Last updated October 15, 2022

Danial Faghihi

Assistant Professor
Department of Mechanical and Aerospace Engineering
University at Buffalo, The State University of New York

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EDUCATION

Ph.D.,	Civil Engineering, Louisiana State University, Baton Rouge, LA	12/2012
M.S.,	Civil Engineering, Sharif University of Technology, Tehran, Iran	06/2008
B.S.,	Civil Engineering, K. N. Toosi University of Technology, Tehran, Iran	06/2005

PROFESSIONAL EXPERIENCE

Assistant Professor, Dept. of Mechanical and Aerospace Engineering University at Buffalo (UB), Buffalo, NY	09/2019 - present
Research Associate, Oden Institute for Computational Engineering & Sciences The University of Texas at Austin, Austin, TX	10/2015 - 08/2019
Postdoctoral Fellow, Oden Institute for Computational Engineering & Sciences The University of Texas at Austin, Austin, TX	01/2013 - 09/2015

HONORS AND AWARDS

- CAREER award — 02/2022
  National Science Foundation
- Doctoral Dissertation Year Fellowship — 2012 - 2013
  Louisiana State University

GRANTS AND CONTRACTS

Awarded

1. Reliable Superinsulated Building Envelopes *via* Predictive Multiphysics Modeling. PI: Danial Faghihi, 02/2022-01/2027, NSF CAREER Award – $595,593 (100% share).
2. Center for Hypersonics Shielding and Detection Network (CHOSEN). PI: James Chen (UB), Co-PIs: Danial Faghihi, Matthew Ringuette (UB), Francis Lagor (UB), 15/04/2020-14/05/2022, SUNY Center-Scale Seed Grant Program – $40,000.

Pending

1. Adaptive Cancer Treatment *via* Digital Twins Technologies: An Application to a Murine Model of Glioblastoma. PI: Danial Faghihi, Co-Investigators: David Hormuth (UT Austin), Umberto Villa (UT Austin), Thomas Yankeelov (UT Austin), 07/01/2023-06/30/2027, NIH National Cancer Institute, R01 – $2,030,741 (40% share).

PUBLICATIONS

Google Scholar

	All	Since 2017
Citations	819	582
h-index	16	14
I10-index	26	20

Book chapters

3. Oden, J. T., Babuska, I., Faghihi, D. (2018). Predictive Computational Science: Computer Predictions in the Presence of Uncertainty. In *Erwin Stein, Rene de Borst, Thomas J. R. Hughes (eds) Encyclopedia of Computational Mechanics, 2nd Edition*. John Wiley & Sons.
2. Voyiadjis, G. Z. and Faghihi, D. (2013). The Effect of Temperature on Interfacial Gradient Plasticity in Metallic Thin Films. In *Altenbach H., Kruch S. (eds) Advanced Materials Modelling for Structures. Advanced Structured Materials, vol 19*. Springer.
1. Voyiadjis, G.Z. and Faghihi, D. (2013). Microstructural Characterization of Metals Using Nano-indentation. In *Shaofan Li, Xin-Lin Gao (eds) Handbook of Micromechanics and Nanomechanics*. Jenny Stanford Publishing.

Refereed Journal Articles

Publications since joining UB (*graduate student supervised, ⁺ undergraduate student supervised)

Submitted:

35. Liang*, B., Tan*, J., Lozenski, L., Hormuth, D.A., Yankeelov, T.E., Villa, U., Faghihi, D. (in review). Bayesian Inference of Tissue Heterogeneity for Individualized Prediction of Glioma Growth. *IEEE Transactions on Medical Imaging.*
34. An, L., Luigi, M.D., Tan*, J., Faghihi, D., Ren, S. (in review). Flexible Percolation Fibrous Thermal Insulating Composite Membrane for Thermal Management. *ACS Applied Nano Materials.*

Published:

33. Tan*, J., Liang*, B., Singh*, P. K., Maupin, L., Faghihi, D. (2022). Toward Selecting Optimal Predictive Multiscale Models. *Computer Methods in Applied Mechanics and Engineering.* pp. 115517. DOI
32. Tan*, J., Maleki*, P., Luigi, M.D., Villa, U., Zhou, C., Ren, S., Faghihi, D. (2022). A Predictive Multiphase Model of Silica Aerogels for Building Envelope Insulations. *Computational Mechanics,* pp.1-23. DOI
31. Mousavi JS*, S.M., Faghihi, D., Sommer, K., Bhurwani, M.M., Patel, T.R., Santo, B., Waqas, M., Ionita, C., Levy, E.I., Siddiqui, A.H., Tutino, V.M. (2022). Realistic Computer Modelling of Stent Retriever Thrombectomy: A Hybrid Finite-Element Analysis-Smoothed Particle Hydrodynamics Model. *Journal of the Royal Society Interface*, *18*(185), pp.20210583. DOI
30. Li*, Z., An, L., Khuje, S., Tan*, J., Hu, Y., Huang, Y., Petit, D., Faghihi, D., Yu, J., Ren, S. (2021). Solution-Shearing of Dielectric Polymer with High Thermal Conductivity and Electric Insulation. *Science Advances, 7*(40). DOI

29. Faghihi, D., Lima, E.A., Philley*, R., Yang, J., Virostko, J., Phillips, C.M., Yankeelov, T.E. (2021). Bayesian Calibration of a Stochastic, Multiscale Agent-Based Model for Predicting *In Vitro* Tumor Growth. *PLOS Computational Biology, 17*(11). DOI

28. Tan*, J., Villa, U., Shamsaei, N., Shao, S., Zbib, H.M., Faghihi, D. (2021). A Predictive Discrete-Continuum Multiscale Model of Plasticity with Quantified Uncertainty. *International Journal of Plasticity*, *138*, pp.102935. DOI

27. An, L., Liang+, B., Guo, Z., Wang, J., Li, C., Huang, Y., Hu, Y., Li, Z., Armstrong, J.N., Zhou, C., Faghihi, D., Ren, S. (2021). Wearable Aramid-Ceramic Aerogel Composite for Harsh Environment. *Advanced Engineering Materials*, *23*(3), pp.2001169. DOI

26. An, L., Shao, Z., Armstrong, J.N., Huang, Y., Hu, Y., Li, Z., Faghihi, D., Ren, S. (2020). Hierarchical Structural Engineering of Ultrahigh-Molecular-Weight Polyethylene. *ACS Applied Materials & Interfaces*, *12*(44), pp.50024-50032. DOI

25. Faghihi, D., Feng, X., Lima, E.A., Oden, J.T., Yankeelov, T.E. (2020). A Coupled Mass Transport and Deformation Theory of Multi-Constituent Tumor Growth. *Journal Of the Mechanics and Physics of Solids*, *139*, pp.103936. DOI

24. Jarrett, A.M., Faghihi, D., Hormuth, D.A., Lima, E.A., Virostko, J., Biros, G., Patt, D., Yankeelov, T.E. (2020). Optimal Control Theory for Personalized Therapeutic Regimens in Oncology: Background, History, Challenges, and Opportunities. *Journal of Clinical Medicine*, *9*(5), pp.1314. DOI

23. Faghihi, D., Carey, V., Michoski, C., Hager, R., Janhunen, S., Chang, C.S., Moser, R.D. (2020). Moment Preserving Constrained Resampling with Applications to Particle-In-Cell Methods. *Journal of Computational Physics*, *409*, pp.109317. DOI

Publications prior to joining UB

22. Scarabosio, L., Wohlmuth, B., Oden, J.T., Faghihi, D. (2019). Goal-Oriented Adaptive Modeling of Random Heterogeneous Media and Model-Based Multilevel Monte Carlo Methods. *Computers & Mathematics with Applications*, *78*(8), pp.2700-2718. DOI

21. Faghihi, D., Sarkar, S., Naderi, M., Rankin, J.E., Hackel, L., Iyyer, N. (2018). A Probabilistic Design Method for Fatigue Life of Metallic Components. *ASME Journal of Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering*, *4*(3), pp.031005. DOI

20. Oden, J.T., Lima, E.A., Almeida, R.C., Feng, Y., Rylander, M.N., Fuentes, D., Faghihi, D., Rahman, M.M., DeWitt, M., Gadde, M., Zhou, J.C. (2015). Toward Predictive Multiscale Modeling of Vascular Tumor Growth. *Archives of Computational Methods in Engineering*, *23*(4), pp.735-779. DOI

19. Oden, J.T., Farrell, K., Faghihi, D. (2015). Estimation of Error in Observables of Coarse-Grained Models of Atomic Systems. *Advanced Modeling and Simulation in Engineering Sciences*, *2*(1), pp.1-20. DOI

18. Farrell, K., Oden, J.T., Faghihi, D. (2015). A Bayesian Framework for Adaptive Selection, Calibration, and Validation of Coarse-Grained Models of Atomistic Systems. *Journal of Computational Physics*, *295*, pp.189-208. DOI

17. Prudencio, E.E., Bauman, P.T., Williams, S.V., Faghihi, D., Ravi-Chandar, K., Oden, J.T. (2014). Real-Time Inference of Stochastic Damage in Composite Materials. *Composites Part B: Engineering*, *67*, pp.209-219. DOI

16. Prudencio, E.E., Bauman, P.T., Faghihi, D., Ravi-Chandar, K., Oden, J.T. (2014). A Computational Framework for Dynamic Data-Driven Material Damage Control, Based on Bayesian Inference and Model Selection. *International Journal for Numerical Methods in Engineering*, *102*(3-4), pp.379-403. DOI

15. Voyiadjis, G.Z. and Faghihi, D. (2014). Overview of Enhanced Continuum Theories for Thermal and Mechanical Responses of the Microsystems in the Fast-Transient Process. *Journal of Engineering Materials and Technology*, *136*(4), pp.041003. DOI

14. Voyiadjis, G.Z., Faghihi, D., Zhang, Y. (2014). A Theory for Grain Boundaries with Strain-Gradient Plasticity. *International Journal of Solids and Structures*, *51*(10), pp.1872-1889. DOI
13. Faghihi, D. and Voyiadjis, G.Z. (2014). A Thermodynamic Consistent Model for Coupled Strain-Gradient Plasticity with Temperature. *Journal of Engineering Materials and Technology*, *136*(1), pp.011002. DOI
12. Faghihi, D., Voyiadjis, G.Z., Park, T. (2013). Coupled Thermomechanical Modeling of Small Volume FCC Metals. *Journal of Engineering Materials and Technology*, *135*(2), pp.021003. DOI
11. Voyiadjis, G.Z. and Faghihi, D. (2013). The Effect of Temperature on Interfacial Gradient Plasticity in Metallic Thin Films. *Journal of Surfaces and Interfaces of Materials*, *1*(1), pp.30-42. DOI
10. Voyiadjis, G.Z. and Faghihi, D. (2013). Localization in Stainless Steel Using a Microstructural Based Viscoplastic Model. *International Journal of Impact Engineering*, *54*, pp.114-129. DOI
9. Voyiadjis, G.Z. and Faghihi, D. (2012). Thermo-Mechanical Strain Gradient Plasticity with Energetic and Dissipative Length Scales. *International Journal of Plasticity*, *30*, pp.218-247. DOI
8. Voyiadjis, G.Z., Almasri, A.H., Faghihi, D., Palazotto, A.N. (2012). Analytical Solution for Shear Bands in Cold-Rolled 1018 Steel. *Journal of the Mechanical Behavior of Materials*, *20*(4-6), pp.89-102. DOI
7. Voyiadjis, G.Z. and Faghihi, D. (2012). Gradient Plasticity for Thermo-Mechanical Processes in Metals with Length and Time Scales. *Philosophical Magazine*, *93*(9), pp.1013-1053. DOI
6. Faghihi, D. and Voyiadjis, G.Z. (2012). Thermal and Mechanical Responses of BCC Metals to the Fast-Transient Process in Small Volumes. *Journal of Nanomechanics and Micromechanics*, *2*(3), pp.29-41. DOI
5. Faghihi, D. and Voyiadjis, G.Z. (2012). Determination of Nanoindentation Size Effects and Variable Material Intrinsic Length Scale for Body-Centered Cubic Metals. *Mechanics of Materials*, *44*, pp.189-211. DOI
4. Voyiadjis, G.Z., Faghihi, D., Zhang, C. (2011). Analytical and Experimental Determination of Rate- and Temperature-Dependent Length Scales using Nanoindentation Experiments. *Journal of Nanomechanics and Micromechanics*, *1*(1), pp.24-40. DOI
3. Faghihi, D. and Voyiadjis, G.Z. (2010). Size Effects and Length Scales in Nanoindentation for Body-Centered Cubic Materials with Application to Iron. *Proceedings of the Institution of Mechanical Engineers, Part N: Journal of Nanoengineering and Nanosystems*, *224*(1-2), pp.5-18. DOI
2. Voyiadjis, G.Z. and Faghihi, D. (2010). Variable (Intrinsic) Material Length Scale for Face-Centered Cubic Metals using Nanoindentation. *Proceedings of the Institution of Mechanical Engineers, Part N: Journal of Nanoengineering and Nanosystems*, *224*(3), pp.123-147. DOI
1. Voyiadjis, G.Z., Deliktas, B., Faghihi, D., Lodygowski, A. (2010). Friction Coefficient Evaluation Using Physically Based Viscoplasticity Model at the Contact Region During High-Velocity Sliding. *Acta Mechanica*, *213*(1), pp.39-52. DOI

Conference Publications (*denotes graduate student supervised)

10. Tan*, J., Maupin, K., Shao, S., Faghihi, D. (2021). A Bayesian Machine Learning Framework for Selection of the Strain Gradient Plasticity Multiscale Model. Proceedings of the ASME International Mechanical Engineering Congress & Exposition (IMECE).
9. Voyiadjis, G. Z., Faghihi, D., Alshibli, K. (2015). Finite Element Analysis of Integral Abutment Bridge Substructure in Louisiana. 94th Transportation Research Board Annual Meeting.
8. Prudencio, E. E., Bauman, P. T., Williams, S. V., Faghihi, D., Ravi-Chandar, K., Oden, J. T. (2013). A Dynamic Data Driven Application System for Real-time Monitoring of Stochastic Damage. Procedia Computer Science, *18*, pp.2056-2065.
7. Voyiadjis, G. Z., and Faghihi, D. (2012). Microstructure to Macro-Scale Using Gradient Plasticity with Temperature and Rate Dependent Length Scale. Procedia IUTAM, 3, 205- 227.

6. Voyiadjis, G. Z., and Faghihi, D., (2012). Thermo-Mechanical Responses of Metals on Fast-Transient Process in Small Volume. Proceedings of the International Congresses on Theoretical and Applied Mechanics (ICTAM).
5. Voyiadjis, G. Z., and Faghihi, D., (2012). Coupled Viscoplastic Damage Model and Simulation for Metals and Composites. Proceedings of International Conference on Damage Mechanics (ICDM).
4. Haeri, S., Faghihi, D. (2009). A Comparison Between Monitoring and Analysis of Taleghan Rockfill Dam During Construction. Proceedings of 17th International Conference on Soil Mechanics and Geotechnical Engineering, Egypt.
3. Jafarzade, F., Faghihi, D., Ehsani, M. (2008). Numerical Simulation of Shaking Table Tests on Dynamic Response of Dry Sand. Proceedings of 14th World Conference on Earthquake Engineering (14WCEE).
2. Haeri, S., Faghihi, D. (2008). Predicting Hydraulic Fracturing in Hyttejuvet Dam. Proceedings of 6th International Conference on Case Histories in Geotechnical Engineering: Symposium in Honor of Professor James K. Mitchell, University of Missouri.
1. Haeri, S., Faghihi, D. (2008). Study on the Behavior of Earth Dam During Construction Process. Proceedings of 4th National Conference of Civil Engineering, Iran.

Reports

5. Faghihi, D., Oden, J. T., Feng, X., Lima, E., Yankeelov, T. E. (2018), A Phase-Field Theory for Multi-constituent Diffusion and Deformation: Application to Avascular Tumor Growth, ICES report 18-09, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, Austin, TX.
4. Moser, R., Carey, V., Michoski, C., Faghihi, D. (2017), Partnership for Edge Physics (EPSI), DOE Report, U.S. Department of Energy Office of Scientific and Technical Information.
3. Oden, J. T., Feng, Y., Rylander, M. N., Fuentes, D., Almeida, R., Lima, E., Faghihi, D. (2015), Toward Predictive Multiscale Modeling of Vascular tumor Growth: Computational and Experimental Oncology for Tumor Prediction, ICES report 15-10, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, Austin, TX.
2. Bauman, P.T., Faghihi, D., Oden, J. T., Prudencio E.E., Williams, S.V., Ravi-Chandar (2013), Development of a Stochastic Dynamic Data-Driven System for Prediction of Material Damage, AFOSR report, The Air Force Office of Scientific Research.
1. Voyiadjis, G.Z., Cai, S., Alshibly, K., Faghihi, D. (2011), Integral Abutment Bridge for Louisiana's Soft and Stiff Soils: Caminda Bay Bridge, LTRC report, Louisiana Transportation Research Center, Baton Rouge, LA.

TECHNICAL PRESENTATIONS

Invited Talks

10. Faghihi, D., Toward Selecting Optimal Predictive Computational Models. U.S. Association for Computational Mechanics (USACM) Technical Trust Area on Uncertainty Quantification and Probabilistic Modeling. March 2022, Monthly Webinar.
9. Faghihi, D., Data-driven Multiscale Modeling of Materials. The University of Texas at Arlington Research Institute (UTARI). January 2019, Fort Worth, TX.
8. Faghihi, D., Predictive Multiscale Modeling of Materials and Structures. Department of Civil, Architectural and Environmental Engineering, The University of Texas at Austin. March 2018, Austin, TX.
7. Faghihi, D., Predictive and Data-enabled Computational Engineering. ExxonMobil Research and Engineering Company, Corporate Strategic Research. July 2015, Annandale, NJ.
6. Faghihi, D., Predictive Computational Material Modeling: Theories and Applications. Department of Civil and Environmental Engineering, University of Southern California. March 2015, Los Angeles, CA.

5. Faghihi, D., Uncertainty Quantification in Computational Materials Engineering. Department of Civil and Environmental Engineering, Sharif University of Technology. January 2015, Tehran, IRAN.
4. Faghihi, D., An Enhanced Continuum Theory for Thermo-Mechanical Responses of Micro-scale Materials. Department of Civil and Environmental Engineering, Sharif University of Technology. July 2014, Tehran, IRAN.
3. Faghihi, D., Micro-structure to Macro-scale using Enhanced Continuum Theories. Civil Engineering Department, Michigan State University. April 2014, East Lansing, MI.
2. Faghihi, D., Generalized Continuum Theories for Bridging Micro-structure to Macro-scale. Civil Engineering Department, New Mexico State University. November 2013, Las Cruces, NM.
1. Faghihi, D., Microstructure to Macro-scale using Generalized Continuum Theories. Oden Institute for Computational Engineering and Science, The University of Texas at Austin. January 2013, Austin, TX.

Conference Presentations (presenter boldfaced, *denotes graduate student supervised; +denotes undergraduate student supervised)

20. **Faghihi, D.**, Tan*, J., Maupin, K., Liang*, B. An Adaptive Framework for Determining Optimal Valid Model: Application to Size Dependent Plasticity. *19th U.S. National Congress on Theoretical and Applied Mechanics*. June 2022, Austin, TX.
19. **Tan*, J.**, Faghihi, D. Validation and Uncertainty Quantification in Predictive Multiphase Modeling of Silica Aerogels Building Insulations. *ASME Verification, Validation, and Uncertainty Quantification Symposium (VVS 2022)*. May 2022, Texas A&M University, College Station, TX.
18. **Liang*, B.**, Tan*, J., Lozenski, Villa, U., L., Hormuth, D., Yankeelov, T.E., Faghihi, D. Image-based Patient Specific Prediction of Heterogeneous Tumor Growth. *U.S. Association for Computational Mechanics (USACM) Thematic Conference on the Role of Mathematical and Computational Modeling in Cancer Research*. January 2022. Austin, Texas (*virtual*).
17. **Liang+, B.**, Tan*, J., Lozenski, L., Hormuth, D., Yankeelov, T.E., Villa, U., Faghihi, D. Image-based Bayesian Inference and Patient Specific Prediction of Heterogeneous Tumor Growth. *16th U.S. National Congress on Computational Mechanics (USNCCM XVI).* July 2021, Chicago, Illinois (*virtual*).
16. **Tan*, J.**, Maupin, K., Faghihi, D. (2021). A Bayesian Framework for Validation and Selection of Multiscale Plasticity Models with Quantified Uncertainty. *16th U.S. National Congress on Computational Mechanics (USNCCM XVI).* July 2021, Chicago, Illinois (*virtual*).
15. **Faghihi, D.**, Tan*, J., Shao, S., Shamsaei, N. A Predictive Multiscale Modeling of Microscale Plasticity: Discrete Dislocation Dynamics to Strain Gradient Plasticity. *The International Mechanical Engineering Congress and Exposition (IMECE 2020)*. November 2020, Portland, Oregon (*virtual*).
14. **Faghihi, D.**, Lima, E. A., Philley, R., Yang, J., Yankeelov, T.E. A Machine-Learning Framework for Predictive Multiscale Modeling of Tumor Growth. *14th World Congress in Computational Mechanics (WCCM) ECCOMAS Congress 2020*. January 2021, Paris, France (*virtual*).
13. **Faghihi, D.**, Lima, E., Feng, X., Oden, J.T., Yankeelov, T.E. A Coupled Phase-Field and Deformation Theory of Multi-constituent Tumor Growth. *15th U.S. National Congress on Computational Mechanics (USNCCM XV).* August 2019, Austin, TX.
12. **Faghihi, D.**, Farrell K., and Oden, J.T. Estimation of Error for Coarse-Grained Models of Atomic Systems. *13th US National Congress on Computational Mechanics (USNCCM XIII)*. July 2015, San Diego, CA.
11. **Faghihi, D.**, Prudencio E.E., Bauman, P.T., Ravi-Chandar, K., and Oden, J.T., Real-Time Monitoring of Stochastic Damage in Composite Materials. *International Mechanical Engineering Congress and Exposition (IMECE 2014).* November 2014, Montreal, QC, Canada

10. **Faghihi, D.** and Voyiadjis, G.Z., Thermo-Mechanical Responses of Metallic Thin Films on the Fast-Transient Process. *International Mechanical Engineering Congress and Exposition (IMECE 2014).* November 2014, Montreal, QC, Canada

9. **Faghihi, D.**, Prudencio E.E., Bauman, P.T., Ravi-Chandar, K., and Oden, J.T., A Stochastic Framework for Material Damage Control in Composite Materials, Based on Bayesian Inference and Model Selection. *Engineering Mechanics Institute Conference (EMI 2014).* August 2014, Hamilton, ON, Canada

8. **Faghihi, D.** and Voyiadjis, G.Z., Thermal and Mechanical Modeling of Micro-scale Materials Using Enhanced Continuum Theories. *Engineering Mechanics Institute Conference (EMI 2014).* August 2014, Hamilton, ON, Canada

7. **Faghihi, D.**, Prudencio E.E., Bauman, P.T., Ravi-Chandar, K., and Oden, J.T., Experimental and Computational Characterization of Damage in Composite Materials. *International Mechanical Engineering Congress and Exposition (IMECE 2013).* November 2013, San Diego, CA.

6. **Faghihi, D.** and Voyiadjis, G.Z., A Gradient-Enhanced Continuum Model for Size and Rate Effects in Thin Metal Film-Substrate Systems. *International Mechanical Engineering Congress and Exposition (IMECE 2013).* November 2013, San Diego, CA.

5. **Faghihi, D.** and Voyiadjis, G.Z., Thermo-Mechanical Responses of Metals in Small Scale and Fast Transient Process. *Society of Engineering Science: 50th Annual Technical Meeting (SES 2013) and ASME-AMD Annual Summer Meeting*. July 2013, Brown University, Providence, RI.

4. **Faghihi, D.** and Voyiadjis, G.Z., Coupled Thermo-Mechanical Responses of Metals Crystal Structure using Strain Gradient Plasticity. *International Mechanical Engineering Congress and Exposition (IMECE 2012)*. November 2012, Houston, TX.

3. **Faghihi, D.** and Voyiadjis, G.Z., Multiscale Modeling of the Size and Interface Effects in Thin Metal Film-Substrate Systems in the Fast-Transient Process. *International Mechanical Engineering Congress and Exposition (IMECE 2012)*. November 2012, Houston, TX.

2. **Faghihi, D.** and Voyiadjis, G.Z., Thermo-Mechanical Responses of Small Volume Metals on The Fast – Transient Process. *Society of Engineering Science: 49th Annual Technical Meeting (SES 2012)*. October 2012, Georgia Tech, Atlanta, GA.

1. **Faghihi, D.** and Voyiadjis, G.Z., Strain Gradient Plasticity with Energetic and Dissipative Length Scales. *2012 Joint Conference of the Engineering Mechanics Institute and 11th ASCE Joint Specialty Conference on Probabilistic Mechanics and Structural Reliability*. June 2012, the University of Notre Dame, South Bend, IN.

TEACHING EXPERIENCE

University at Buffalo

Department of Mechanical and Aerospace Engineering

- MAE509: Quantification of Uncertainties in Physical Models — Spring 2022
- MAE376: Applied Mathematics in MAE — Fall 2019/Fall 2020/Fall 2021/Fall 2022
- MAE555: Continuum Mechanics — Spring 2020/Fall 2021/Fall 2022

The University of Texas at Austin

Department of Biomedical Engineering

- Numerical Methods in Biomedical Engineering — Fall 2018/Spring 2019
- Introduction to Computing (C++/Python) — Spring 2019
- Network Analysis in Biomedical Engineering — Fall 2018/Spring 2019

Department of Aerospace Engineering and Engineering Mechanics

- Engineering Computation — Fall 2013

The University of Texas at San Antonio

Department of Civil and Environmental Engineering

- Finite Element Methods (Graduate) — Fall 2016

GRADUATE STUDENTS

Dissertations/Theses

1. Jingye Tan, Ph.D., University at Buffalo, 09/2019-present
   Passed the qualifying exam, degree expected 08/2023
   Dissertation title: “Predictive multiphase modeling and design of mesoporous materials under uncertainty”
2. Baoshan Liang, Ph.D., University at Buffalo, 09/2021-present
   Degree expected 08/2025
   Dissertation title: “A predictive image-guided digital twin for individualized cancer treatment: Application to brain tumor and radiotherapy”
3. Pratyush Kumar Singh, M.S., University at Buffalo, 09/2021-present
   Degree expected 12/2022
   Thesis title: “A coupled thermal transport and phase separation theory of self-assembled nanostructured materials”
4. Shayan Bhattacharjee, M.S., University at Buffalo, 02/2022-present
   Degree expected 05/2023.
   Thesis title: “Microstructure design of mesoporous materials via Generative Adversarial Networks”

Special Achievements of Graduate Students

1. Pratyush Kumar Singh, *Ph.D. Incentive Scholarship*, Department of Mechanical and Aerospace Engineering, University at Buffalo. March 2022.
2. Baoshan Liang, *Travel Award*, U.S. Association for Computational Mechanics (USACM) Thematic Conference on the Role of Mathematical and Computational Modeling in Cancer Research. January 2022.
3. Jingye Tan, *Travel Award*, 16th U.S. National Congress on Computational Mechanics (USNCCM XVI). July 2021.
4. Jingye Tan, *Runner-up Best Student Poster Competition in Computational Mechanics*, ASME-International Mechanical Engineering Congress and Exposition (IMECE). November 2020.

Dissertation/Thesis Committee Member

1. Committee member, Massimigliano Di Luigi (Ph.D.), Department of Mechanical and Aerospace Engineering, University at Buffalo. December 2023.
2. Committee member, Manaswin Oddiraju (Ph.D.), Department of Mechanical and Aerospace Engineering, University at Buffalo. August 2024.
3. Committee member, Seyyed Mostafa Mousavi JanbehSarayi (Ph.D.), Department of Mechanical and Aerospace Engineering, University at Buffalo. August 2022.
4. Committee member, Deekshitha Jetta (Ph.D.), Department of Mechanical and Aerospace Engineering, University at Buffalo. January 2022.
5. Committee member, Manaswin Oddiraju (M.S.), Department of Mechanical and Aerospace Engineering, University at Buffalo. August 2021.
6. Committee member, Mriganka Roy (Ph.D.), Department of Mechanical and Aerospace Engineering, University at Buffalo. June 2020.

UNDERGRADUATE STUDENTS

Undergrad Research Directed

1. Romika Sairam, 06/2022 – 08/2022, University at Buffalo.
2. Armaan Shojaie, 06/2022 – 08/2022, University at Buffalo.
3. Baoshan Liang, 01/2020 – 08/2021, University at Buffalo.
4. Russell Philly, 01/2018 – 08/2019, The University at Texas at Austin.

Undergrad Research in Progress

1. Catherine Mulvey, 06/2021 - present, University at Buffalo.

Special Achievements of Undergraduate Students

1. Baoshan Liang, *Gustav and Grete Zimmer Memorial Scholarship Fund*, University at Buffalo, 2020.
2. Baoshan Liang, *Travel Award*, 16th U.S. National Congress on Computational Mechanics (USNCCM XVI), 2021.

PROFESSIONAL ACTIVITIES

Leadership

Professional Organizations

- Member, U.S. Association for Computational Mechanics (USACM) Technical Thrust Area Committee on Uncertainty Quantification and Probabilistic Modeling 05/2020 - present
- Member, American Society of Mechanical Engineers (ASME) Committee on Computing in Applied Mechanics 11/2019 - present

Conferences

- Symposium Co-organizer: “Data-Enabled Predictive Modeling, Machine Learning, and Uncertainty Quantification in Computational Mechanics”, ASME International Mechanical Engineering Congress & Exposition (IMECE), November 2020 - November 2022.
- Symposium Co-organizer: “Physics-Informed and Data-Enabled Predictive Modeling”, 16th US National Congress on Computational Mechanics (USNCCM XVI), July 2021.
- Symposium Co-organizer: “Modeling of the Behavior of the Micro-/Nano-Structured Thin Films”, ASME International Mechanical Engineering Congress & Exposition (IMECE), November 2014.

Other Service

Journal and Conference Reviewer

- Journal of Computer Methods in Applied Mechanics and Engineering (Elsevier)
- International Journal of Plasticity (Elsevier)
- International Journal of Mechanical Sciences (Elsevier)
- International Journal of Materials & Design (Elsevier)
- Journal of Nanomechanics and Micromechanics (ASCE)
- Journal of Engineering Mechanics (ASCE)
- International Journal of Fracture (Springer)
- Robotics and Computer-Integrated Manufacturing (Elsevier)
- Materials Science and Engineering A (Elsevier)
- International Journal of Experimental and Computational Biomechanics (Inderscience)
- International Mechanical Engineering Congress & Exposition (ASME)
- Computational Materials Science (Elsevier)
- Journal of Clinical Medicine (MDPI)
- Axioms (MDPI)

Proposal Reviewer

- NSF, CMMI/Engineering for Civil Infrastructure 2022
- NSF, Advanced Cyberinfrastructure 2018

UNIVERSITY SERVICE

Department Committees

- Graduate Student Committee
  (representative of Computational and Applied Mechanics area) 08/2022 – present
- Co-organizer, MAE seminar series 08/2020 – 05/2022
- Member, Faculty Search Committee 09/2019 – 02/2020
- Judge, MAE Poster Competition 2020