

Ilias Bilionis, Ph.D.
School of Mechanical Engineering
Purdue University, West Lafayette, IN 47907
Tel: 765-496-0217. E-mail: ibilion@purdue.edu

Professional Preparation

Ph.D.	2013	Cornell University	Applied Mathematics
Diploma	2008	N.T.U.A. (Greece)	Applied Mathematics

Appointments

Associate Professor		Purdue University	7/20 – present
Assistant Professor		Purdue University	8/14 – 6/20
Postdoctoral Researcher		Argonne National Laboratory	9/13 – 7/14
Graduate Research Assistant		Cornell University	8/08 – 8/13

Awards and Fellowships:

1. Outstanding mentor of mechanical engineering graduate students (2019).
2. Outstanding engineering teacher (Spring 2018, Fall 2018, Spring 2019).
3. Olin Fellowship, Cornell University, 2008-2009, \$55,014.
4. National Technical University of Athens award for best student performance in mathematics, 2003-2005, EUR 300.
5. State Scholarship Foundation (IKY) award for best student performance (2003-2004, 2004-2005), EUR 2,800.

Archival Journal Publications

Notes: The ‘*’ marks a major contributor. The ‘G’ superscript marks a graduate student.

1. Koutsourelakis, P.*; Bilionis, E.* Scalable Bayesian Reduced-Order Models for Simulating High-Dimensional Multiscale Dynamical Systems. *Multiscale Modeling & Simulation* 2011, 9 (1), 449–485. <https://doi.org/10.1137/100783790>. Tier 1
2. Bilionis, I.*; Koutsourelakis, P. S.* Free Energy Computations by Minimization of Kullback–Leibler Divergence: An Efficient Adaptive Biasing Potential Method for Sparse Representations. *Journal of Computational Physics* 2012, 231 (9), 3849–3870. <https://doi.org/10.1016/j.jcp.2012.01.033>. Tier 1
3. Bilionis, I.*; Zabararas, N.* Multidimensional Adaptive Relevance Vector Machines for Uncertainty Quantification. *Society for Industry and Applied Mathematics (SIAM) Journal of Scientific Computing* 2012, 34 (6), B881–B908. <https://doi.org/10.1137/120861345>. Tier 1
4. Bilionis, I.*; Zabararas, N.* Multi-Output Local Gaussian Process Regression: Applications to Uncertainty Quantification. *Journal of Computational Physics* 2012, 231 (17), 5718–5746. <https://doi.org/10.1016/j.jcp.2012.04.047>. Tier 1
5. Bilionis, I.*; Zabararas, N.* A Stochastic Optimization Approach to Coarse-Graining Using a Relative-Entropy Framework. *The Journal of Chemical Physics* 2013, 138 (4), 044313. <https://doi.org/10.1063/1.4789308>. Tier 1
6. Bilionis, I.*; Zabararas, N.; Konomi, B. A.*; Lin, G. Multi-Output Separable Gaussian Process: Towards an Efficient, Fully Bayesian Paradigm for Uncertainty Quantification. *Journal of Computational Physics* 2013, 241, 212–239. <https://doi.org/10.1016/j.jcp.2013.01.011>. Tier 1
7. Kristensen, J.*; Bilionis, I.*; Zabararas, N.* Relative Entropy as Model Selection Tool in Cluster Expansions. *Physical Review B* 2013, 87 (17), 174112. <https://doi.org/10.1103/PhysRevB.87.174112>. Tier 1
8. Bilionis, I.*; Zabararas, N.* Solution of Inverse Problems with Limited Forward Solver Evaluations: A Bayesian Perspective. *Inverse Problems* 2014, 30 (1), 015004. <https://doi.org/10.1088/0266-5611/30/1/015004>. Tier 1
9. Bilionis, I.*; Constantinescu, E. M.*; Anitescu, M.* Data-Driven Model for Solar Irradiation Based on Satellite Observations. *Solar Energy* 2014, 110, 22–38. <https://doi.org/10.1016/j.solener.2014.09.009>. Tier 1
10. Bilionis, I.*; Drewniak, B. A.*; Constantinescu, E. M.* Crop Physiology Calibration in the Community Land Model (CLM). *Geoscientific Model Development* 2015, 8 (4), 1071–1083. <https://doi.org/10.5194/gmd-8-1071-2015>. Tier 1

11. Chen, P.*; Zabararas, N.*; Bilonis, I.* Uncertainty Propagation Using Infinite Mixture of Gaussian Processes and Variational Bayesian Inference. *Journal of Computational Physics* 2015, 284, 291–333. <https://doi.org/10.1016/j.jcp.2014.12.028>. Tier 1
12. Pandita, P.*^G; Bilonis, I.*; Panchal, J.* Extending Expected Improvement for High-Dimensional Stochastic Optimization of Expensive Black-Box Functions. *Journal of Mechanical Design* 2016, 138 (11), 111412. <https://doi.org/10.1115/1.4034104>. Tier 1
13. Tripathy, R.*^G; Bilonis, I.*; Gonzalez, M.* Gaussian Processes with Built-in Dimensionality Reduction: Applications to High-Dimensional Uncertainty Propagation. *Journal of Computational Physics* 2016, 321, 191–223. <https://doi.org/10.1016/j.jcp.2016.05.039>. Tier 1
14. Tsilifis, P.*^G; Bilonis, I.*; Katsounaros, I.*; Zabararas, N.* Computationally Efficient Variational Approximations for Bayesian Inverse Problems. *Journal of Verification, Validation, and Uncertainty Quantification* 2016, 1 (3), 031004-031004–031013. <https://doi.org/10.1115/1.4034102>. Tier 1
15. Alrefae, M. A.*^G; Kumar, A.*^{PD}; Pandita, P.*^G; Candadai, A. G; Bilonis, I.*; Fisher, T. S.* Process Optimization of Graphene Growth in a Roll-to-Roll Plasma CVD System. *AIP Advances* 2017, 7 (11), 115102. <https://doi.org/10.1063/1.4998770>. Tier 1
16. Lee, S.*^G; Bilonis, I.*; Karava, P.*; Tzempelikos, A.* A Bayesian Approach for Probabilistic Classification and Inference of Occupant Thermal Preferences in Office Buildings. *Building and Environment* 2017, 118, 323–343. <https://doi.org/10.1016/j.buildenv.2017.03.009>. Tier 1
17. Sadeghi, S. A.*^G; Awalgaonkar, N. M.*^G; Karava, P.*; Bilonis, I.* A Bayesian Modeling Approach of Human Interactions with Shading and Electric Lighting Systems in Private Offices. *Energy and Buildings* 2017, 134, 185–201. <https://doi.org/10.1016/j.enbuild.2016.10.046>. Tier 1
18. Dachowicz, A.*^G; Chaduvula, S. C.*^G; Atallah, M. J.*; Bilonis, I.*; Panchal, J. H.* Strategic Information Revelation in Collaborative Design. *Advanced Engineering Informatics* 2018, 36, 242–253. <https://doi.org/10.1016/j.aei.2018.04.004>. Tier 1
19. Lee, T.*^G; Turin, S. Y.*; Gosain, A. K.*; Bilonis, I.*; Buganza T. A.* Propagation of Material Behavior Uncertainty in a Nonlinear Finite Element Model of Reconstructive Surgery. *Biomechanics and Modeling in Mechanobiology* 2018, 17 (6), 1857–1873. <https://doi.org/10.1007/s10237-018-1061-4>. Tier 1
20. Liu, X.*^G; Paritosh, P.*^G; Awalgaonkar, N. M.*^G; Bilonis, I.*; Karava, P.* Model Predictive Control under Forecast Uncertainty for Optimal Operation of Buildings with Integrated Solar Systems. *Solar Energy* 2018, 171, 953–970. <https://doi.org/10.1016/j.solener.2018.06.038>. Tier 1
21. Pandita, P.*^G; Bilonis, I.*; Panchal, J.*; Gautham, B. P.; Joshi, A.; Zagade, P. Stochastic Multiobjective Optimization on a Budget: Application to Multipass Wire Drawing with Quantified Uncertainties. *International Journal for Uncertainty Quantification* 2018, 8 (3). <https://doi.org/10.1615/Int.J.UncertaintyQuantification.2018021315>. Tier 1
22. Sadeghi, S. A.*^G; Lee, S.*^G; Karava, P.*; Bilonis, I.*; Tzempelikos, A.* Bayesian Classification and Inference of Occupant Visual Preferences in Daylit Perimeter Private Offices. *Energy and Buildings* 2018, 166, 505–524. <https://doi.org/10.1016/j.enbuild.2018.02.010>. Tier 1
23. Shergadwala, M.*^G; Bilonis, I.*; Kannan, K. N.*; Panchal, J. H.* Quantifying the Impact of Domain Knowledge and Problem Framing on Sequential Decisions in Engineering Design. *Journal of Mechanical Design* 2018, 140 (10), 101402-101402–101413. <https://doi.org/10.1115/1.4040548>. Tier 1
24. Tripathy, R. K.*^G; Bilonis, I.* Deep Uncertainty Quantification (UQ): Learning Deep Neural Network Surrogate Models for High Dimensional Uncertainty Quantification. *Journal of Computational Physics* 2018, 375, 565–588. <https://doi.org/10.1016/j.jcp.2018.08.036>. Tier 1
25. Xiong, J.*^G; Tzempelikos, A.*; Bilonis, I.*; Awalgaonkar, N. M.*^G; Lee, S.*^G; Konstantzos, I.*^G; Sadeghi, S. A.*^G; Karava, P.* Inferring Personalized Visual Satisfaction Profiles in Daylit Offices from Comparative Preferences Using a Bayesian Approach. *Building and Environment* 2018, 138, 74–88. <https://doi.org/10.1016/j.buildenv.2018.04.022>. Tier 1
26. Lee, S.*^G; Joe, J.*^G; Karava, P.*; Bilonis, I.*; Tzempelikos, A.* Implementation of a Self-Tuned HVAC Controller to Satisfy Occupant Thermal Preferences and Optimize Energy Use. *Energy and Buildings* 2019, 194, 301–316. <https://doi.org/10.1016/j.enbuild.2019.04.016>. Tier 1
27. Lee, S.*^G; Karava, P.*; Tzempelikos, A.*; Bilonis, I.* Inference of Thermal Preference Profiles for Personalized Thermal Environments with Actual Building Occupants. *Building and Environment* 2019, 148, 714–729. <https://doi.org/10.1016/j.buildenv.2018.10.027>. Tier 1
28. Lee, T.*^G; Gosain, A. K.*; Bilonis, I.*; Tepole, A. B.* Predicting the Effect of Aging and Defect Size on

- the Stress Profiles of Skin from Advancement, Rotation and Transposition Flap Surgeries. *Journal of the Mechanics and Physics of Solids* 2019, 125, 572–590. <https://doi.org/10.1016/j.jmps.2019.01.012>. Tier 1
29. Scheidegger, S.*; Bilonis, I.* Machine Learning for High-Dimensional Dynamic Stochastic Economies. *Journal of Computational Science* 2019, 33, 68–82. <https://doi.org/10.1016/j.jocs.2019.03.004>. Tier 1
 30. Xiong, J.*^G; Tzempelikos, A.*; Bilonis, I.*; Karava, P.* A Personalized Daylighting Control Approach to Dynamically Optimize Visual Satisfaction and Lighting Energy Use. *Energy and Buildings* 2019, 193, 111–126. <https://doi.org/10.1016/j.enbuild.2019.03.046>. Tier 1
 31. Pandita, P.*^G; Bilonis, I.*; Panchal J.* Bayesian Optimal Design of Experiments for Inferring the Statistical Expectation of Expensive Black-Box Functions. *Journal of Mechanical Design* 2019, 141(10), <https://doi.org/10.1115/1.4043930>. Tier 1
 32. Peña, F.*^G; Bilonis, I.*; Dyke, S.* Model Selection and Uncertainty Quantification of Seismic Fragility Functions. *American Society of Civil Engineers (ASCE) American Society of Mechanical Engineers (ASME) Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering* 2019, 5(3), 04019009, <https://doi.org/10.1061/AJRUA6.0001014>. Tier 1
 33. Lund, A.*^G; Dyke, S.*; Song, W.*; Bilonis, I.* Global Sensitivity Analysis for the Design of Nonlinear Identification Experiments. *Nonlinear Dynamics* 2019, 98, 375-394. <https://link.springer.com/article/10.1007/s11071-019-05199-9>. Tier 1
 34. Naik, P.*^G; Pandita, P.*^G; Aramideh, S.*^G; Bilonis, I.*; Ardekani, A.* Bayesian Model Calibration and Optimization of Surfactant-polymer Flooding. *Computational Geosciences* 2019, 23, 981-996. <https://link.springer.com/article/10.1007/s10596-019-09858-z>. Tier 1
 35. Lenjani, A.*^G; Yeum, C. M.*; Dyke, S.*; Bilonis, I.* Automated Building Image Extraction from 360-degree Panoramas for Post-disaster Evaluation. *Journal of Computer-aided Civil and Infrastructure Engineering* 2020, 1-17. <https://doi.org/10.1111/mice.12493>. Tier 1
 36. Lund, A.*^G; Dyke, S.*; Song, W.*; Bilonis, I.* Identification of an Experimental Nonlinear Energy Sink Device Using Unscented Kalman Filter. *Mechanical Systems and Signal Processing* 2020, 136, 106512. <https://www.sciencedirect.com/science/article/pii/S0888327019307332>. Tier 1
 37. Karumuri, S.*^G; Tripathy, R.*^G; Bilonis, I.*; Panchal, J.* Simulator-free Solution of High-Dimensional Stochastic Elliptic Partial Differential Equations Using Deep Neural Networks. *Journal of Computational Physics* 2020, 404, 109120, <https://doi.org/10.1016/j.jcp.2019.109120>. Tier 1
 38. Lee, T.*^G; Bilonis, I.*; Buganza T. A.* Propagation of Uncertainty in the Mechanical and Biological Response of Growing Tissues using Multi-fidelity Gaussian Processes. *Computer Methods in Applied Mechanics and Engineering* 2020, 359, 112724, <https://doi.org/10.1016/j.cma.2019.112724>. Tier 1
 39. Safarkhani, S.*^G; Bilonis, I.*; Panchal, J.* Towards a Theory of Systems Engineering Processes: A Principal-agent Model of a One-shot, Shallow Process. *The Institute of Electrical and Electronics (IEEE) Systems Journal* 2020, <https://doi.org/10.1109/JSYST.2020.2964668>. Tier 1
 40. Lenjani, A.*^G; Bilonis, I.*; Dyke, S.*; Yeum C. M.*; Monteiro, R.* A Resilience-based Method for Prioritizing Post-event Building Inspections. *Natural Hazards* 2020, 100, 877-896, <https://link.springer.com/article/10.1007/s11069-019-03849-0>. Tier 1
 41. Chaudhari, A. M.*^G; Bilonis, I.*; Panchal, J.* Descriptive Models of Sequential Decisions in Engineering Design: An Experimental Study. *Journal of Mechanical Design* 2020, 142(8), 081704, <https://doi.org/10.1115/1.4045605>. Tier 1
 42. Lenjani, A.*^G; Dyke, S.*; Bilonis, I.*; Yeum C. M.*; Kamiya, K.*; Jongseong C.*; Xiaoyu, L.*^G; Chowdhury, A. G.* Towards Fully Automated Post-event Data Collection and Analysis: Pre-event and Post-event Information Fusion. *Engineering Structures* 2020, 208, 109884, <https://doi.org/10.1016/j.engstruct.2019.109884>. Tier 1
 43. Sahu, A.*^G; Aliprantis, D.*; Bilonis, I.* Quantification and Propagation of Uncertainty in the Magnetic Characteristic of Steel and Permanent Magnets of a Synchronous Machine Drive. *IEEE Transactions of Energy Conversion* 2020, 35(4), 1926 – 1934, <https://doi.org/10.1109/TEC.2020.2998142>. Tier 1
 44. Safarkhani, S.*^G; Bilonis, I.*; Panchal, J.* Modeling the System Acquisition using Deep Reinforcement Learning. *IEEE Access* 2020, 8, 124894 – 124904, <https://doi.org/10.1109/ACCESS.2020.3008083>. Tier 1
 45. Beltran-Pulido, A.*^G; Aliprantis, D.*; Bilonis, I.*; Munoz, A.*; Leonardi, F.*; Avery, S.*; Uncertainty Quantification and Sensitivity Analysis in a Nonlinear Finite Element Model of a Permanent Magnet Synchronous Machine. *IEEE Transactions on Energy Conversion* 2020, 35 (4), 2152 – 2161, <https://doi.org/10.1109/TEC.2020.3001914>. Tier 1

46. Peña, F.*^G; Bilonis, I.*; Dyke, S.*; Cao, Y.*; Mavroeidis, G. P.*; Efficient Seismic Fragility Functions Through Sequential Selection. *Structural Safety*, 2020, 87, 101977, <https://doi.org/10.1016/j.strusafe.2020.101977>. Tier 1
47. Casey, A. D.*^G; Son, S. F.*; Bilonis, I.*; Barnes, B. C.*; Prediction of Energetic Material Properties from Electronic Structure Using 3D Convolutional Neural Networks. *Journal of Chemical Information and Modeling* 2020, 60 (10), 4457 – 4473, <https://pubs.acs.org/doi/10.1021/acs.jcim.0c00259>. Tier 1
48. Lee, S.*^G; Karava, P.*; Tzempelikos, A.*; Bilonis, I.*; A Smart and Less Intrusive Feedback Request Algorithm Towards Human-centered HVAC Operation. *Building and Environment* 2020, 184, 107190, <https://doi.org/10.1016/j.buildenv.2020.107190>. Tier 1
49. Xiong J.*^G; Awalgaonkar, N.*^G; Tzempelikos, A.*; Bilonis, I.*; Karava, P.*; Efficient Learning of Personalized Visual Preferences in Daylit Offices: An Online Elicitation Framework. *Building and Environment* 2020, 181, 107013, <https://doi.org/10.1016/j.buildenv.2020.107013>. Tier 1
50. Liu, X.*^G; Dyke, S. J.*; Yeum, C. M.*; Bilonis, I.*; Lenjani, I.*^G; Choi, J.*; Automated Indoor Image Localization to Support Post-Event Building Assessment. *Sensors* 2020, 20 (6), 1610, <https://doi.org/10.3390/s20061610>. Tier 1
51. Stowers, C.*^{UG}; Lee, T.*^G; Bilonis, I.*; Gosain, A.*; Tepole, A. B.*; Improving Reconstructive Surgery Design using Gaussian Process Surrogates to Capture Material Behavior Uncertainty. *Journal of the Mechanical Behavior of Biomedical Materials* 2021, 118, 104340. <https://doi.org/10.1016/j.jmbbm.2021.104340>. Tier 1
52. Lund, A.*^G; Bilonis, I.*; Dyke, S. J.*; Variational Inference for Nonlinear Structural Identification, *Journal of Applied and Computational Mechanics* 2021, 7, Special Issue, 1218-1231, <https://dx.doi.org/10.22055/jacm.2020.32626.2049>. Tier 1
53. Liu, X.*^G; Lee, S.*; Bilonis, I.*; Karava, P.*; Joe, J.*; Sadeghi, A.*; A User-interactive System for Smart Thermal Environment Control in Office Buildings. *Applied Energy* 2021, 298, 117005, <https://doi.org/10.1016/j.apenergy.2021.117005>. Tier 1
54. Sang, W. H.*^G; Karava, P.*; Bilonis, I.*; Braun, J.*; A Data-driven Model for Building Energy Normalization to Enable Eco-feedback in Smart and Connected Multi-family Residential Buildings. *Journal of Building Performance Simulation* 2021, 14 (4), 343-365, <https://doi.org/10.1080/19401493.2021.1928755>. Tier 1
55. Pandita P.*^G; Tsilifis, P.*; Awalgaonkar, N.*^G; Bilonis, I.*; Panchal, J.*; Surrogate-based sequential Bayesian experimental design using non-stationary Gaussian processes. *Computer Methods in Applied Mechanics and Engineering* 2021, 385, 114007, <https://doi.org/10.1016/j.cma.2021.114007>. Tier 1
56. Ogunsina, K.*^G; Bilonis, I.*; DeLaurentis, D.*; Exploratory Data Analysis for Airline Disruption Management. *Machine Learning with Applications* 2021, 6, 100102, <https://doi.org/10.1016/j.mlwa.2021.100102>. Tier 1
57. Ham, S.*^G; Karava, P.*; Bilonis, I.*; Braun, J.*; Real-time Model for Unit-level Heating and Cooling Energy Prediction in Multi-family Residential Housing. *Journal of Building Performance Simulation* 2021, 14 (4), 420-445, <https://doi.org/10.1080/19401493.2021.1968495>. Tier 1
58. Choi, J.*; Park, J. A.*; Dyke, S.*; Yeum, C. M.*; Liu, X., Lenjani, A.*^{PD}; Bilonis, I.*; Similarity Learning to Enable Building Searches in Post-event Image Data. *Computer-aided Civil and Infrastructure Engineering* 2022, 37 (2), 261-275, <https://doi.org/10.1111/mice.12698>. Tier 1
59. Ham, S.*^G; Karava, P.*; Bilonis, I.*; Braun, J.*; A Scalable and Practical Method for Disaggregating Heating and Cooling Electrical Usage Using Smart Thermostat and Smart Metre Data. *Journal of Building Performance Simulation* 2022, 15 (2), 251-267, <https://doi.org/10.1080/19401493.2022.2032352>. Tier 1
60. Zhong, X.*^G; Bilonis, I.*; Ardekani, A.*; A Framework to Optimize Spring-driven Autoinjectors. *International Journal of Pharmaceutics* 2022, 617, 121588, <https://doi.org/10.1016/j.ijpharm.2022.121588>. Tier 1
61. Liu, X.*^G; Dyke, S.*; Lenjani, A.*^{PD}; Bilonis, I.*; Zhang, X.*; Choi, J.*; Automated Image Localization to Support Rapid Building Reconnaissance in a Large-scale Area. *Computer-Aided Civil and Infrastructure Engineering* 2022, <https://doi.org/10.1111/mice.12828>. Tier 1.
62. Kim, H.*^G; Ham, S.*^G; Promann; M.*^{PD}; Devarapalli, H.*; Bihani, G.*^G; Ringenberg T.*^G; Kwarteng, V.*^G; Bilonis, I.*; Braun, J. E.*; Taylor Rayz, J.*; Raymond, L.*; Reimer, T.*; Karava, P.*; MySmartE – An Eco-feedback and Gaming Platform to Promote Energy Conserving Thermostat-adjustment Behaviors in Multi-unit Residential buildings. *Building and Environment* 2022, 221, 109252, <https://doi.org/10.1016/j.buildenv.2022.109252>. Tier 1.

63. Beltrán-Pulido, A.*^G; Bilionis, I.*; Aliprantis, D.*; Physics-informed Neural Networks for Solving Parametric Magnetostatic Problems. IEEE Transactions on Energy Conversion 2022, <https://doi.org/10.1109/TEC.2022.3180295>. Tier 1
64. Shergadwala, M.*; Panchal, J.*; Bilionis, I.* How does Past Performance of Competitors Influence Designers' Cognition, Behaviors, and Outcomes? Journal of Mechanical Design 2022, 144(10), 101401, <https://doi.org/10.1115/1.4054604>. Tier 1
65. Thomas, A. J.*^G; Barocio, E.*; Bilionis, I.*; Pipes, R. B.*; Bayesian Inference of Fiber Orientation and Polymer Properties in Short Fiber-reinforced Polymer Composites. Composites Science and Technology 2022, 228, 109630, <https://doi.org/10.1016/j.compscitech.2022.109630>. Tier 1
66. Hans, A.*^G; Chaudhari A. M.*^G; Bilionis, I.*; Panchal, J.*; A Bayesian Hierarchical Model for Extracting Individuals' Theory-Based Causal Knowledge. Journal of Computing and Information Science in Engineering 2023, 23 (3), 031011, <https://doi.org/10.1115/1.4055596>. Tier 1
67. de Lucio, M.*^G; Leng, Y.*^G; Hans, A.*^G; Bilionis, I.*; Brindise, M.*; Ardekani, A.*; Vlachos, P.*; Gomez, H.*; Modeling Large-volume Subcutaneous Injection of Monoclonal Antibodies with Anisotropic Porohyperelastic Models and Data-driven Tissue Layer Geometries. Journal of the Mechanical Behavior of Biomedical Materials 2023, 138, 105602, <https://doi.org/10.1016/j.jmbbm.2022.105602>. Tier 1
68. Karumuri, S.*^G; McCluer, Z.*^G; Strachan, A.; Titus, M.; Bilionis, I.*; Hierarchical Bayesian Approach to Experimental Fusion: Application to Strength Prediction of High Entropy Alloys from Hardness Measurements. Computational Materials Science 2023, 217, 111851, <https://doi.org/10.1016/j.commatsci.2022.111851>. Tier 1
69. Kim, H.*^G; Bilionis, I.*; Karava, P.*; Braun J.*; Human Decision Making During Eco-feedback Intervention in Smart and Connected Energy-aware Communities. Energy and Buildings, 2023, 112627, <https://doi.org/10.1016/j.enbuild.2022.112627>. Tier 1
70. Sree, V.*^G; Zhong, X.*^G; Bilionis, I.*; Ardekani, A.*; Tepole, A. B.*; Optimizing Autoinjector Devices Using Physics-based Simulations and Gaussian Processes. Journal of the Mechanical Behavior of Biomedical Materials, 2023, 105695, <https://doi.org/10.1016/j.jmbbm.2023.105695>. Tier 1
71. Alberts, A.*^G; Bilionis, I.*; Physics-informed Information Field Theory for Modeling Physics Systems with Uncertainty Quantification. Journal of Computational Physics, 2023, 486 (112100), <https://doi.org/10.1016/j.jcp.2023.112100>. Tier 1

Fully Reviewed Book Chapters

1. Kristensen, J.*; Bilionis, I.*; Zabarar N.* Adaptive Simulation Selection for the Discovery of the Ground State Line of Binary Alloys with a Limited Computational Budget. Recent Progress and Modern Challenges in Applied Mathematics, Modeling and Computational Science, vol 79, Springer, New York, pp. 185-211, 2017. https://doi.org/10.1007/978-1-4939-6969-2_6
2. Bilionis, I.*; Zabarar N.* Bayesian Uncertainty Propagation using Gaussian Processes. Handbook of Uncertainty Quantification, no. 16, Cham: Springer International Publishing, pp. 555–599, 2017. https://doi.org/10.1007/978-3-319-11259-6_16-1.

Fully Reviewed Conference Papers

1. Pandita P.*^G, Bilionis I.*, Panchal J.* Extending Expected Improvement for High-Dimensional Stochastic Optimization of Expensive Black-Box Functions. American Society of Mechanical Engineers (ASME). International Design Engineering Technical Conferences and Computers and Information in Engineering Conference, Volume 2B: 42nd Design Automation Conference 2016: V02BT03A060. Charlotte, North Carolina <https://doi.org/10.1115/DETC2016-60527>.
2. Lee, S.*^G; Bilionis, I.*; Karava, P.*; and Tzempelikos, A.* A Bayesian Approach for Learning and Predicting Personal Thermal Preference (2016). International High Performance Buildings Conference. Paper 233. West Lafayette, Indiana <http://docs.lib.purdue.edu/ihpbc/233>.
3. Sadeghi, S. A.*^G; Awalgaonkar, N.*^G; Karava, P.*; and Bilionis, I.* A Bayesian Approach for Modeling Occupants' Use of Window Shades" (2016). International High Performance Buildings Conference. Paper 169. West Lafayette, Indiana <http://docs.lib.purdue.edu/ihpbc/169>.
4. Liu, X.*^G; Paritosh, P.*^G; Awalgaonkar, N.*^G; Bilionis, I.*; Karava, P.* Optimal Solar Energy Utilization in Building Operation under Weather Uncertainty (2018). International High Performance Buildings Conference. Paper 327. West Lafayette, Indiana <https://docs.lib.purdue.edu/ihpbc/327>.
5. Awalgaonkar, N.*^G; Xiong, J.*^G; Bilionis, I.*; Tzempelikos, A.*; and Karava, P.* Design of Experiments

- for Learning Personalized Visual Preferences of Occupants In Private Offices (2018). International High Performance Buildings Conference. Paper 336. West Lafayette, Indiana <https://docs.lib.purdue.edu/ihpbc/336>.
6. Lee, S.*^G; Karava, P.*; Tzempelikos, A.*; Bilonis, I.* An Efficient Method for Learning Personalized Thermal Preference Profiles in Office Spaces. (2018). International High Performance Buildings Conference. Paper 326. West Lafayette, Indiana <https://docs.lib.purdue.edu/ihpbc/326>.
 7. Safarkhani, S.*^G; Kattakuri, V.*^G; Bilonis, I.*; Panchal, J.* A Principal-agent Model of Systems Engineering Processes with Application to Satellite Design. Paper presented at the Council of Engineering Systems Universities Global Conference 2018, Tokyo, Japan. <https://arxiv.org/abs/1903.06979>.
 8. Chaudhari A. M.*^G; Bilonis, I.*; Panchal J. H.* How do Designers Choose Among Multiple Noisy Information Sources in Engineering Design Optimization? An Experimental Study. American Society of Mechanical Engineers (ASME). International Design Technical Conferences and Computers and Information in Engineering Conference. Volume 2A: 44th Design Automation Conference 2018: V02AT03A021. Quebec, Canada <https://doi.org/10.1115/DETC2018-85460>.
 9. Pandita, P.*^G; Bilonis, I.*; Panchal J. H.* Deriving Information Acquisition Criteria for Sequentially Inferring the Expected Value of a Black-Box function. American Society of Mechanical Engineers (ASME). International Design Technical Conferences and Computers and Information in Engineering Conference. Volume 2A: 44th Design Automation Conference 2018: V02BT03A057. Quebec, Canada <https://doi.org/10.1115/DETC2018-85893>.
 10. Shergadwala M.*^G; Bilonis I.*; Panchal J. H.* Students as Sequential Decision-Makers: Quantifying the Impact of Problem Knowledge and Process Deviation on the Achievement of Their Design Problem Objective. American Society of Mechanical Engineers (ASME). International Design Engineering Technical Conferences and Computers and Information in Engineering Conference, Volume 3: 20th International Conference on Advanced Vehicle Technologies; 15th International Conference on Design Education 2018: V003T04A011. Quebec, Canada <https://doi.org/10.1115/DETC2018-85537>.
 11. Safarkhani S.*^G; Bilonis I.*; Panchal J. H.* Understanding the Effect of Task Complexity and Problem-Solving Skills on the Design Performance of Agents in Systems Engineering. American Society of Mechanical Engineers (ASME). International Design Engineering Technical Conferences and Computers and Information in Engineering Conference 2018, Volume 2A: 44th Design Automation Conference ():V02AT03A060. Quebec, Canada <https://doi.org/10.1115/DETC2018-85941>.
 12. Ogunsina, K.*^G; Davendralingam, N.*; Bilonis, I.*; DeLaurentis, D.* Dimensionality Reduction in a Data-driven Model for Airline Disruption Management. American Institute of Aeronautics and Astronautics (AIAA) Scitech 2019 Forum, San Diego, California. <https://doi.org/10.2514/6.2019-0403>.
 13. Tripathy, R.*^G; Bilonis, I.* Deep Active Subspaces – A Scalable Method for High-Dimensional Uncertainty Propagation. American Society of Mechanical Engineers (ASME) 2019 International Design Engineering Technical Conferences and Computers and Information in Engineering Conferences, Anaheim, California
 14. Chaudhari, A.*^G; Bilonis, I.*; Panchal, J.* Similarity in Engineering Design: A knowledge-based approach. American Society of Mechanical Engineers (ASME) 2019 International Design Engineering Technical Conferences and Computers and Information in Engineering Conferences, Anaheim, California
 15. Lund, A.*^G; Dyke S. J.*; Song W.*; Bilonis I.* Bayesian Identification of a Nonlinear Energy Sink Device: Method Comparison. In Model Validation and Uncertainty Quantification, Volume 3, 173–75. Springer International Publishing. Conference Proceedings of the Society for Experimental Mechanics Series. 2019. 37th International Modal Analysis Conference, Orlando Florida https://doi.org/10.1007/978-3-030-12075-7_19
 16. Lee, S.*^G; Karava, P.*; Tzempelikos, A.*; Bilonis, I. Integrating Occupants' Voluntary Thermal Preference Responses into Personalized Thermal Control in Office Buildings. Proceedings of CISBAT2019 Conference, Lausanne, Switzerland, September 2019. <https://iopscience.iop.org/article/10.1088/1742-6596/1343/1/012138/meta>
 17. Lee, S.*^G; Joe, J.*^G; Karava, P.*; Tzempelikos, A.*; Bilonis, I.* Simulation and Implementation of a Self-tuned Heating, Air Conditioning, and Ventilation (HVAC) Controller. Proceedings of the International Building Performance Simulation Association (IBPSA) 2019 Conference, Rome, Italy, September 2019.
 18. Xiong, J.*^G; Tzempelikos, A.*; Bilonis, I.*; Karava, P.* Dynamic Balancing Between Personalized Daylight Preferences and Lighting Energy Use: Implementation of a Multi-objective Optimization

- Framework. Proceedings of International Building Performance Simulation Association (IBPSA) 2019 Conference, Rome, Italy, September 2019.
19. Lenjani, A.*^G; Dyke, S.*; Bilonis, I.*; Yeum, C. M.*; Choi, J.*; Lund, A.*^G; Maghareh, A.* Hierarchical Convolutional Neural Networks Information Fusion for Activity Source Detection in Smart Buildings. Structural Health Monitoring 2019. <http://10.12783/shm2019/32353>
 20. Ogunsina, K.*^G; Papamichalis, Marios* Bilonis, I.*; DeLaurentis, D.*Hidden Markov Models for Pattern Learning and Recognition in a Data-driven Model for Airline Disruption Management. American Institute of Aeronautics and Astronautics Aviation Forum, June 2019, Dallas, Texas. <https://arc.aiaa.org/doi/pdf/10.2514/6.2019-3508>
 21. Hans, A.*^G; Chaudhari, A. M.*^G; Bilonis, I.*; Panchal, J.*; Quantifying Individuals' Theory-based Knowledge using Probabilistic Causal Graphs: A Bayesian Hierarchical Approach. ASME IDETC 2020. <https://ieeexplore.ieee.org/document/9103068>
 22. Dyke, S.*; Marais, K.*; Bilonis, I.*; Werfel, J.*; Malla, R.*; Strategies for the Design and Operation of Resilient Extraterrestrial Habitats. Proceedings Volume 11591, Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems 2021; 115905. <https://doi.org/10.1117/12.2585118>
 23. ElSayed, K. A.*^G; Bilonis, I.*; Panchal, J.*; Evaluating Heuristics in Engineering Design: A Reinforcement Learning Approach. ASME IDETC 2021. <https://doi.org/10.1115/DETC2021-70425>
 24. Hans, A.*^G; Chaudhari, A. M.*; Bilonis, I.*; Panchal, J.*; A Mixed-method Analysis for Schedule and Cost Growth in Defense Acquisition Programs. ASME IDETC 2021. <https://doi.org/10.1115/DETC2021-71517>
 25. Bhattacharya, S.*; Bilonis, I.*; Vlachos, P.*; Approximate Bayesian Framework for 3D Reconstruction in a Volumetric PIV/PTV Measurement. 14th International Symposium on Particle Image Velocimetry 2021. <https://doi.org/10.18409/ispiv.v1i1.90>
 26. Maghareh, A.*; Lenjani, A.*; Krishnan, M.*^G; Dyke, S.*; Bilonis, I.*; Role of Cyber-Physical Testing in Developing Resilient Extraterrestrial Habitats. 17th Biennial International Conference on Engineering, Science, Construction, and Operations in Challenging Environments 2021. <https://doi.org/10.1061/9780784483374.098>
 27. Lund, A.*; Bilonis, I.*; Dyke, S.*; Variational Filter for Predictive Modeling of Structural Systems. Model Validation and Uncertainty Quantification, Volume 3. Conference Proceedings of the Society for Experimental Mechanics Series. 2022. Springer, Cham. https://doi.org/10.1007/978-3-031-04090-0_7
 28. Zinage, S.*^G; Jadhav, S.*^G; Zhou Y.*^G; Bilonis, I.*; Meckl, P.*; Data Driven Modeling of Turbocharger Turbine using Koopman Operator. IFAC-PapersOnLine, Volume 5, Issue 37, Pages 175-180. 2022. <https://doi.org/10.1016/j.ifacol.2022.11.180>

Conference Papers based on Abstracts or Extended Abstracts and Invited Talks

1. Bilonis, I.*; Koutsourelakis, P. S.* (2010, May 16-21). Coarse-graining in Crystalline Materials through Adaptive Free-energy Calculations. IV European Conference on Computational Mechanics, Paris, France.
2. Bilonis, I.*; Koutsourelakis, P. S.* (2010, May 23-26). Adaptive Free Energy Calculations for Crystalline Materials. SIAM Conference on Mathematical Aspects of Materials Science, Philadelphia, Pennsylvania.
3. Bilonis, I.*; Ma, X.*; Zabaras, N.* (2011, February 28-March 2). Kernel PCA for Stochastic Input Generation of Multiscale Systems. SIAM Computational Science and Engineering Meeting, Reno, Nevada.
4. Bilonis, I.*; Zabaras, N.* (2011, August 1-5). Multi-output Local Gaussian Process Regression: Applications to Uncertainty Quantification. USA/Brazil Symposium on Stochastic Modeling and Uncertainty Quantification, Rio de Janeiro, Brazil.
5. Bilonis, I.*; Zabaras, N.* (2012, April 2-5). Sparse Bayesian Techniques for Surrogate Creation and Uncertainty Quantification. SIAM Conference on Uncertainty Quantification, Raleigh, North Carolina.
6. Bilonis, I.*; Zabaras, N.* (2012, April 2-5). Hierarchical Multi-output Gaussian Process Regression for Uncertainty Quantification with Arbitrary Input Probability Distributions. SIAM Conference on Uncertainty Quantification, Raleigh, North Carolina.

7. Bilonis, I.*; Zabarar, N.* (2012, April 2-5). Uncertainty Quantification with High Dimensional, Experimentally Measured Inputs. SIAM Conference on Uncertainty Quantification, Raleigh, North Carolina.
8. Bilonis, I.*; Zabarar, N.* (2013, February 25-March 1). Building Surrogates of Very Expensive Computer Codes: Applications to Uncertainty Quantification. SIAM Conference on Computational Science and Engineering, Boston, Massachusetts.
9. Bilonis, I.*; Zabarar, N.* (2013, February 25-March 1). Solution of Inverse Problems with Limited Forward Solver Evaluations: A Bayesian Framework. SIAM Conference on Computational Science and Engineering, Boston, Massachusetts.
10. Bilonis, I.*; Zabarar, N.* (2014, March 31-April 3). Solution of Inverse Problems with Limited Forward Solver Evaluations: A Bayesian Framework. SIAM Conference on Uncertainty Quantification, Savannah, Georgia.
11. Chen, P.*; Zabarar, N.*; Bilonis, I.* (2015, March 14-18). Uncertainty Propagation using Infinite Mixtures of Gaussian Processes. SIAM Conference on Scientific Computing and Engineering, Salt Lake City, Utah.
12. Bilonis, I.*; Zabarar, N.* (2015, March 14-18). Gaussian Processes in High-dimensions. SIAM Conference on Scientific Computing and Engineering, Salt Lake City, Utah.
13. Bilonis, I.*; Zabarar, N.* (2015, March 14-18). Detecting Discontinuities and Localized Features using Gaussian Processes. SIAM Conference on Scientific Computing and Engineering, Salt Lake City, Utah.
14. Bilonis, I.*; Constantinescu, E. M.*; Anitescu, M.* (2015, March 14-18). Data-driven Model for Solar Irradiation based on Satellite Observations. SIAM Conference on Computational Science and Engineering, Salt Lake City, Utah.
15. Bilonis, I.*; Panchal, J. H.*; Pandita, P.*^G (2015, October 4-8). Materials Design through Value-based Optimization under Uncertainty. Materials Science & Technology, Columbus, Ohio.
16. Bilonis, I.* (January 19 – 22, 2016). Enabling Predictive Simulations for Design and Decision Making under a Limited Budget. Workshop on Uncertainty Quantification for Multiscale Stochastic Systems and Applications, Institute for Pure and Applied Mathematics, University of California Los Angeles, Los Angeles, California.
17. Bilonis, I.*; Tripathy, R.*^G; Gonzalez, M.* (2016, April 5-8). Probabilistic Active Subspaces: Learning High-dimensional Noisy Functions without Gradients. SIAM Conference on Uncertainty Quantification, Lausanne, Switzerland.
18. Bilonis, I.*; Pandita, P.*^G; Panchal, J.* (2016, June 5-10). Design Optimization with Quantified Uncertainties under a Computational Budget. European Congress on Computational Methods in Applied Sciences and Engineering, Crete Island, Greece.
19. Bilonis, I.* (2016, November 11). Uncertainty Quantification using Embarrassingly Small Numbers of Simulations and Experiments. Brown University, Providence, Rhode Island.
20. Bilonis, I.*; Tripathy, R.*^G (2017, February 27-March 3). Solving Multi-scale Stochastic Partial Differential Equations using Deep Neural Networks. SIAM Conference on Computational Science and Engineering, Atlanta, Georgia.
21. Bilonis, I.* (2017, March 30). Uncertainty Quantification using Embarrassingly Small Numbers of Simulations and Experiments. Stony Brook University, Stony Brook, New York.
22. Bilonis, I.* (2017, April 7). Uncertainty Quantification using Embarrassingly Small Numbers of Simulations and Experiments. University of Connecticut, Storrs, Connecticut.
23. Bilonis, I.* (2017, June 5 – 9). Variational Reformulation of the Uncertainty Propagation Problem in Linear Partial Differential Equations. Workshop on Probabilistic Scientific Computing: Statistical Inference Approaches to Numerical Analysis and Algorithm Design. Brown University, Providence, Rhode Island.
24. Bilonis, I.*; Tripathy, R.*^G (2017, July 10-14). Learning Non-linear Correlations Between Multi-fidelity Models using Deep Neural Networks. SIAM Annual Meeting, Pittsburgh, Pennsylvania.
25. Bilonis, I.* (2018, February 19). Making the Most of your Resources: How to Design Simulations and Experiments to Achieve your Engineering Goals. University of Notre Dame, Notre Dame, Indiana.
26. Tripathy, R.*^G; Bilonis, I.* (2018, April). Deep Neural Networks for Multifidelity Uncertainty Quantification. SIAM Conference on Uncertainty Quantification, Garden Grove, California.
27. Bilonis, I.* (2018, April). Variational Reformulation of the Uncertainty Propagation Problem using Probabilistic Numerics. SIAM Conference on Uncertainty Quantification, Garden Grove, California.
28. Pandita, P.*^G; Kristensen, J.*; Bilonis, I.* (2018, April). Optimal Information Acquisition for Inferring the

- Order of Sensitivity Indices. SIAM Conference on Uncertainty Quantification, Garden Grove, California.
29. Karumuri, S.*^G; Tripathy, R.*^G; Bilonis, I.*; Panchal, J.* (2018, July). Deep UQ: A Variational Reformulation of the Uncertainty Propagation Problem in Stochastic Elliptic PDEs using Deep Neural Networks. SIAM Annual Meeting, Portland, Oregon.
 30. Karumuri, S.*^G; Tripathy, R.*^G; Bilonis, I.*; Panchal, J.* (2019, February). Energy Minimizing Deep Neural Networks for Solving High-dimensional Stochastic Partial Differential Equations. SIAM Conference on Computational Science and Engineering, Spokane, Washington.
 31. Pandita, P.*^G; Awalgaonkar, N.*^G; Bilonis, I.*; Panchal, J.* (2019, February). Inferring Black Box Functions under a Limited Computational Budget. SIAM Conference on Computational Science and Engineering, Spokane, Washington.
 32. Tripathy, R.*^G; Bilonis, I.* (2019, February). Learning Deep Neural Network Surrogate Models for High Dimensional and Multi-fidelity Uncertainty Quantification Problems. SIAM Conference on Computational Science and Engineering, Spokane, Washington.
 33. Kwarteng, V.*^G; Kim, H.*^G; Ham, S. W.*^G; Bilonis, I.*; Karava, P.*; Castillo, L.* (2019, June) Sociotechnical Modeling and Applying Machine Learning in Peru Applications. Universidad Nacional de San Antonio Abad del Cusco, Cusco, Peru.
 34. Bilonis, I.*; Papamichalis, M.*; Kannan, K.* (2019, September) How to Make Costly Decisions Based on Observational Data When you are Uncertain about Causal Relationships, Facebook, Menlo Park, CA.
 35. Bilonis, I.* (2019, September) Big Data is not Enough: Thoughts on Causality, Physics-informed Machine Learning and Decision-making, Indy Big Data Conference, Indianapolis, IN.
 36. Bilonis, I.* (2019, October) Physics-informed Machine Learning: A Very Gentle Introduction, National Institute of Health, Bethesda, MD.
 37. Bilonis, I.* (2020, March) Physics-informed Neural Networks and Applications to Engineering Systems, GE Global Research, Albany, NY, (virtual).
 38. Bilonis, I.* (2020, August) High-dimensional uncertainty propagation using Physics-informed Neural Networks, Keynote at ASME IDETC DAC (virtual).
 39. Bilonis, I.* (2020, October). Solving high-dimensional stochastic partial differential equations with physics-informed neural networks. Brown University, Providence, Rhode Island. (virtual).
 40. Bilonis, I.*; (2020, October) Panel on job prospects after postdoc, Argonne National Laboratory, Mathematics and Computer Science Division, Lemont, IL, (virtual).
 41. Bilonis, I.*; (2021, May) A Hands-on Introduction to Physics-informed Machine Learning, NanoHUB, Purdue University, West Lafayette, IN (virtual).
 42. Bilonis, I.*; (2021, June) Situational awareness in extraterrestrial habitats: Open challenges, potential applications of physics-informed neural networks, and limitations. Alberto Luiz Coimbra Institute for Graduate Studies and Research in Engineering, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil (virtual).
 43. Bilonis, I.*; (2021, July) Situational awareness in extraterrestrial habitats: Open challenges, potential applications of physics-informed neural networks, and limitations. Centrum Wiskunde & Informatic, University of Amsterdam, Amsterdam, Netherlands (virtual).
 44. Bilonis, I.*; (2021, August) Open challenges, potential applications, and limitations of physics-informed neural networks. 3M, Minneapolis, MN (virtual).
 45. Bilonis, I.*; (2022, April) A statistical field theory approach to physics-informed machine learning. Royal Statistical Society (North Eastern), UK (virtual).
 46. Bilonis, I.*; (2021, August) Open challenges, potential applications, and limitations of physics-informed neural networks. 3M, Minneapolis, MN (virtual).
 47. Bilonis, I.*; (2021, September) Open challenges, potential applications, and limitations of physics-informed neural networks. University of Texas, El Paso, TX (virtual).
 48. Alberts, A.*^G; Bilonis, I.; (2022, April) An information field theory interpretation of physics-informed neural networks, SIAM Conference on Uncertainty Quantification, Atlanta, GA.
 49. Bilonis, I.*; (2022, April) A statistical field theory approach to physics-informed machine learning. Royal Statistical Society (North Eastern), UK (virtual).
 50. Hao, K.*^G; Bilonis, I.; (2022, June) Learning to solve Bayesian filtering problems in real time using amortized variational inference. 19th U.S. National Congress on Theoretical and Applied Mechanics. Austin, TX.

51. Alberts, A.*^G; Bilonis, I.; (2023, June) Physics-informed information field theory for modeling physical systems with uncertainty quantification. 5th International Conference on Uncertainty Quantification in Computational Science and Engineering. Athens, Greece.

Contributed Conference/Symposium Presentations

1. Bilonis, I.*; Zabarar, N. (2011, July 25-29). Sparse Bayesian Kernel Techniques for the Solution of Stochastic Partial Differential Equations. 11th U.S. National Congress on Computational Mechanics, Minneapolis, Minnesota.
2. Bilonis, I.*; Zabarar, N. (2013, July 22-25). Multidimensional Adaptive Relevance Vector Machines for Uncertainty Quantification. 12th U.S. National Congress on Computational Mechanics, Raleigh, North Carolina.
3. Bilonis, I.*; Zabarar, N. (2013, July 22-25, 2013). Solution of Inverse Problems with Limited Forward Solver Evaluations: A Bayesian Framework. 12th U.S. National Congress on Computational Mechanics, Raleigh, North Carolina.
4. Kristensen, J.*; Bilonis, I.; Zabarar, N. (2013, July 22-25). Relative Entropy Based Surrogate Energy Models for Modeling Phase Transitions. 12th U.S. National Congress on Computational Mechanics, Raleigh, North Carolina.
5. Bilonis, I.*; Drewniak, B. A.; Constantinescu, E. M. (2014, December 15-19). Soybean Physiology Calibration in the Community Land Model. American Geophysical Union (AGU) Fall Meeting, San Francisco, California.
6. Bilonis, I.*; Tsilifis, P.; Zabarar, N. (2015, March 14-18). Poster: Variational Reformulation of Bayesian Inverse Problems. Society for Industry and Applied Mathematics (SIAM) Conference on Computational Science and Engineering, Salt Lake City, Utah.
7. Bilonis, I.*; Tripathy, R.*^G; Gonzalez, M. (2015, May 11-15). High-dimensional Uncertainty Propagation: A Bayesian Approach using Gaussian Processes with Build-in Dimensionality Reduction. American Society of Mechanical Engineers (ASME) Verification and Validation Symposium, Las Vegas, Nevada.
8. Gonzalez, M.*; Krishnakumar, N.; Bilonis, I. (2015, June 29 - July 1). Uncertainty Quantification in Multi-dimensional Granular Crystals for Robust Performance. American Society of Mechanical Engineers (ASME) Applied Mechanics and Materials Conference, Seattle, Washington.
9. Tripathy, R.*^G; Bilonis, I.; Gonzalez, M. (2016, May 18-20). Automatic Dimensionality Reduction via Deep Architectures and Applications to High-dimensional Uncertainty Quantification. American Society of Mechanical Engineers (ASME) 2016 Verification and Validation Symposium, Las Vegas, Nevada.
10. Pandita, P.*^G; Bilonis, I.; Panchal, J. (2016, May 18-20). Stochastic Multi-objective Optimization on a Budget: Application to Multi-pass Wire Drawing with Quantified Uncertainties. ASME 2016 Verification and Validation Symposium, Las Vegas, Nevada.
11. Pena, F.*^G; Dyke S. J.; Bilonis, I. (2017, June 4-7). Rapid Determination of Seismic Fragility Functions with Limited Observations. Engineering Mechanics Institute Conference. San Diego, California
12. Pandita, P.*^G; Bilonis, I.; Panchal, J. (2018, May). Optimal Design of Experiments for Inferring the Expected Value of a Black-box Function. American Society of Mechanical Engineers (ASME) 2018 Verification and Validation Symposium, Minneapolis, Minnesota.
13. Tripathy, R.*^G; Bilonis, I. (2018, May). Deep Uncertainty Quantification (UQ) – Learning Deep Neural Network Surrogate Models for Uncertainty Quantification. American Society of Mechanical Engineers (ASME) 2018 Verification and Validation Symposium, Minneapolis, Minnesota.
14. Lund, A.*^G; Dyke, S. J.; Song, W.; Bilonis, I. (2018, May). Kalman Filters and the Real World: Use of the Unscented Kalman Filter under Practical Uncertainties. Engineering Mechanics Institute Conference, Boston, Massachusetts.
15. Kwarteng, V.*^G; Kim, H.*^G; Ham, S. W.*^G; Bilonis, I.; Karava, P.; Nguyen, T. (2018, July). Designing a Game Mechanism to Incentivize Energy Conservative Behaviors in Subsidized Residential Communities. Purdue Office of Diversity and Inclusion Summer Research Opportunities Program (SROP)/Bridge Program, West Lafayette, Indiana.
16. Sahu, A.*^G; Beltran-Pulido, A.*^G; Bilonis, I.; Aliprantis, D. (2018, October). Quantifying Uncertainties in Electric Machines. Poster: Sustainable Electrified Transportation Center (SELECT) Annual Meeting and Technology Showcase, West Lafayette, Indiana.
17. Kim, H.*^G; Ham, S. W.*^G; Kwarteng, V.*^G; Bilonis, I.; Karava, P. (2019, March) Poster: Sociotechnical Systems to Enable Smart and Connected Energy-aware Residential Communities. National Science

- Foundation (NSF) Purdue Center for Resilient Infrastructures, Systems and Processes Workshop, West Lafayette, Indiana.
18. Kim, H.*^G; Ham, S. W.^G; Kwarteng, V.^G; Bilonis, I.; Karava, P. (2019, March) Poster: Sociotechnical Systems to Enable Smart and Connected Energy-aware Residential Communities. National Science Foundation (NSF) 2019 Smart and Connected Cities PI's Meeting, Denver Colorado.
 19. Lund, A.*^G; Dyke, S. J.; Song, W.; Bilonis, I. (2019, April). Identification of a Nonlinear Energy Sink Device. 4th Midwest Smart Structures Technology Colloquium, West Lafayette, Indiana.
 20. Kim, H.*^G; Ham, S. W.^G; Kwarteng, V.^G; Bilonis, I.; Karava, P. (2019, May) Poster: Sociotechnical Systems to Enable Smart and Connected Energy-aware Residential Communities. Purdue Office of Interdisciplinary Graduate Programs Spring Reception, West Lafayette, Indiana.
 21. Casey, A.*^G; Cummock, N.; Bilonis, I.; Son, S. (2019, June). A Comparison of Gaussian Process Classification to Classical Statistical Methods in Sensitivity Tests. 21st Biennial Conference of the American Physical Society (APS) Topical Group on Shock Compression of Condensed Matter, Portland, Oregon.
 22. Casey, A.*^G; Barnes B.; Bilonis, I.; Son, S. (2020, March). Deep Learning for Energetic Materials: Predicting Material Properties from Electronic Structure using Convolutional Neural Networks. American Physical Society March Meeting 2020, Denver, Colorado.
 23. Bhattacharya, S.*; Bilonis, I.; Vlachos, P. (2020, November). Approximate Bayesian Approach for Volumetric Reconstruction in a 3D PIV Measurement. Bulletin of the American Physical Society, 2020.
 24. Maghareh, A.*; Lenjani, A.^G; Krishnan, M.^G; Dyke, S.; Bilonis, I. (2021, April). Role of Cyber-Physical Testing in Developing Resilient Extraterrestrial Habitats. 17th Biennial International Conference on Engineering, Science, Construction, and Operations in Challenging Environments.
 25. Austin, H.*; Karumuri, S.^G; Avetian, S.; McClure, Z.; Ware, L.; Strachan, A.; Bilonis, I.; Sandhage, K.; Titus, M. (2022). Exploration of Refractory Complex Concentrated Alloys through the use of High-throughput Calculations and Experimentation. TMS Annual Meeting and Exhibition.
 26. Beltran-Pulido, A.*^G; Bilonis, I.; Aliprantis, D. (2022, July). Physics-informed Deep Learning for Solving a Magnetostatic Problem. 16th U.S. National Congress on Computational Mechanics.
 27. Kuo, T.*^G, Karava, P., Bilonis, I., Hu, J.; (2022, September) Poster: A meta-learning approach to enable autonomous building. 2022 Fall Purdue Ray W. Herrick Laboratories Industrial Advisory Committee Conference. West Lafayette, IN.
 28. Kuo, T.*^G, Mannikan S.*^G, Devarapalli, H., Karava, P., Bilonis, I., Hu, J.; (2022, October) Poster: A meta-learning approach to enable autonomous building. 2022 NSF-CPS PI Meeting. Arlington, VA.
 29. Hans, A.*^G; Bhattacharya S.; Bilonis, I.; Vlachos P.; (2023, June) Stochastic Volumetric Reconstruction. 15th International Symposium on Particle Image Velocimetry. San Diego, California.

Research Funding:

Summary: ~\$53M total from which ~\$5.3M allocated for Bilonis.

1. NSF CyberCEES: Type 2, "Human-centered systems for cyber-enabled sustainable buildings", \$1,200,000, **Co-PI** 25%, PI P. Karava. 2015 – 2019.
2. NSF: CMMI/SYS, "Understanding information acquisition decisions in systems engineering," \$649,876, **Co-PI** 25%, PI J. Panchal. 2017 – 2020.
3. NSF: CMMI/SYS, "A theoretical framework for understanding strategic behavior in systems engineering," \$502,945, **PI** 34%. 2017 – 2020.
4. Purdue University: "Affordable NetZero housing and transportation solutions," \$300,000, **Co-PI** 25%, PI L. Raymond. 2017 – 2018.
5. Facebook: "Causal inference on Bayesian graphical networks," \$65,000, **Co-PI** 50%, PI K. Kannan. 2018.
6. University of Illinois: "Quantifying uncertainties in electric machine design," \$25,000, **Co-PI** 50%, PI D. Aliprantis. 2018.
7. NSF: "S&CC-IRG Track 1: Sociotechnical systems to enable smart and connected energy-aware residential communities," \$3,980,061, **Co-PI** 20%. PI P. Karava. 2018 – 2023.
8. Purdue University (CRISP), "Automating exposure and probabilistic vulnerability quantification for assets in the built environment using street-view images," \$50,000, **PI** 50%. 2018 – 2019.
9. NSF AMPS: Collaborative Research, "Efficient algorithms for ultra-fast detection of power system contingencies in the transient regime," \$100,000, **PI** 33%. 2018 – 2021.

10. Ford Motor Company, "Development of computational tools for electric machine design including manufacturing uncertainties," \$204,930, **PI** 50%. 2018 – 2021.
11. DARPA, "Physics-Informed Learning for Multiscale Systems (PILgRIMS)," \$179,037, **Co-PI** 25%. PI N. Zabarar. 2018 – 2019.
12. NSF, "2019 NSF EDSE workshop and grantees meeting: Positioning engineering design and systems engineering (EDSE) research for sustained societal impact," \$49,998, **Co-PI** 25%. PI J. Panchal. 2019.
13. NSF: DMREF, "Discovery of High-temperature, oxidation-resistant, complex concentrated alloys via data science driven multi-resolution experiments and simulations," \$1,738,752, **Co-PI** 25%. PI A. Strachan. 2019 – 2023.
14. NASA, "Resilient Extraterrestrial Habitats Institute," \$15,000,000, **Co-PI** 6.5%. PI S. Dyke. 2019 – 2024.
15. DARPA: "Computing Contact Problems with Self-Conforming Hybrid Materials," \$1,000,000, **Co-PI** 25%. PI A. Arrieta. 2019 – 2021.
16. Cummins, Inc.: "Development of a Robust, Dynamic Engine Model Combining Techniques from Empirical Modeling and Physics-Based Modeling," \$750,000, **Co-PI** 10%. PI P. Meckl. 2019 – 2021.
17. Lilly (Eli) And Company: "Lilly Injectable Biologics 2021," \$7,200,000, **Co-PI** 14%, PI P. Vlachos. 2021.
18. NSF: CPS: Medium: "A Meta-Learning Approach to Enable Autonomous Buildings," \$994,592, **Co-PI** 33%, PI. P. Karava. 2021 – 2024.
19. Lilly (Eli) And Company: "Injection Biologics 2022", \$7,300,000, **Co-PI** 14%, PI P. Vlachos. 2022.
20. AFRL/AFOSR: "Focused manufacturing of hypersonic materials," \$1,789,993, **Co-PI** 25%, PI G. Scott (SUNY). 2022 – 2025.
21. DOD/ARL: "Machine learning enhanced models: Enabling new materials for hypersonic and protection applications," \$500,000, **Co-PI** 20%, PI Strachan. 2023 – 2025.
22. Ford Motor Company: "eMachine design optimization using physics-informed neural networks," \$212,450, **PI**. 2022 – 2024.
23. Cummins, Inc: "Real-time health monitoring of engineered systems," \$866,000, **Co-PI** 50%, PI P. Meckl. 2022 – 2025.
24. Lilly (Eli) And Company: "Lilly strategic partnership 2023," \$6,198,253, **Co-PI** 14%, PI P. Vlachos. 2023.

Graduate Students

1. Zengyi Dou, "Bayesian global optimization approach to the oil well placement problem with quantified uncertainties," MS Thesis, Spring 2015.
2. Chaolei Chen, "Oil reservoir modeling," MS, Fall 2015-Spring 2016.
3. Parth Parintosh, "Gaussian process dynamical models for designing multi-stage manufacturing processes," MS Thesis, Spring 2017. Co-advised with Prof. J. Panchal.
4. Majed Alrefae, "Optimizing a chemical vapor deposition reactor for high quality graphene manufacturing," Ph.D., Spring 2017. Co-advised with Prof. T. S. Fisher.
5. Francisco Peña, "Efficient computation of fragility curves," PhD, Spring 2019. Co-advised with Prof. S. Dyke.
6. Piyush Pandita, "Bayesian optimal design of experiments for expensive black-box functions under uncertainty," Ph.D., Spring 2019. Co-advised with Prof. J. Panchal.
7. Rohit Tripathy, "High-dimensional uncertainty quantification," PhD, Spring 2016-Fall 2019.
8. Abhijit Sahu, "Quantification of uncertainty in magnetic characteristics of steel and its effect on the torque profile of a permanent magnet machine," MS Thesis, Spring 2019.
9. Alex D. Casey, "Estimation of melting point and sensitivity in energetic materials with statistical learning," Ph.D., Fall 2018-Spring 2020. Co-advised with S. Son.
10. Ali Lenjani, "Automating decision support to address system resilience challenges," PhD, Spring 2017-Spring 2020. Co-advised with Prof. S. Dyke.
11. Salar Safarkani, "Game theoretic foundations of systems engineering," PhD, Fall 2017-Spring 2020.
12. Alana Kathleen Lund, "Variational inference algorithms for health monitoring of structural systems," Ph.D., Fall 2016-Spring 2021. Co-advised with Prof. S. Dyke.
13. Nimish Awalgaoonkar, "Sequential design of experiments for human preference elicitation with applications to human-building interactions," PhD Fall 2016-Spring 2022.
14. Sharmila Karumuri, "Physics-informed machine learning with applications to high-dimensional uncertainty propagation, inverse, and design problems," Ph.D., Fall 2017-Fall 2022.
15. Shrenik Zinage Vijaykumar, "Investigation of different data-driven approaches for modeling engineered systems," MS Thesis, Fall 2022.

16. Heliben Parikh Naimeskumar, "Bayesian optimization for design parameters of autoinjectors," MS Thesis, Spring 2023.
17. Andres Felipe Beltran Pulido, "Quantification of manufacturing uncertainty in electric machines," Ph.D., Fall 2018-present. Co-advised with Prof. D. Aliprantis.
18. Vanessa Kwarteng, "Incentivizing energy conserving behaviors in smart and connected communities," Ph.D., Fall 2018-present.
19. Murali Krishnan Rajasekharan Pillai, "Health-management systems in extraterrestrial habitats," Ph.D., Fall 2019-present.
20. Kairui Hao, "Physics-informed information field theory for dynamical systems," Ph.D., Fall 2019-present.
21. Atharva Hans, "Particle image velocimetry using information field theory," Ph.D., Fall 2020-present.
22. Vahidullah Tac, "Bayesian calibration of hyperelasticity models," Ph.D., Fall 2020-present. Co-advised with Prof. A. Buganza.
23. Abhinav Prithviraj Rao, TBD, MS Thesis, Fall 2022-present.
24. Rudra Sethu, TBD, Ph.D., Fall 2021-present. Co-advised with Prof. P. Vlachos.
25. Wesley Holt, TBD, Ph.D., Fall 2021-present. Co-advised with Prof. P. Vlachos.
26. Sreehari Manikkan, TBD, Ph.D., Fall 2021-present.
27. Shrenik Zinage Vijaykumar, TBD, Ph.D., Spring 2022-present. Co-advised with Prof. Meckl.

Postdoctoral researchers:

1. Biswarup Bhattacharyya, Fall 2021-Spring 2022.
2. Sharmila Karumuri, Spring 2023-present.

Undergraduate Students:

1. Juan Camilo Lopez Ramirez, "Uncertainty analysis of granular crystals using Gaussian processes with built-in dimensionality reduction," SURF student, summer 2015.
2. Zixuan Liu, "Solving inverse problems efficiently using Bayesian global optimization," SURF student, summer 2015.
3. Yinuo Li, "Determining minimum energy structures of arbitrary clusters of atoms efficiently using Bayesian global optimization", SURF student, summer 2015.
4. Rahul, Patni, "Deep neural nets and engineering applications," Bottomley fellow, spring 2016.
5. Juan Sebastian Martinez Carvajal, "Enhancing graphene manufacturing by designing experiments for the roll-to-roll chemical vapor deposition reactors," SURF student, summer 2016.
6. Martin Figura, "Multi-objective optimization of electric engines," SURF student, summer 2016.
7. Michael Wang, "Quantifying the effect of manufacturing uncertainties in weakly coupled arrays of electromechanical oscillators," SURF student, summer 2017.
8. Jinze Li, "Learning algorithms for mechanical computers based on weakly coupled arrays of electromechanical oscillators," Bottomley fellow, spring 2017.
9. Atharva Hans, "Design experiments for optimal graphene growth using a chemical vapor deposition reactor," SURF student, summer 2017. He continued to work with me during fall 2017, and from summer 2018 until now. He received the Bottomley fellowship for spring 2019.
10. Darya Julia Corry, "Fault analysis of photovoltaic panels in a space environment." Undergraduate research assistant Spring 2020.
11. Nicholas Masso, "Stochastic modeling of meteorite showers on the Moon's surface." Undergraduate research assistant Spring 2020 – Fall 2020.
12. Jacob Evans, "Literature review of human machine interfaces for complex, critical systems." Summer 2020 undergraduate researcher. Undergraduate researcher Fall 2020.
13. Bernardo De Araujo Alvarenga, Summer 2021-Spring 2022. Working on NASA RETHi project on robotic agent simulation.
14. Prathyush Ravula, Summer 2021-Spring 2022. Working on NASA RETHi project on robotic agent simulation.
15. Sayak Chatterjee, Spring 2022. Working on physics informed neural networks.
16. Max Bolt, Summer 2022-present. Started as a Cummins intern which I advised on data science issues. He is transitioning to a funded MS thesis student in August 2023.
17. Mahira Morris, Spring 2023-present. Working on the visual interface of the command and control for extraterrestrial habitats.