**, Gurralla, P., Leifur, L., Song, J., Meeker, W., and Roberts, R., “Fast MAPOD and Sensitivity Analysis Using Stochastic Metamodels,” *45<sup>th</sup> Annual Review of Progress in Quantitative Nondestructive Evaluation*, 2018.
- [C11] **Du, X.**, Gurralla, P., Leifsson, L., Song, J., Meeker, W., Roberts, R., Koziel, S., and Tesfahunegn, Y., “Stochastic-Expansions-Based Model-Assisted Probability of Detection Analysis of the Spherically-Void-Defect Benchmark Problem,” *International Conference on Computational Science*, ICCS 2018, Wuxi, China, June 2018.
- [C10] **Du, X.**, Yan, J., Laflamme, S., Leifsson, L., Tesfahunegn, Y., and Koziel, S., “Model-Assisted Probability of Detection for Structural Health Monitoring of Flat Plates,” *International Conference on Computational Science*, Wuxi, China, June 2018.
- [C9] **Du, X.**, Leifsson, L., Amrit, A., and Koziel, S., “Efficient Inverse Design of Transonic Airfoils Using Variable-Resolution Models and Manifold Mapping,” AIAA Aerospace Sciences Meeting, AIAA SciTech Forum, Kissimmee, Florida, January 2018.
- [C8] Yan, J., **Du, X.**, Downey, A., Cancelli, A., Laflamme, S., Chen, A., Leifsson, L., and Ubertini, F., “Surrogate Model for Condition Assessment of Structures Using a Dense Sensor Network,” SPIE Conference on Smart Structures and Nondestructive Evaluation, Denver, Colorado, March 2018.
- [C7] **Du, X.**, Leifsson, L., Grandin, R., Meeker, W., Roberts, R., and Song, J., “Model-Assisted Probability of Detection of Flaws in Aluminum Blocks Using Polynomial Chaos Expansion,” *Review of Progress in Quantitative Nondestructive Evaluation*, 2017.
- [C6] **Du, X.**, Amrit, A., Thelen, A., Leifsson, L., Zhang, Y., Han, Z., and Koziel, S., “Aerodynamic Design of a Rectangular Wing in Subsonic Inviscid Flow by Direct and Surrogate-Based Optimization,” *35<sup>th</sup> AIAA Applied Aerodynamics Conference*, Denver, Colorado, June 2017.
- [C5] **Du, X.**, Leifsson, L., and Koziel, S., “Robust Airfoil Design Optimization Using Stochastic Expansion and Utility Theory,” *18<sup>th</sup> AIAA / ISSMO Multidisciplinary Analysis and Optimization Conference*, AIAA Aviation Forum, Denver, Colorado, June 2017.
- [C4] **Du, X.**, Leifsson, L., Grandin, R., Meeker, W., Roberts, R., and Song, J., “Model-Assisted Probability of Detection of Ultrasonic Testing Simulation of a Flat

Bottom Hole Flaw in Aluminum Block Using Least Angle Regression Sparse Polynomial Chaos Expansion,” *44<sup>th</sup> Annual Review of Progress in Quantitative Nondestructive Evaluation*, 2017 (poster).

- [C3] Amrit, A., **Du, X.**, Thelen, A., Leifsson, L., and Koziel, S., “Aerodynamic Design of the RAE 2822 in Transonic Viscous Flow: Sing- and Multi- Objective Optimization Studies,” *35<sup>th</sup> AIAA Applied Aerodynamics Conference*, Denver, Colorado, June 2017.
- [C2] **Du, X.**, Grandin, R., and Leifsson, L., “Surrogate Modeling of Ultrasonic Simulations Using Data-Driven Methods,” *43<sup>rd</sup> Annual Review of Progress in Quantitative Nondestructive Evaluation*, 2016, pp. 150002-1 – 150002-9.
- [C1] Ren, J., Thelen, A., Amrit, A., **Du, X.**, Leifsson, L., Tesfahunegn, Y., and Koziel, S., “Application of Multi-Fidelity Optimization Techniques to Benchmark Aerodynamic Design Problems,” *54<sup>th</sup> AIAA Aerospace Sciences Meeting, AIAA SciTech Forum*, San Diego, California, January 2016.

#### *Conference Talks and Presentations*

- [P11] **Du, X.**, “Generative Adversarial Networks-Based Aerodynamic Analysis and Optimization”, Keynote Talk at *Physics and Its Applications Conference*, Boston, Massachusetts, October 2024.
- [P10] **Du, X.**, “Generative Artificial Intelligence in Aerospace Engineering”, Invited Talk at *Midwest Numerical Analysis Day*, Iowa City, Iowa, April 2024.
- [P9] **Du, X.**, and Martins, J. R. A. A., “Super Resolution Generative Adversarial Networks for Multi-Fidelity Pressure Distribution Prediction,” *AIAA SciTech Forum*, National Harbor, Maryland, January 2023.
- [P8] **Du, X.**, Martins, J. R. R. A., O’Leary Roseberry, T., Chaudhuri, A., Ghattas, O., and Willcox, K., “Learning Optimal Aerodynamic Designs through Multi-Fidelity Reduced Dimensional Neural Networks,” *AIAA SciTech Forum*, National Harbor, Maryland, January 2023.
- [P7] **Du, X.**, “Multi-Fidelity Parsimonious Neural Networks for Learning Optimal Aerodynamic Designs,” Invited Talk at *Scientific Machine Learning for Complex Systems Workshop*, Santa Fe, New Mexico, October 2022.
- [P6] **Du, X.**, He, P., and Martins, J. R. R. A., “A B-Spline-based Generative Adversarial Network Model for Fast Interactive Airfoil Aerodynamic Optimization,” *AIAA SciTech Forum*, Orlando, Florida, January 2020.
- [P5] **Du, X.**, and Leifsson, L., “Multifidelity Model-Assisted Probability of Detection via Cokriging,” *45<sup>th</sup> Annual Review of Progress in Quantitative Nondestructive Evaluation*, 2018.
- [P4] **Du, X.**, Gurralla, P., Leifur, L., Song, J., Meeker, W., and Roberts, R., “Fast MAPOD and Sensitivity Analysis Using Stochastic Metamodels,” *45<sup>th</sup> Annual Review of Progress in Quantitative Nondestructive Evaluation*, 2018.
- [P3] **Du, X.**, Leifsson, L., Song, J., Meeker, W., and Roberts, R., “Efficient Uncertainty Quantification for Model-Assisted Probability of Detection of Nondestructive Testing Simulations,” *Society for Industrial and Applied Mathematics Conference on Uncertainty Quantification*, Garden Grove, California, April 2018.
- [P2] **Du, X.**, Leifsson, L., Grandin, R., Meeker, W., Roberts, R., and Song, J., “Model-Assisted Probability of Detection of Flaws in Aluminum Blocks Using

Polynomial Chaos Expansion,” *44<sup>th</sup> Annual Review of Progress in Quantitative Nondestructive Evaluation*, 2017.

- [P1] **Du, X.**, Leifsson, L., and Koziel, S., “Robust Airfoil Design Optimization Using Stochastic Expansion and Utility Theory,” *18<sup>th</sup> AIAA / ISSMO Multidisciplinary Analysis and Optimization Conference*, AIAA Aviation Forum, Denver, Colorado, June 2017.

## **SERVICES**

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### *Professional/External Services*

Reviewer of NSF and NIH SCH Program	2024
Reviewer of NSF Graduate Research Fellowship Program	2024
Topical Advisory Panel for Processes Journal	2024, 2025
Guest Editor of a Special Issue for Processes Journal	2023 – 2025
Guest Editor of a Special Issue for Mathematics Journal	2022 – 2025
Editorial Board for Journal of Innovation Sciences and Sustainable Technologies	2022 – 2025
Volunteer of State Science and Technology Fair of Iowa	2019

### *Institutional Services*

Graduate Student Research Showcase Committee	2024
Kummer Institute Doctoral Research Fellowship for my PhD student	2024
Faculty Judge for Intelligent Systems Center Graduate Student Symposium	2023, 2024
Faculty Judge for Undergraduate Student Research Conference	2023, 2024
NASA-Missouri Graduate Research Fellowship for my PhD student	2022 – 2024
Faculty Evaluator of MAE Department Undergraduate Research Fellowship	2022
Representative of Diversity, Equity, and Inclusion of UMich Aerospace	2021
Technical Advisor of Boeing-supported M:2:I Multi-Mission Innovative Drone	2019
Volunteer of the BUAA 60 <sup>th</sup> Anniversary	2012