

Ilias Bilonis, Ph.D.
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Professional Preparation

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

Appointments

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

Research Funding:

Summary: ~\$24M total from which ~\$2.53M allocated for Bilonis; ~\$850K as PI.

1. 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.
2. NASA, “Resilient Extraterrestrial Habitats Institute,” \$15,000,000, **Co-PI** 6.5%. PI S. Dyke.
3. DARPA, “Physics-Informed Learning for Multiscale Systems (PILgRIMS),” \$179,037, **Co-PI** 25%. PI N. Zabaras.
4. 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.
5. Purdue University (CRISP), “Automating exposure and probabilistic vulnerability quantification for assets in the built environment using street-view images,” \$50,000, **PI** 50%.
6. Facebook, “Causal inference on Bayesian graphical networks (confidential application),” \$65,000, **Co-PI** 40%. PI K. Kannan.
7. NSF AMPS: Collaborative Research, “Efficient algorithms for ultra-fast detection of power system contingencies in the transient regime,” \$90,000, **PI** 33%.
8. Ford Motor Company, “Development of computational tools for electric machine design including manufacturing uncertainties,” \$204,930, **PI** 50%.
9. NSF CMMI/SYS, “A theoretical framework for understanding strategic behavior in systems engineering,” \$502,945, **PI** 34%.
10. NSF CMMI/SYS, “Understanding information acquisition decisions in systems engineering,” \$649,876, **Co-PI** 25%, PI J. Panchal.
11. NSF, “S&CC-IRG Track 1: Sociotechnical systems to enable smart and connected energy-aware residential communities,” \$3,581,912, **Co-PI** 20%. PI P. Karava.
12. Purdue University, “Affordable NetZero Housing and Transportation Solutions,” \$300,000, **Co-PI** 9%. PI L. Raymond.
13. University of Illinois, “Quantifying uncertainties in electric machine design,” \$25,000, **Co-PI** 50%. PI D. Aliprantis.
14. NSF CyberCEES: Type 2, “Human-centered systems for cyber-enabled sustainable buildings”, \$1,200,000, **Co-PI** 25%, PI P. Karava.

Awards and Fellowships:

1. Outstanding mentor of mechanical engineering graduate students (2019).
2. Outstanding engineering teacher (Spring 2018, Fall 2018).
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. Peña, F.*^G; Bilonis, I.*; Dyke, S.* Model Selection and Uncertainty Quantification of Seismic Fragility Functions. *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering* 2019, 5(3), 04019009, <https://doi.org/10.1061/AJRUAE6.0001014>.
2. Lund, A.*^G; Dyke, S.*; Song, W.*; Bilonis, I.* Excitation Selection for the Identification of an Experimental Nonlinear Energy Sink. *Nonlinear Dynamics* 2019 (accepted). <https://link.springer.com/article/10.1007/s11071-019-05199-9>.
3. 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* 2019, 1-17. <https://doi.org/10.1111/mice.12493>.
4. Pandita, P.*^G; Bilonis, I.*; Panchal J.* Deriving Information Acquisition Criteria for Sequentially Inferring the Expected Value of a Black-box Function. *Journal of Mechanical Design* 2019 (accepted).
5. Pena, F.*^G; Bilonis, I.*; Dyke, S.* Model Selection and Uncertainty Quantification of Seismic Fragility Functions. *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering* 2019 (accepted).
6. 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>.
7. 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>.
8. 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>.
9. 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>.
10. 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>.
11. 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>.
12. Tripathy, R. K.*^G; Bilonis, I.* Deep 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>.
13. 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), 101402–101413. <https://doi.org/10.1115/1.4040548>.
14. 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>.
15. 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>.
16. 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>.
17. 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>.
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>.

19. 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>.
20. 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>.
21. 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>.
22. Tsilifis, P.*^G; Bilonis, I.*; Katsounaros, I.*; Zabarar, 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>.
23. 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>.
24. 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>.
25. Chen, P.*; Zabarar, 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>.
26. Bilonis, I.*; Drewniak, B. A.*; Constantinescu, E. M.* Crop Physiology Calibration in the CLM. *Geoscientific Model Development* 2015, 8 (4), 1071–1083. <https://doi.org/10.5194/gmd-8-1071-2015>.
27. Bilonis, 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>.
28. Bilonis, I.*; Zabarar, 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>.
29. Kristensen, J.*; Bilonis, I.*; Zabarar, 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>.
30. Bilonis, I.*; Zabarar, 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>.
31. Bilonis, I.*; Zabarar, 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>.
32. Bilonis, I.*; Zabarar, 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>.
33. Bilonis, I.*; Zabarar, N.* Multidimensional Adaptive Relevance Vector Machines for Uncertainty Quantification. *SIAM Journal of Scientific Computing* 2012, 34 (6), B881–B908. <https://doi.org/10.1137/120861345>.
34. Bilonis, 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>.
35. Koutsourelakis, P.*; Bilonis, 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>.

Journal Papers Under Review

1. Lenjani, A.*^G; Bilonis, I.*; Dyke, S.*; Yeum C. M.*; Monteiro, R.* A Resilience-based Method for Prioritizing Post-event Building Inspections. *Natural Hazards* 2019 (under review).
2. Chaudhari, A.*^G; Bilonis, I.*; Panchal, J.* Descriptive Models of Sequential Decisions in Engineering Design: An Experimental Study. *Journal of Mechanical Design* 2019 (under review).
3. Pena, F. ^G, Bilonis, I.*; Dyke, S., Cao, Y.*; Mavroedidis, G.* Efficient Seismic Fragility Functions Through Sequential Selection. *Probabilistic Engineering Mechanics* 2019 (under review).

4. 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 2019 (under review). <https://arxiv.org/abs/1902.05200>.
5. Awalgaonkar, N.*^G; Liu, X.*^G; Bilonis, I.*; Karava, P.*; Tzempelikos, A.* Learning Personalized Thermal Preferences via Bayesian Active Learning with Unimodality Constraints. Journal of Building Performance Simulation 2019 (under review). <https://arxiv.org/abs/1903.09094>.
6. Safarkhani, S.*^G; Bilonis, I.*; Panchal, J.* Towards a Theory of Systems Engineering Processes: A Principal-agent Model of a One-shot, Shallow Process. IEEE Systems Journal 2019 (under review). <https://arxiv.org/abs/1903.12086>.
7. Safarkhani, S.*^G; Bilonis, I.*; Panchal, J.* Understanding the Effect of Task Difficulty and Problem-Solving Skills on the Design Performance of Agents in Systems Engineering. Journal of Mechanical Design 2019 (under review). Based on ASME IDETC conference paper: <https://doi.org/10.1115/DETC2018-85941>.
8. 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 2019 (under review).

Fully Reviewed Book Chapters

1. Kristensen, J.*; Bilonis, I.*; Zabaras 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. Bilonis, I.*; Zabaras 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. Chaudhari, A.*^G; Bilonis, I.*; Panchal, J.* Similarity in engineering design: A knowledge-based approach. Accepted paper to be presented at the ASME 2019 International Design Engineering Technical Conferences and Computers and Information in Engineering Conferences, Anaheim, CA.
2. Tripathy, R.*^G; Bilonis, I.* Deep active subspaces – a scalable method for high-dimensional uncertainty propagation. Accepted paper presented at the ASME 2019 International Design Engineering Technical Conferences and Computers and Information in Engineering Conferences, Anaheim, CA.
3. Ogunsina, K.*^G; Davendralingam, N.* Bilonis, I.*; DeLaurentis, D.* Dimensionality Reduction in a Data-driven Model for Airline Disruption Management. AIAA Scitech 2019 Forum, San Diego, CA. <https://doi.org/10.2514/6.2019-0403>.
4. 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. ASME. International Design Engineering Technical Conferences and Computers and Information in Engineering Conference 2018, Volume 2A: 44th Design Automation Conference ():V02AT03A060. <https://doi.org/10.1115/DETC2018-85941>.
5. 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. 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. <https://doi.org/10.1115/DETC2018-85537>.
6. 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. ASME. International Design Technical Conferences and Computers and Information in Engineering Conference. Volume 2A: 44th Design Automation Conference 2018: V02AT03A021. <https://doi.org/10.1115/DETC2018-85460>.
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. Lee, S.*^G; Karava, P.*; Tzempelikos, A.*; Bilionis, I.* An Efficient Method for Learning Personalized Thermal Preference Profiles in Office Spaces. (2018). International High Performance Buildings Conference. Paper 326. <https://docs.lib.purdue.edu/ihpbc/326>.
 9. 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. <https://docs.lib.purdue.edu/ihpbc/336>.
 10. 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. <https://docs.lib.purdue.edu/ihpbc/327>.
 11. 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. <http://docs.lib.purdue.edu/ihpbc/169>.
 12. 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. <http://docs.lib.purdue.edu/ihpbc/233>.
 13. Pandita P.*^G, Bilionis I.*, Panchal J.* Extending Expected Improvement for High-Dimensional Stochastic Optimization of Expensive Black-Box Functions. ASME. International Design Engineering Technical Conferences and Computers and Information in Engineering Conference, Volume 2B: 42nd Design Automation Conference 2016: V02BT03A060. <https://doi.org/10.1115/DETC2016-60527>.

Conference Papers based on Abstracts or Extended Abstracts

1. Pandita, P.*^G, Kristensen, J.*, Bilionis, I.*, (2018, April). *Optimal information acquisition for inferring the order of sensitivity indices*. Paper presented at the SIAM Conference on Uncertainty Quantification, Garden Grove, CA.
2. Bilionis, I.*, (2018, April). *Variational reformulation of the uncertainty propagation problem using probabilistic numerics*. Paper presented at the SIAM Conference on Uncertainty Quantification, Garden Grove, CA.
3. Tripathy, R.*^G, & Bilionis, I.*, (2018, April). *Deep neural networks for multifidelity uncertainty quantification*. Paper presented at the SIAM Conference on Uncertainty Quantification, Garden Grove, CA.
4. Bilionis, I.*, & Tripathy, R.*^G, (2017, July 10-14). *Learning non-linear correlations between multi-fidelity models using deep neural networks*. Paper presented at the SIAM Annual Meeting, Pittsburgh, PA.
5. Bilionis, I.*, & Tripathy, R.*^G, (2017, February 27-March 3). *Solving multi-scale stochastic partial differential equations using deep neural networks*. Paper presented at the SIAM Conference on Computational Science and Engineering, Atlanta, GA.
6. Bilionis, I.*, Pandita, P.*^G, & Panchal, J. (2016, June 5-10). *Design optimization with quantified uncertainties under a computational budget*. Paper presented at the European Congress on Computational Methods in Applied Sciences and Engineering, Crete Island, Greece.
7. Pandita, P.*^G, Bilionis, I.*, & Panchal, J.* (2016, May 18-20). *Stochastic multi-objective optimization on a budget: Application to multi-pass wire drawing with quantified uncertainties*. Paper presented at the ASME Verification and Validation Symposium, Las Vegas, NV.
8. Tripathy, R.*^G, Bilionis, I.*, & Gonzalez, M.* (2016, May 18-20). *Automatic dimensionality reduction via deep architectures and applications to high-dimensional uncertainty quantification*. Paper presented at the ASME Verification and Validation Symposium, Las Vegas, NV.
9. Bilionis, I.*, Tripathy, R.*^G, & Gonzalez, M.* (2016, April 5-8). *Probabilistic active subspaces: Learning high-dimensional noisy functions without gradients*. Paper presented at the SIAM Conference on Uncertainty Quantification, Lausanne, Switzerland.
10. Bilionis, I.*, Panchal, J. H.*, & Pandita, P. ^G (2015, October 4-8). *Materials design through value-based optimization under uncertainty*. Paper presented at the Materials Science & Technology, Columbus, OH.
11. Bilionis, 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*.

- Paper presented at the ASME Verification and Validation Symposium, Las Vegas, NV, USA.
12. Gonzalez, M.* , Krishnakumar, N.*^G, & Bilonis, I.* (2015, June 29 - July 1). *Uncertainty quantification in multi-dimensional granular crystals for robust performance*. Paper presented at the ASM Applied Mechanics and Materials Conference, Seattle, WA, USA.
 13. Bilonis, I.* , Constantinescu, E. M.* , & Anitescu, M.* (2015, March 14-18). *Data-driven model for solar irradiation based on satellite observations*. Paper presented at the SIAM Conference on Computational Science and Engineering, Salt Lake City, UT.
 14. Bilonis, I.* , Tsilifis, P.* , & Zabaras, N.* (2015, March 14-18). *Variational Reformulation of Bayesian Inverse Problems (Poster)*. Paper presented at the SIAM Conference on Computational Science and Engineering, Salt Lake City, UT, USA.
 15. Bilonis, I.* , & Zabaras, N.* (2015, March 14-18). *Detecting discontinuities and localized features using Gaussian processes*. Paper presented at the SIAM Conference on Scientific Computing and Engineering, Salt Lake City, UT.
 16. Bilonis, I.* , & Zabaras, N.* (2015, March 14-18). *Gaussian processes in high-dimensions*. Paper presented at the SIAM Conference on Scientific Computing and Engineering, Salt Lake City, UT.
 17. Chen, P.* , Zabaras, N.* , & Bilonis, I.* (2015, March 14-18). *Uncertainty Propagation using Infinite Mixtures of Gaussian Processes*. Paper presented at the SIAM Conference on Scientific Computing and Engineering, Salt Lake City, UT, USA.
 18. Bilonis, I.* , & Zabaras, N.* (2014, March 31-April 3). Solution of inverse problems with limited forward solver evaluations: A Bayesian framework. Paper presented at the SIAM Conference on Uncertainty Quantification, Savannah, GA, USA.
 19. Bilonis, I.* , Drewniak, B. A.* , & Constantinescu, E. M. (2014, December 15-19). Soybean physiology calibration in the community land model. Paper presented at the AGU Fall Meeting, San Francisco, CA, USA.
 20. Kristensen, J.* , Bilonis, I.* , & Zabaras, N.* (2013, July 22-25). Relative entropy based surrogate energy models for modeling phase transitions. Paper presented at the 12th U.S. National Congress on Computational Mechanics, Raleigh, NC, USA.
 21. Bilonis, I.* , & Zabaras, N.* (2013, July 22-25, 2013). Solution of inverse problems with limited forward solver evaluations: A Bayesian framework. Paper presented at the 12th U.S. National Congress on Computational Mechanics, Raleigh, NC, USA.
 22. Bilonis, I.* , & Zabaras, N.* (2013, July 22-25). Multidimensional adaptive relevance vector machines for uncertainty quantification. Paper presented at the 12th U.S. National Congress on Computational Mechanics, Raleigh, NC, USA.
 23. Bilonis, I.* , & Zabaras, N.* (2013, February 25-March 1). Solution of inverse problems with limited forward solver evaluations: A fully Bayesian framework. Paper presented at the SIAM Conference on Computational Science and Engineering, Boston, MA, USA.
 24. Bilonis, I.* , & Zabaras, N.* (2013, February 25-March 1). Building surrogates of very expensive computer codes: Applications to uncertainty quantification. Paper presented at the SIAM Conference on Computational Science and Engineering, Boston, MA, USA.
 25. Bilonis, I.* , & Zabaras, N.* (2012, April 2-5). Uncertainty quantification with high dimensional, experimentally measured inputs. Paper presented at the SIAM Conference on Uncertainty Quantification, Raleigh, NC, USA.
 26. Bilonis, I.* , & Zabaras, N.* (2012, April 2-5). Hierarchical multi-output Gaussian process regression for uncertainty quantification with arbitrary input probability distributions. Paper presented at the SIAM Conference on Uncertainty Quantification, Raleigh, NC, USA.
 27. Bilonis, I.* , & Zabaras, N.* (2012, April 2-5). Sparse Bayesian techniques for surrogate creation and uncertainty quantification. Paper presented at the SIAM Conference on Uncertainty Quantification, Raleigh, NC, USA.
 28. Bilonis, I.* , & Zabaras, N.* (2011, July 25-29). Sparse Bayesian kernel techniques for the solution of stochastic partial differential equations. Paper presented at the 11th U.S. National Congress on Computational Mechanics, Minneapolis, MN, USA.
 29. Bilonis, I.* , & Zabaras, N.* (2011, August 1-5). Multi-output local Gaussian process regression: Applications to uncertainty quantification. Paper presented at the USA/Brazil Symposium on Stochastic Modeling and Uncertainty Quantification, Rio de Janeiro, Brazil.

30. Bilionis, I.*, Ma, X.*, & Zabarar, N.* (2011, February 28-March 2). Kernel PCA for stochastic input generation of multiscale systems. Paper presented at the SIAM Computational Science and Engineering Meeting, Reno, NV, USA.
31. Bilionis, I.*, & Koutsourelakis, P. S.* (2010, May 16-21 2010). Coarse-graining in crystalline materials through adaptive free-energy calculations. Paper presented at the IV European Conference on Computational Mechanics, Paris, France.
32. Bilionis, I.*, & Koutsourelakis, P. S.* (2010, May 23-26). Adaptive free energy calculations for crystalline materials. Paper presented at the SIAM Conference on Mathematical Aspects of Materials Science, Philadelphia, PA, USA.

Graduate Students

1. Hans A., "TBD," Ph.D., joining Fall 2018. Co-advised with J. Panchal.
2. Alberts A., "TBD", Ph.D., joining Fall 2018. Co-advised with P. Vlachos.
3. Alex D. Casey, "Estimation of melting point and sensitivity in energetic materials with statistical learning," Ph.D., Fall 2018-present. Co-advised with S. Son.
4. Vanessa Kwarteng, "Incentivizing energy conserving behaviors in smart and connected communities," Ph.D., Fall 2018-present.
5. Andres Felipe Beltran Pulido, "Quantification of manufacturing uncertainty in electric machines," Ph.D., Fall 2018-present. Co-advised with Prof. D. Aliprantis.
6. Pillai, M. K. R., "Identifying unanticipated faults in technical systems," MSME Thesis to be converted to Ph.D., Spring 2018-present.
7. Mamidipaka, S., "Physics-informed machine learning with applications to particle image velocimetry," MS Thesis, Spring 2018-present.
8. Karumuri S., "Physics-informed machine learning with applications to high-dimensional uncertainty propagation, inverse, and design problems," Ph.D., Fall 2017-present. Co-advised with J. Panchal.
9. Salar Safarkani, "Game theoretic foundations of systems engineering," PhD, Fall 2017-present.
10. Rohit Tripathy, "High-dimensional uncertainty quantification," PhD, Spring 2016-present.
11. Nimish Awalgaonkar, "Sequential design of experiments for human preference elicitation with applications to human-building interactions," PhD Fall 2016-present.
12. Ali Lenjani, "Automating decision support to address system resilience challenges," PhD, Spring 2017-present. Co-advised with Prof. S. Dyke.
13. Abhijit, S., "Quantification of uncertainty in magnetic characteristics of steel and its effect on the torque profile of a permanent magnet machine," MS Thesis, Spring 2019.
14. Piyush Pandita, "Bayesian optimal design of experiments for expensive black-box functions under uncertainty," Ph.D., Spring 2019. Co-advised with Prof. J. Panchal.
15. Francisco Pena, "Efficient computation of fragility curves," PhD, Spring 2019. Co-advised with Prof. S. Dyke.
16. Majed Alrefae, "Optimizing a chemical vapor deposition reactor for high quality graphene manufacturing," Ph.D., Spring 2017. Co-advised with Prof. T. S. Fisher.
17. Parth Parintosh, "Gaussian process dynamical models for designing multi-stage manufacturing processes," MS Thesis, Spring 2017. Co-advised with Prof. J. Panchal.
18. Chaolei Chen, "Oil reservoir modeling," MS, Fall 2015-Spring 2016.
19. Zengyi Dou, "Bayesian global optimization approach to the oil well placement problem with quantified uncertainties," MS Thesis, Spring 2015.

Undergraduate Students:

1. 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.
2. Jinze Li, "Learning algorithms for mechanical computers based on weakly coupled arrays of electromechanical oscillators," Bottomley fellow, spring 2017.
3. Michael Wang, "Quantifying the effect of manufacturing uncertainties in weakly coupled arrays of electromechanical oscillators," SURF student, summer 2017.
4. Martin Figura, "Multi-objective optimization of electric engines," SURF student, summer 2016.

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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. Rahul, Patni, "Deep neural nets and engineering applications," Bottomley fellow, spring 2016.
7. Yinuo Li, "Determining minimum energy structures of arbitrary clusters of atoms efficiently using Bayesian global optimization", SURF student, summer 2015.
8. Zixuan Liu, "Solving inverse problems efficiently using Bayesian global optimization," SURF student, summer 2015.
9. Juan Camilo Lopez Ramirez, "Uncertainty analysis of granular crystals using Gaussian processes with built-in dimensionality reduction," SURF student, summer 2015.