

FACULTY VITA

Date: 10/20/2026

Name: Soumik Sarkar

Department: Mechanical Engineering

Current Rank: Professor

I. BACKGROUND, PROFESSIONAL EXPERIENCE AND RECOGNITIONS

A. Education

Jadavpur University, India, B.E., Mechanical Engineering, 2006
Pennsylvania State University, M.S., Mechanical Engineering, 2009
Pennsylvania State University, M.A., Mathematics, 2009
Pennsylvania State University, Ph.D., Mechanical Engineering, 2011

B. Academic Appointments

Professor, Department of Mechanical Engineering, Iowa State University, July 2023 – now
Professor (courtesy), Department of Computer Science, Iowa State University, July 2023 – now
Associate Professor, Department of Mechanical Engineering, Iowa State University, July 2019 – June 2023
Associate Professor (courtesy), Department of Computer Science, Iowa State University, July 2019 – June 2023
Assistant Professor, Department of Mechanical Engineering, Iowa State University, August 2014 – June 2019
Assistant Professor (courtesy), Department of Computer Science, Iowa State University, January 2016 – June 2019

C. Other Professional Employment

Director, Translational AI Center (TrAC), Iowa State University, July 2021 - now
Chief Innovation Officer and Partner, Etalyc LLC., January 2017 - now
Senior Scientist, Decision Support & Machine Intelligence, United Technologies Research Center, August 2011 – August 2014

D. Honors and Awards (selected)

1. Presidential Early Career Award for Scientists and Engineers (PECASE) (2025)
2. Iowa State College of Engineering Mid-career Achievement in Research Award (2023)
3. Iowa State College of Agriculture and Life Sciences Team Award (2022)
4. ASME DSCD Kalman Best Paper Award (2021)
5. Walter W Wilson Faculty Fellow in Engineering, Iowa State University (2020)
6. Iowa State University Early Achievement in Research Award (2020)
7. NSF CAREER Award (2019)
8. Iowa State College of Engineering Early Achievement in Research Award (2019)
9. Scholar of Plant Science Institute (PSI), Iowa State University (2018)
10. NVIDIA Deep Learning Institute (DLI) University Ambassador (2017)
11. AFOSR Young Investigator Program (YIP) award (2017)
12. ASHRAE Science and Technology for the Built Environment Best Paper Award (2015)
13. NSF CISE Research Initiation Initiative (CRII) award (2015)
14. Black & Veatch Faculty Fellowship, Iowa State College of Engineering (2014)

II. SCHOLARSHIP AND RESEARCH/CREATIVE ACTIVITIES

A. Scholarship

- *Total of 334 publications including 164 peer reviewed journal papers (148 after joining ISU – 112 at the current rank, 120 with ISU students/postdocs), Total 9 book*

chapters (7 after joining ISU – 4 at the current rank, 6 with ISU students/postdocs) and 161 peer reviewed conference papers (141 after joining ISU – 85 at the current rank, 135 with ISU students and postdocs).

- My published work received a cumulative 11342 citations with h-index of 47 and i10 index of 135 according to OpenAlex (data collected on 10/20/2026).
- High impact papers in *Proceedings of the National Academy of Sciences (PNAS, IF: 12.78, 100 pctI)*, *Nature Computational Science, Trends in Plant Science (IF:18.31, 98 pctI)*, *Applied Energy (IF: 11.45, 98 pctI)*, *IEEE Transactions on SMC B (IF: 6.22)*, *Scientific Reports (IF: 4.259, 100 pctI)*, *Neural Information Processing Systems (NeurIPS)*, *International Conference on Machine Learning (ICML)*, *International Conference on Computer Vision (ICCV)* and *Association for the Advancement of Artificial Intelligence (AAAI) conferences (top ML/Vision conferences with acceptance rate ~20%)*, *International Conference on Geometric Modeling and Processing (GMP, acceptance rate < 20%)*, *Supercomputing (acceptance rate ~20%)* and *International Conference on Cyber Physical Systems (ICCPS, acceptance rate <25%)*.
- + denotes graduate students or post-docs, * denotes undergraduate students, # denotes publications during candidate's graduate study, _ denotes corresponding authorship of the candidate.

1. Articles in Peer-Reviewed Journals – In Print or Accepted

During current rank at ISU

1. Y. Shen, T. T. Ayanlade+, V. N. Boddepalli, M. Saadati, A. Rairdin, Z. K. Deng, M. Arshad+, B. Ganapathysubramanian, A. Balu+, D. Mueller, A. K. Singh, A. K. Singh, W. Everman, N. Merchant, B. Ganapathysubramanian, M. J. B. Anderson, S. Sarkar, A. Singh, A. Singh, "WeedNet: a foundation model-based global-to-local AI approach for weed species identification and classification," *Nature Communications*, 2026. <https://doi.org/10.1038/s41467-026-78044-4>
2. J. R. Waite+, D. Golden, B. Indelicato, K. Camp, M. Saadati, S. K. Regan, P. S. Schnable, B. Ganapathysubramanian, C. D. Messina, S. Thornsbury, S. Sarkar, "A framework for AI-integrated models to assess agricultural resilience," *Frontiers in Sustainable Food Systems*, 2026. <https://doi.org/10.3389/fsufs.2026.1924646>
3. J. D. Salvo, S. Joshi, M. Hadadi, T. Z. Jubery, S. Sarkar, A. Singh, B. Ganapathysubramanian, S. V. Archontoulis, A. Krishnamurthy, A. K. Singh, "Phenological growth stages of Finger millet (*Eleusine coracana* (L.)) using 3-D phenotyping with relevance to breeding applications," *Frontiers in Plant Science*, 2026. <https://doi.org/10.3389/fpls.2026.1747707>
4. M. H. H. Hasib, N. Masud, A. Biswas, T. Z. Jubery, C. Stanley, S. Swaminathan, C. E. Grover, J. F. Wendel, S. Sarkar, O. A. Zabolina, A. Sarkar, "Sewing the future of cotton: An integrated omics study combining nanomechanics, transcriptomics, and phenotypic traits," *Current Plant Biology*, 2026. <https://doi.org/10.1016/j.cpb.2026.100626>
5. S. Joshi, J. D. Salvo, Y. Shen, M. Hadadi, V. N. Boddepalli, T. Z. Jubery, S. Sarkar, A. Singh, B. Ganapathysubramanian, A. K. Singh, A. Krishnamurthy, "Neural 3D reconstruction and immersive VR visualization of row crops across phenological growth stages," *Smart Agricultural Technology*, 2026. <https://doi.org/10.1016/j.atech.2026.102024>
6. T. T. Ayanlade+, L. V. D. Laan, Q. Liu+, T. Gangopadhyay+, J. M. Shook, A. Singh, B. Ganapathysubramanian, S. Sarkar, A. K. Singh, "Transformer model to determine spatio-temporal relationships of variables, and interpretability for soybean seed yield, oil, and protein prediction," *Frontiers in Artificial Intelligence*, 2026. <https://doi.org/10.3389/fraci.2026.1750108>
7. Q. Liu+, Z. Jiang+, H.-J. Yang+, M. Khosravi+, J. R. Waite+, S. Sarkar, "Enhancing PPO With Trajectory-Aware Hybrid Policies," *IEEE Transactions on Neural Networks and Learning Systems*, 2026. <https://doi.org/10.1109/tnnls.2025.3641531>

8. S. Ganguly+, A. Biswas, J. Rade+, M. H. H. Hasib, N. Masud, N. Singla, A. Dash, U. Bhattacharjee, A. Balu+, A. Krishnamurthy, S. Sarkar, A. Sarkar, "BPS2026 – In-context adaptation of vision language models (VLMs) for few-shot cell detection in microscopy," Biophysical Journal, 2026. <https://doi.org/10.1016/j.bpj.2025.11.2598>
9. N. Masud, M. H. H. Hasib, A. Biswas, T. Z. Jubery, S. Sarkar, A. Sarkar, "BPS2026 – AFM-based force spectroscopy for linking plant cell wall mechanics to agriculture," Biophysical Journal, 2026. <https://doi.org/10.1016/j.bpj.2025.11.1616>
10. M. Z. Hasan+, G. Basulto-Elias, J. HaChang, S. Hallmark, M. Rizzo, A. Sharma, S. Sarkar, "Driving as a screening aid: Scenario-based cognitive assessment in older drivers from driving video," Artificial Intelligence for Transportation, 2026. <https://doi.org/10.1016/j.ait.2026.100067>
11. S. Chattopadhyay+, G. Basulto-Elias, J. H. Chang, M. Rizzo, S. Hallmark, A. Sharma, S. Sarkar, "Predicting mild cognitive impairment using naturalistic driving and trip destination modeling," Transportation Research Interdisciplinary Perspectives, Vol. 38, 102091, 2026. <https://doi.org/10.1016/j.trip.2026.102091>
12. Q. Liu+, Z. Jiang+, M. Z. Hasan+, J. R. Waite+, C. Liu+, A. Balu+, S. Sarkar, "Bidirectional linear recurrent models for sequence-level multisource fusion," Information Fusion, Vol. 126, 103601, 2026. <https://doi.org/10.1016/j.inffus.2025.103601>
13. N. Saadati+, Z. Jiang+, J. R. Waite+, S. Ganguly+, A. Balu+, C. Hegde, S. Sarkar, "DeCAF: Decentralized consensus-and-factorization for low-rank adaptation of foundation models," Neural Networks, Vol. 202, pp. 108992-108992, Elsevier BV, 2026. <https://doi.org/10.1016/j.neunet.2026.108992>
14. S. Ganguly+, A. Biswas, J. Rade+, M. H. H. Hasib, N. Masud, N. Singla, A. Dash, U. Bhattacharjee, A. Balu+, A. Sarkar, A. Krishnamurthy, S. Sarkar, "In-context adaptation of VLMs for few-shot cell detection in optical microscopy," Frontiers in Artificial Intelligence, Vol. 9, pp. 1761903-1761903, Frontiers Media, 2026. <https://doi.org/10.3389/frai.2026.1761903>
15. J. H. Chang, R. Dai, A. Sharma, S. Sarkar, E. Vlock, C. BAILEY, L. Lienemann, M. Rizzo, "54 Broad and shallow, deep and narrow, data track health's causal arrow," Journal of Clinical and Translational Science, Vol. 10, pp. 17-17, Cambridge University Press, 2026. <https://doi.org/10.1017/cts.2026.10283>
16. M. Khosravi+, M. Carroll, K. L. Tan+, L. V. D. Laan, J. Raigne, D. S. Mueller, A. Singh, A. Balu+, B. Ganapathysubramanian, A. K. Singh, S. Sarkar, "AgGym: An agricultural biotic stress simulation environment for ultra-precision management planning," Computers and Electronics in Agriculture, Vol. 246, 111479, 2026. <https://arxiv.org/abs/2409.00735>
17. A. Joshi+, A. Venkatachalapathy, J. Merickel, J. H. Chang, M. Rizzo, S. Sarkar, A. Sharma, "Impact of acute glucose episodes on adherence to speed limits in the naturalistic setting for drivers with diabetes: An application of linear quantile mixed models," Transportation Research Interdisciplinary Perspectives, 2025. <https://doi.org/10.1016/j.trip.2025.101633>
18. B. Kim, S. W. Blair, T. Z. Jubery, S. Sarkar, A. Singh, A. K. Singh, A. K. Singh, A. K. Singh, B. Ganapathysubramanian, "Soybean maturity prediction using two-dimensional contour plots from drone-based time series imagery," The Plant Phenome Journal, 2025. <https://doi.org/10.1002/ppj2.70036>
19. S. Chiranjeevi, M. Saadati, Z. K. Deng, J. Koushik, T. Z. Jubery, D. S. Mueller, M. O'Neal, N. Merchant, A. Singh, A. K. Singh, S. Sarkar, A. Singh, B. Ganapathysubramanian, "InsectNet: Real-time identification of insects using an end-to-end machine learning pipeline," PNAS nexus, Vol. 4, pp. pgae575, Oxford University Press, 2025. <https://academic.oup.com/pnasnexus/article-abstract/4/1/pgae575/7933354>
20. M. Hadadi, M. Saraeian, J. Godbersen, T. Z. Jubery, Y. Li, L. Attigala, A. Balu+, S. Sarkar, P. S. Schnable, A. Krishnamurthy, B. Ganapathysubramanian, "Procedural generation of 3D maize plant architecture from LiDAR data," Computers and Electronics in Agriculture, Vol. 236, pp. 110382, Elsevier, 2025. <https://www.sciencedirect.com/science/article/pii/S0168169925004880>

21. N. Shrestha, A. Powadi, J. Davis, T. T. Ayanlade+, H. Liu, M. C. Tross, R. K. Mathivanan, J. Bares, L. Lopez-Corona, J. Turkus, L. Coffey, T. Z. Jubery, Y. Ge, S. Sarkar, J. C. Schnable, B. Ganapathysubramanian, P. S. Schnable, "Plot-level satellite imagery can substitute for UAVs in assessing maize phenotypes across multistate field trials," *Plants, People, Planet*, Vol. 7, pp. 1011-1026, 2025. <https://nph.onlinelibrary.wiley.com/doi/abs/10.1002/ppp3.10613>
22. A. K. Singh, S. E. Jones, L. V. D. Laan, T. T. Ayanlade+, J. Raigne, N. Saleem, S. Joshi, M. A. Arshad+, H. ZareMehrdjerdi, A. Rairdin, J. D. Salvo, D. Elango, L. D. A. Peixoto, T. Z. Jubery, A. Krishnamurthy, A. Singh, S. Sarkar, B. Ganapathysubramanian, "Use of artificial intelligence in soybean breeding and production," *Advances in Agronomy*, Vol. 190, pp. 199-273, Academic Press, 2025. <https://www.sciencedirect.com/science/article/pii/S0065211324001147>
23. H. C. Croll, K. Ikuma, S. K. Ong, S. Sarkar, "Reinforcement learning optimization of a water resource recovery facility: Evaluating the impact of reward function design on agent training, control optimization, and treatment risk," *Journal of Water Process Engineering*, Vol. 69, pp. 106658, Elsevier, 2025. <https://www.sciencedirect.com/science/article/pii/S2214714424018907>
24. M. Khosravi+, Z. Jiang+, J. R. Waite+, S. E. Jones, H. T. Pacin, A. Singh, B. Ganapathysubramanian, A. K. Singh, S. Sarkar, "Optimizing navigation and chemical application in precision agriculture with deep reinforcement learning and conditional action tree," *Smart Agricultural Technology*, pp. 101194, Elsevier, 2025. <https://www.sciencedirect.com/science/article/pii/S2772375525004253>
25. L. V. D. Laan, K. Parmley, M. Saadati, H. T. Pacin, S. Panthulugiri, S. Sarkar, B. Ganapathysubramanian, A. Lorenz, A. K. Singh, "Genomic and phenomic prediction for soybean seed yield, protein, and oil," *The plant genome*, Vol. 18, pp. e70002, 2025. <https://acsess.onlinelibrary.wiley.com/doi/abs/10.1002/tpg2.70002>
26. N. Baishnab, E. Herron+, A. Balu+, S. Sarkar, A. Krishnamurthy, B. Ganapathysubramanian, "3D multiphase heterogeneous microstructure generation using conditional latent diffusion models," *Digital Discovery*, Vol. 4, pp. 3175-3190, Royal Society of Chemistry, 2025. <https://pubs.rsc.org/en/content/articlehtml/2025/dd/d5dd00159e>
27. A. Rabeh, E. Herron+, A. Balu+, S. Sarkar, C. Hegde, A. Krishnamurthy, B. Ganapathysubramanian, "Benchmarking scientific machine-learning approaches for flow prediction around complex geometries," *Communications Engineering*, Vol. 4, pp. 182, Nature Publishing Group UK, 2025. <https://www.nature.com/articles/s44172-025-00513-3>
28. B. Ganapathysubramanian, S. Sarkar, A. Singh, A. K. Singh, "Digital twins for the plant sciences," *Trends in Plant Science*, Vol. 30, pp. 576-577, Elsevier BV, 2025. <https://doi.org/10.1016/j.tplants.2024.12.013>
29. J. Feng+, S. W. Blair, T. T. Ayanlade+, A. Balu+, B. Ganapathysubramanian, A. Singh, A. Singh, S. Sarkar, A. K. Singh, A. K. Singh, "Robust soybean seed yield estimation using high-throughput ground robot videos," *Frontiers in Plant Science*, Vol. 16, pp. 1554193-1554193, Frontiers Media, 2025. <https://doi.org/10.3389/fpls.2025.1554193>
30. M. Z. Hasan+, G. Basulto-Elias, S. Hallmark, J. H. Chang, A. Sharma, J. D. Dawson, S. Sarkar, M. Rizzo, "Classifying Cognitive Decline in Older Drivers from Behavior on Adverse Roads Detected Using Computer Vision," *Journal of Transportation Technologies*, Vol. 15, pp. 135-154, Scientific Research Publishing, 2025. <https://doi.org/10.4236/jtts.2025.151008>
31. S. E. Jones, S. Dutta, T. T. Ayanlade+, B. Ganapathysubramanian, S. Sarkar, B. Fallen, A. K. Singh, "Assessing phenotypic diversity and sensor-based metrics for drought response in soybean," *Crop Science*, Vol. 65, Wiley, 2025. <https://doi.org/10.1002/csc2.70098>
32. V. Sarkar, S. Chakraborty, B. C. Rudra, R. Roy, B. Maity, K. Pradhan, P. Bhowmik, P. Pal, S. Sarkar, "Assessing the effectiveness of CFLD on black gram cultivation and its socio-economic impact on farmers in Malda," *International Journal of Agriculture Extension and Social Development*, Vol. 8, pp. 498-503, 2025. <https://doi.org/10.33545/26180723.2025.v8.i6g.2069>

33. A. Biswas, J. Rade+, N. Masud, M. H. H. Hasib, A. Balu+, J. Zhang, S. Sarkar, A. Krishnamurthy, J. Ren, A. Sarkar, "Conversational LLM-based decision support for defect classification in AFM images," IEEE Open Journal of Instrumentation and Measurement, IEEE, 2025.
<https://ieeexplore.ieee.org/abstract/document/11096088/>
34. S. Sarkar, B. Ganapathysubramanian, A. Singh, F. Fotouhi+, S. Kar, K. Nagasubramanian+, G. Chowdhary, S. K. Das, G. Kantor, A. Krishnamurthy, N. Merchant, A. K. Singh, "Cyber-agricultural systems for crop breeding and sustainable production," Trends in Plant Science, Vol. 29, pp. 130-149, Elsevier, 2024. [https://www.cell.com/trends/plant-science/fulltext/S1360-1385\(23\)00263-7](https://www.cell.com/trends/plant-science/fulltext/S1360-1385(23)00263-7)
35. M. A. Arshad+, T. Jubery, J. Afful, A. Jignasu, A. Balu+, B. Ganapathysubramanian, S. Sarkar, A. Krishnamurthy, "Evaluating neural radiance fields for 3D plant geometry reconstruction in field conditions," Plant Phenomics, Vol. 6, pp. 0235, AAAS, 2024.
<https://spj.science.org/doi/abs/10.34133/plantphenomics.0235>
36. C.-H. Yang, B. Feuer, T. Jubery, Z. Deng, A. Nakkab, M. Z. Hasan+, S. Chiranjeevi, K. Marshall, N. Baishnab, A. Singh, A. Singh, S. Sarkar, N. Merchant, C. Hegde, B. Ganapathysubramanian, "Biotrove: A large curated image dataset enabling ai for biodiversity," Advances in Neural Information Processing Systems, Vol. 37, pp. 102101-102120, 2024.
https://proceedings.neurips.cc/paper_files/paper/2024/hash/b92854f80ba4feefb973959b259dbc2c-Abstract-Datasets_and_Benchmarks_Track.html
37. A. K. Singh, B. J. Balabaygloo, B. Bekee, S. W. Blair, S. Fey, F. Fotouhi+, A. Gupta, A. Jha, J. C. Martinez-Palomares, K. Menke, A. Prestholt, V. K. Tanwar, X. Tao, A. Vangala, M. E. Carroll, S. K. Das, G. DePaula, P. Kyveryga, S. Sarkar, M. Segovia, S. Silvestri, C. Valdivia, "Smart connected farms and networked farmers to improve crop production, sustainability and profitability," Frontiers in Agronomy, Vol. 6, pp. 1410829, Frontiers Media SA, 2024.
<https://www.frontiersin.org/journals/agronomy/articles/10.3389/fagro.2024.1410829/full>
38. B. Khara, A. Balu+, A. Joshi+, S. Sarkar, C. Hegde, A. Krishnamurthy, B. Ganapathysubramanian, "NeuFENet: neural finite element solutions with theoretical bounds for parametric PDEs," Engineering with Computers, Vol. 40, pp. 2761-2783, Springer London, 2024.
<https://link.springer.com/article/10.1007/s00366-024-01955-7>
39. S. E. Jones, T. T. Ayanlade+, B. Fallen, T. Z. Jubery, A. Singh, B. Ganapathysubramanian, S. Sarkar, A. K. Singh, "Multi-sensor and multi-temporal high-throughput phenotyping for monitoring and early detection of water-limiting stress in soybean," The Plant Phenome Journal, Vol. 7, pp. e70009, 2024.
<https://onlinelibrary.wiley.com/doi/abs/10.1002/ppj2.70009>
40. E. Herron+, J. Rade+, A. Jignasu, B. Ganapathysubramanian, A. Balu+, S. Sarkar, A. Krishnamurthy, "Latent diffusion models for structural component design," Computer-Aided Design, Vol. 171, pp. 103707, Elsevier, 2024.
<https://www.sciencedirect.com/science/article/pii/S0010448524000344>
41. G. Cutshaw, N. Joshi, X. Wen, E. Quam, G. Bogatcheva, N. Hassan, S. Uthaman, J. Waite+, S. Sarkar, B. Singh, R. Bardhan, "Metabolic response to small molecule therapy in colorectal cancer tracked with Raman spectroscopy and metabolomics," Angewandte Chemie International Edition, Vol. 63, pp. e202410919, 2024.
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43. B. Khara, E. Herron+, A. Balu+, D. Gamdha, C.-H. Yang, K. Saurabh, A. Jignasu, Z. Jiang+, S. Sarkar, C. Hegde, B. Ganapathysubramanian, A. Krishnamurthy, "Neural pde solvers for irregular domains," Computer-Aided Design, Vol. 172, pp. 103709, Elsevier, 2024.
<https://www.sciencedirect.com/science/article/pii/S0010448524000368>

44. T. T. Ayanlade+, S. E. Jones, L. V. D. Laan, S. Chattopadhyay+, D. Elango, J. Raigne, A. Saxena, A. Singh, B. Ganapathysubramanian, A. K. Singh, S. Sarkar, "Multi-modal AI for ultra-precision agriculture," *Harnessing Data Science for Sustainable Agriculture and Natural Resource ...*, 2024, pp. 299-334, Springer Nature Singapore, 2024. https://link.springer.com/chapter/10.1007/978-981-97-7762-4_13
45. M. E. Carroll, L. G. Riera+, B. A. Miller, P. M. Dixon, B. Ganapathysubramanian, S. Sarkar, A. K. Singh, "Leveraging soil mapping and machine learning to improve spatial adjustments in plant breeding trials," *Crop Science*, Vol. 64, pp. 3135-3152, 2024. <https://acsess.onlinelibrary.wiley.com/doi/abs/10.1002/csc2.21336>
46. T. J. Young, S. Chiranjeevi, D. Elango, S. Sarkar, A. K. Singh, A. Singh, B. Ganapathysubramanian, T. Z. Jubery, "Soybean canopy stress classification using 3D point cloud data," *Agronomy*, Vol. 14, pp. 1181, MDPI, 2024. <https://www.mdpi.com/2073-4395/14/6/1181>
47. S. Ghazvini, S. Uthaman, L. Synan, E. C. Lin, S. Sarkar, M. K. Santillan, D. A. Santillan, R. Bardhan, "Predicting the onset of preeclampsia by longitudinal monitoring of metabolic changes throughout pregnancy with Raman spectroscopy," *Bioengineering & translational medicine*, Vol. 9, pp. e10595, John Wiley & Sons, Inc., 2024. <https://aiche.onlinelibrary.wiley.com/doi/abs/10.1002/btm2.10595>
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50. A. P. Mathew, G. Cutshaw, O. Appel, M. Funk, L. Synan, J. Waite+, S. Ghazvini, X. Wen, S. Sarkar, M. Santillan, D. Santillan, R. Bardhan, "Diagnosis of pregnancy disorder in the first-trimester patient plasma with Raman spectroscopy and protein analysis," *Bioengineering & translational medicine*, Vol. 9, pp. e10691, John Wiley & Sons, Inc., 2024. <https://aiche.onlinelibrary.wiley.com/doi/abs/10.1002/btm2.10691>
51. T. Gangopadhyay+, S. De, Q. Liu+, A. Mukhopadhyay, S. Sen, S. Sarkar, "An LSTM-based approach to detect transition to lean blowout in swirl-stabilized dump combustion systems," *Energy and AI*, Vol. 16, pp. 100334, Elsevier, 2024. <https://www.sciencedirect.com/science/article/pii/S2666546823001064>
52. Z. Jiang+, N. Saadati+, A. Balu+, M. Pham, J. R. Waite+, N. Saleem, C. Hegde, S. Sarkar, "A unified convergence theory for large language model efficient fine-tuning," *OPT 2024: Optimization for Machine Learning*, 2024, 2024. <https://openreview.net/forum?id=f0lq26eITJ>
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79. X.Y. Lee+, S. Ghadai+, K.L. Tan+, C. Hedge, S. Sarkar, “*Spatiotemporally Constrained Action Space Attacks on Deep Reinforcement Learning Agents*”, NeurIPS Workshop on Deep Reinforcement Learning, Vancouver, Canada, Dec 13-14, 2019.
80. T. Gangopadhyay+, J. Shook+, A. K. Singh+, S. Sarkar, “*Deep Time Series Attention Models for Crop Yield Prediction and Insights*”, NeurIPS Workshop on Machine Learning and the Physical Sciences, Vancouver, Canada, Dec 13-14, 2019.
81. A. Joshi+, A. Mukherjee+, S. Sarkar, C. Hegde, “*Semantic Adversarial Attacks: Parametric Transformations That Fool Deep Classifiers*”, International Conference on Computer Vision (ICCV), Seoul, South Korea, Oct 27 – Nov 2, 2019.
82. A. Balu, K.L. Tan, C. H. Wu, M-C. Hsu, S. Sarkar, A. Krishnamurthy, “*Deep Learning for Dynamic Deformation Simulation of Bioprosthetic Heart Valves*”, USNCCM 15, Austin, TX, 2019.
83. A. Barnwal+, J. Merickel, L. Riera-Garcia+, K. Ozcan+, S. Sarkar, A. Sharma, M. Rizzo, “*Linking age-related decline to driver behavior at signalized intersections*”, 2019 Association for the Advancement of Automotive Medicine’s (AAAM) 63rd Annual Scientific Conference, Madrid, Spain, 15 – 18 October 2019.
84. K.L. Tan+, S. Poddar+, S. Sarkar, A. Sharma, “*Deep Reinforcement Learning for Adaptive Traffic Signal Control*”, Proceedings of ASME 2019 Dynamic Systems and Control Conference (DSCC), (Park City, Utah), Oct 8-11, 2019.
85. S.Y. Tan+, H. Saha+, A.R. Florita, G.P. Henze, S. Sarkar, “*A flexible framework for building occupancy detection using spatiotemporal pattern networks*”, Proceedings of American Control Conference (ACC), (Philadelphia, PA), Jul 10-12, 2019.

During previous rank at ISU

86. A. Mukherjee+, A. Joshi+, S. Sarkar, C. Hegde, “*Attribute-Controlled Traffic Data Augmentation Using Conditional Generative Models*”, Vision for All Seasons: Bad Weather and Nighttime workshop at IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR), (Long Beach, CA), Jun 16-20, 2019.

87. S. Ghadai+, X. Y. Lee+, A. Balu+, S. Sarkar, A. Krishnamurthy, "*Multi-level 3D CNN for Learning Multi-scale Spatial Features*", Deep Learning for Geometric Shape Understanding workshop at IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR), (Long Beach, CA), Jun 16-20, 2019.
88. A. Balu+, M. Hsu, S. Sarkar, A. Krishnamurthy, "*A Deep-Learning Framework for Diagnostics and Design of Bioprosthetic Heart Valves*", BMES/FDA conference on Frontiers in Medical Devices : The Role of Digital Evidence to Support Personalized Patient Healthcare, (Washington, DC Metropolitan Area), Mar 19-21, 2019.
89. R. Singh+, A. Sharma+, O. Bingol+, A. Balu+, G. Balasubramanian, D. D. Johnson and S. Sarkar, "*3D Deep Learning with voxelized atomic configurations for modeling atomistic potentials in complex solid-solution alloys*", Workshop on Machine Learning for Molecules and Materials (MLMM) at Proceedings of Advances in Neural Information Processing Systems (NeurIPS), (Montreal, Canada), Dec 3-8, 2018.
90. B.S.S. Pokuri+, S. Ghosal+, A. Kokate+, B. Ganapathysubramanian, S. Sarkar, "*Interpretable deep learning for guided structure-property explorations in photovoltaics*", Workshop on Machine Learning for Molecules and Materials (MLMM) at Proceedings of Advances in Neural Information Processing Systems (NeurIPS), (Montreal, Canada), Dec 3-8, 2018.
91. X. Lee+, A. Balu+, D. Stoecklein, B. Ganapathysubramanian, S. Sarkar, "*Flow Shape Design for Microfluidic Devices Using Deep Reinforcement Learning*", Deep Reinforcement Learning Workshop at Proceedings of Advances in Neural Information Processing Systems (NeurIPS), (Montreal, Canada), Dec 3-8, 2018.
92. R. Singh+, V. Shah+, B. Pokuri+, S. Sarkar, B. Ganapathysubramanian, C. Hegde, "*Physics-aware Deep Generative Models for Creating Synthetic Microstructures*", Workshop on Machine Learning for Molecules and Materials (MLMM) at Proceedings of Advances in Neural Information Processing Systems (NeurIPS), (Montreal, Canada), Dec 3-8, 2018.
93. T. Gangopadhyay+, S. Y. Tan+, G. Huang+, S. Sarkar, "*Temporal Attention and Stacked LSTMs for Multivariate Time Series Prediction*", Workshop on Modeling and decision-making in the spatiotemporal domain at Proceedings of Advances in Neural Information Processing Systems (NeurIPS), (Montreal, Canada), Dec 3-8, 2018.
94. A. Havens, Z. Jiang+, S. Sarkar, "*Online Robust Policy Learning in the Presence of Unknown Adversaries*", Proceedings of Advances in Neural Information Processing Systems (NeurIPS), (Montreal, Canada), Dec 3-8, 2018.
95. A. Balu+, S. Nallagonda+, F. Xu+, A. Krishnamurthy, M. Hsu, S. Sarkar, "*Machine Learning for Diagnostics and Patient-Specific Design of Bioprosthetic Heart Valves*", Integrating Design and Analysis (IGA), (Austin, TX), Oct 10-12, 2018.
96. H. Saha+, C. Liu+, Z. Jiang+, and S. Sarkar, "*Exploring granger causality in dynamical systems modeling and performance monitoring*", Proceedings of Conference on Decision and Control, (Miami, FL), Dec 17-19, 2018.
97. T. Gangopadhyay+, A. Locurto+, P. Boor+, J. B. Michael, S. Sarkar, "*Characterizing Combustion Instability Using Deep Convolutional Neural Networks*", Proceedings of ASME Dynamic Systems and Control Conference, (Atlanta, Georgia), Oct 1-3, 2018.
98. Z. Jiang+, A. Balu+, C. Hedge, S. Sarkar, "*Incremental Consensus-based Collaborative Deep Learning*", ICML Workshop on Modern Trends in Nonconvex Optimization for Machine Learning (Spotlight presentation), Stockholm, Sweden, Jul 13-15, 2018.
99. L. Wu+, V.Chinde+, H. Sharma+, U.Passe, S. Sarkar, "*A Data-driven approach towards integration of microclimate conditions for predicting building energy performance*", 5th International High Performance Buildings Conference, (West Lafayette, IN), Jul 9-12, 2018.

100. A. Locurto+, T. Gangopadhyay+, P. Boor*, S. Sarkar, J. B. Michael, “*Mode decomposition and convolutional neural network analysis of thermoacoustic instabilities in a Rijke tube*”, 2018 Spring Technical Meeting, Central States Section of The Combustion Institute, (Minneapolis, MN), May 20-22, 2018.
101. Z. Jiang+, K. Mukherjee, S. Sarkar, “*On consensus-disagreement tradeoff in distributed optimization*”, Proceedings of American Control Conference (ACC), (Milwaukee, WI), Jun 27-29, 2018.
102. C. Liu+, Z. Jiang+, A. Akintayo+, G. P. Henze, S. Sarkar, “*Building energy disaggregation using spatiotemporal pattern network*”, Proceedings of American Control Conference (ACC), (Milwaukee, WI), Jun 27-29, 2018.
103. Z. Jiang+, T. Wilkie+, S. Sarkar, “*Hierarchical optimization for building energy systems*”, Proceedings of American Control Conference (ACC), (Milwaukee, WI), Jun 27-29, 2018.
104. P. Chakraborty+, Y. A. Gyamfi, S. Poddar+, V. Ahsani+, A. Sharma and S. Sarkar, “*Traffic congestion detection from camera images using deep convolutional neural networks*”, Transportation Research Board 97th Annual Meeting, (Washington, D.C.), Jan 7-11, 2018.
105. S. Poddar+, K. Ozcan+, P. Chakraborty+, V. Ahsani+, A. Sharma and S. Sarkar, “*Comparison of machine learning algorithms to determine traffic congestion from camera images*”, Transportation Research Board 97th Annual Meeting, (Washington, D.C.), Jan 7-11, 2018.
106. Z. Jiang+, A. Balu+, C. Hegde, S. Sarkar, “*Collaborative deep learning in fixed topology networks*”, Proceedings of Advances in Neural Information Processing Systems (NIPS), (Long Beach, CA), Dec 4-9, 2017.
107. A. Balu+, T. V. Nguyen+, A. Kokate+, C. Hegde, S. Sarkar, “*A forward-backward approach for visualizing information flow in deep networks*”, Symposium on Interpretable Machine Learning at NIPS, (Long Beach, CA), Dec 4-9, 2017.
108. K. Nagasubramanian+, S. Jones+, A. K. Singh, A. Singh, B. Ganapathysubramanian, S. Sarkar, “*Explaining hyperspectral imaging based plant disease identification: 3D CNN and saliency map*”, NIPS Workshop on Interpreting, Explaining and Visualizing Deep Learning ... now what? (Long Beach, CA), Dec 4-9, 2017.
109. S. Ghosal+, D. Blystone+, A. K. Singh, B. Ganapathysubramanian, A. Singh and S. Sarkar, “*Interpretable deep learning applied to plant stress phenotyping*”, Symposium on Interpretable Machine Learning at NIPS, (Long Beach, CA), Dec 4-9, 2017.
110. S. Ghadai+, A. Balu+, A. Krishnamurthy, S. Sarkar, “*Learning and visualizing localized geometric features using 3D-CNN: an application to manufacturability analysis of drilled holes*”, Symposium on Interpretable Machine Learning at NIPS, (Long Beach, CA), Dec 4-9, 2017.
111. C. Liu+, K. G. Lore+, S. Sarkar, “*Root-cause analysis for time-series anomalies via spatiotemporal causal graphical modeling*”, Proceedings of IEEE Conference on Decision and Control (CDC), (Melbourne, Australia), Dec 12-15, 2017.
112. L. Wu+, C. Liu+, T. Huang+, A. Sharma, S. Sarkar, “*Traffic sensor health monitoring using spatiotemporal graphical modeling*”, Proceedings of the 2nd ACM SIGKDD Workshop on Machine Learning for Prognostics & Health Management, (Halifax, NS, Canada), Aug 13-17, 2017.
113. T. Huang+, C. Liu+, A. Sharma, S. Sarkar, “*Traffic system anomaly detection using spatiotemporal pattern networks*”, Proceedings of the 2nd ACM SIGKDD Workshop on Machine Learning for Prognostics & Health Management, (Halifax, NS, Canada), Aug 13-17, 2017.
114. S. Ghosal+, A. Akintayo+, P. K. Boor+, S. Sarkar, “*High speed video-based health monitoring using 3D deep learning*”, Proceedings of the Dynamic Data Driven Application Systems (DDDAS), (Cambridge, MA), Aug 7-9, 2017.
115. H. Saha+, T. Gao+, H. Emadi+, Z. Jiang+, A. Singh, B. Ganapathysubramanian, S. Sarkar, A. Singh, S. Bhattacharya, “*Autonomous mobile sensing platform for spatiotemporal plant phenotyping*”, Proceedings of ASME 2017 Dynamic Systems and Control Conference (DSCC), (Tysons, VA), Oct 11-13, 2017.

116. Z. Jiang+, K. Mukherjee and S. Sarkar, “Convergence and noise effect analysis for generalized gossip-based distributed optimization”, Proceedings of the American Control Conference (ACC), (Seattle, WA), May 24-26, 2017
117. C. Liu+, B. Huang+, M. Zhao+, S. Sarkar, U. Vaidya, A. Sharma, “Data driven exploration of traffic network system dynamics using high resolution probe data”, Proceedings of IEEE Conference on Decision and Control (CDC), (Las Vegas, NV), Dec 12-14, 2016.
118. S. Ghosal+, V. Ramanan+, S. Sarkar, S. R. Chakravarthy, S. Sarkar, “Detection and analysis of combustion instability from high-speed flame images using dynamic mode decomposition”, Proceedings of ASME 2016 Dynamic Systems and Control Conference (DSCC), (Minneapolis, MN), Oct 12-14, 2016.
119. C. Liu+, Y. Gong+, S. Laflamme, B. Phares, S. Sarkar, “Damage detection of bridge network with spatiotemporal pattern network”, Proceedings of ASME 2016 Dynamic Systems and Control Conference (DSCC), (Minneapolis, MN), Oct 12-14, 2016.
120. V. Chawla+, M.H. Hsiang+, A. Akintayo+, D. Hayes, P. Schnable, B. Ganapathysubramanian, S. Sarkar, “A bayesian network approach to county-level corn yield prediction using historical data and expert-knowledge”, Proceedings of the 22nd ACM SIGKDD Workshop on Data Science for Food, Energy and Water, (San Francisco, CA), Aug 13-17, 2016.
121. A. Akintayo+, N. Lee +, V. Chawla+, M. Mullaney, C. Marett, A. K. Singh, A. Singh, G. Tylka, B. Ganapathysubramanian, S. Sarkar, “An end-to-end convolutional selective autoencoder approach to soybean cyst nematode eggs detection”, Proceedings of the 22nd ACM SIGKDD Workshop on Data Science for Food, Energy and Water, (San Francisco, CA), Aug 13-17, 2016.
122. A. Akintayo+, K. G. Lore+, S. Sarkar, S. Sarkar, “Early detection of combustion instabilities using deep convolutional selective autoencoders on hi-speed flame video”, Proceedings of the 22nd ACM SIGKDD Workshop on Machine Learning for Prognostics & Health Management, (San Francisco, CA). Aug 13-17, 2016.
123. S. Ghosal+, C. Liu+, U. Passe, S. He+, S. Sarkar, “Data-driven persistent monitoring of Indoor Air Systems”, Proceedings of the ASHRAE IAQ 2016 Defining Indoor Air Quality: Policy, Standards and Best Practices, (Alexandria, VA), Sep 12-14, 2016.
124. V. Chinde+, A. Kohl*, Z. Jiang+, A. Kelkar, S. Sarkar, “A VOLTTRON based implementation of supervisory control using generalized gossip for building energy systems”, Proceedings in the 4th International High Performance Buildings Conference, (West Lafayette, IN), Jul 11-14, 2016.
125. K. G. Lore+, N. Sweet+, K. Kumar+, N. Ahmed and S. Sarkar, “Deep value of information estimators for collaborative human-machine information gathering”, ACM/IEEE International Conference on Cyber-Physical Systems (ICCPs), (Vienna, Austria), Apr 11-14, 2016.
126. C. Liu+, S. Ghosal+, Z. Jiang+ and S. Sarkar, “An unsupervised spatiotemporal graphical modeling approach to anomaly detection in distributed CPS”, ACM/IEEE International Conference on Cyber-Physical Systems (ICCPs), (Vienna, Austria), Apr 11-14, 2016.
127. Z. Jiang+, V. Chinde+, A. Kohl*, S. Sarkar, A. Kelkar, “Scalable supervisory control of building energy systems using generalized gossip”, Proceedings of the American Control Conference (ACC), (Boston, MA), Jul 6-8, 2016.
128. V. Chinde+, K. C. Kosaraju, A. Kelkar, R. Pasumathy, S. Sarkar and N. M. Singh, “Building HVAC systems control using power shaping approach”, Proceedings of the American Control Conference (ACC), (Boston, MA), Jul 6-8, 2016.
129. S. Sarkar, D. K. Jha+, K. G. Lore+, A. Ray and S. Sarkar, “Multi-modal spatiotemporal fusion using neural-symbolic causal modeling for early detection of combustion instability”, Proceedings of the American Control Conference (ACC), (Boston, MA), Jul 6-8, 2016.
130. K. G. Lore+, S. Sarkar and D. K. Jha+, “Topology control of mobile sensor networks using information space feedback”, Proceedings of the American Control Conference (ACC), (Boston, MA), Jul 6-8, 2016.

131. S. Sarkar, K. G. Lore+ and S. Sarkar, “Early detection of combustion instability by neural-symbolic analysis of hi-speed video”, NIPS Workshop on Cognitive Computation: Integrating Neural and Symbolic Approaches, (Montreal, Canada), Dec 7-12, 2015.
 132. Z. Jiang+, S. Sarkar and K. Mukherjee, “On distributed optimization using generalized gossip”, Proceedings of Conference on Decision and Control (CDC), (Osaka, Japan), Dec 15-18, 2015.
 133. S. Sarkar, K. G. Lore+, S. Sarkar, V. Ramanan, S. Chakravarthy and A. Ray, “Early detection of combustion instability from hi-speed flame images via deep learning and symbolic time series analysis”, Proceedings of Annual Conference of the Prognostics and Health Management (PHM) Society, (San Diego, CA), Oct 18-24, 2015.
 134. Z. Jiang+ and S. Sarkar, “Understanding wind turbine interactions using spatiotemporal pattern network”, Proceedings of ASME Dynamical Systems and Control Conference (DSCC), (Columbus, OH), Oct 28-30, 2015.
 135. V. Chinde+, J. Heylmun*, A. Kohl*, Z. Jiang+ and S. Sarkar, “Comparative evaluation of control-oriented zone temperature prediction modeling strategies in buildings”, Proceedings of ASME Dynamical Systems and Control Conference (DSCC), (Columbus, OH), Oct 28-30, 2015.
 136. S. Sarkar, V. Venugopalan, K. Reddy, J. Rayde, M. Giering and N. Jaitly, “Using deep convolutional networks for occlusion edge detection in RGB-D frames”, IEEE High Performance Extreme Computing Conference (HPEC), (Waltham, MA), Sep 15-17, 2015.
 137. A. Akintayo+, S. Sarkar, “A symbolic dynamic filtering approach to unsupervised hierarchical feature extraction from time-Series data”, Proceedings of American Control Conference (ACC), (Chicago, IL), Jul 1-3, 2015.
 138. P. Chattopadhyay+, D. K. Jha+, S. Sarkar and A. Ray, “Path planning in GPS-denied environments: a collective intelligence approach”, Proceedings of American Control Conference (ACC), (Chicago, IL), Jul 1-3, 2015.
 139. K. G. Lore+, M. Davies+, D. Stoecklein+, B. Ganapathysubramanian and S. Sarkar, “Deep learning for flow sculpting in microfluidic platforms”, NVIDIA GPU Technical Conference, (Silicon Valley, CA), Mar 17-20, 2015.
 140. R. Georgescu, K. Reddy, N. Trcka, M. Chen, P. Quimby, P. O’Neill, T. Khawaja, D. Hestand, L. Bertuccelli, S. Sarkar, O. Erdinc and M. Giering, “Scalable human-in-the-loop decision support”, IEEE Aerospace Conference, (Big Sky, MT), Mar 7-14, 2015.
 141. S. Krishnamurthy, S. Sarkar, A. Tewari, “Scalable anomaly detection and isolation in cyber-physical systems using bayesian networks”, Proceedings of ASME Dynamical Systems and Control Conference (DSCC), (San Antonio, TX), Oct 22-24, 2014.
- Prior to ISU appointment
142. R. Khire, F. Leonardi, P. Quimby, S. Sarkar (in alphabetical order), “A novel human machine interface for advanced building controls and diagnostics”, 3rd International High Performance Buildings Conference, (West Lafayette, IN), Jul 14-17, 2014.
 143. V. Adetola, S. Benga, F. Borrelli, K. Kang, A. Kelman, F. Leonardi, P. Li, T. Lovett, S. Sarkar, S. Vichik (in alphabetical order), “Fault-Tolerant optimal control of a large-size, commercial building heating, ventilation and air conditioning system”, 3rd International High Performance Buildings Conference, (West Lafayette, IN), Jul 14-17, 2014.
 144. S. Sarkar, N. Virani, M. Yasar, A. Ray, and S. Sarkar, “Spatiotemporal information fusion for fault detection in shipboard auxiliary systems”, Proceedings of American Control Conference (ACC), (Washington, D.C.), Jun 17-19, 2013.
 145. S. Sarkar, A. Srivastav, and M. Shashanka, “Maximally bijective discretization for data-driven modeling of complex systems”, Proceedings of American Control Conference (ACC), (Washington, D.C.), Jun 17-19, 2013.

146. S. Sarkar, K. Mukherjee, S. Sarkar, and A. Ray, "Symbolic transient time-series analysis for fault detection in aircraft gas turbine engines", Proceedings of American Control Conference (ACC), (Montreal, Canada), Jul 27-29, 2012.
147. S. Sarkar#, K. Mukherjee, and A. Ray, "Distributed decision propagation in mobile agent networks", Proceedings of American Control Conference (ACC), (Montreal, Canada), Jul 27-29, 2012.
148. S. Sarkar#, D. S. Singh, A. Srivastav, and A. Ray, "Semantic sensor fusion for fault diagnosis in aircraft gas turbine engines", Proceedings of American Control Conference (ACC), (San Francisco, CA), Jun 29- Jul 1, 2011.
149. D. S. Singh, S. Sarkar#, S. Gupta, and A. Ray, "Optimal partitioning of ultrasonic data for fatigue damage detection", Proceedings of American Control Conference (ACC), (San Francisco, CA), Jun 29- Jul 1, 2011.
150. S. Sarkar#, K. Mukherjee, A. Srivastav, and A. Ray, "Distributed decision propagation in mobile agent networks", Proceedings of Conference on Decision and Control (CDC), (Atlanta, GA), Dec 15-17, 2010.
151. S. Sarkar#, K. Mukherjee, X. Jin, and A. Ray, "Optimization of time-series data partitioning for parameter identification", Proceedings of ASME Dynamic Systems and Control Conference (DSCC), (Cambridge, MA), Sep 13-15, 2010.
152. S. Sarkar#, K. Mukherjee, A. Srivastav, and A. Ray, "Critical phenomena and finite-size scaling in communication networks", Proceedings of American Control Conference (ACC), (Baltimore, MD), Jun 30 - Jul 2, 2010.
153. S. Chakraborty, S. Sarkar#, A. Ray and S. Phoha, "Symbolic identification for anomaly detection in aircraft gas turbine engines", Proceedings of American Control Conference (ACC), (Baltimore, MD), Jun 30 – Jul 2, 2010.
154. X. Jin, S. Sarkar#, K. Mukherjee and A. Ray, "Suboptimal partitioning of time-series data for anomaly detection", Proceedings of Conference on Decision and Control (CDC), (Shanghai, China), Dec 15-18, 2009.
155. S. Sarkar#, K. Mukherjee, A. Srivastav, and A. Ray, "Understanding phase transition in communication networks to enable robust and resilient control", Proceedings of American Control Conference (ACC), (St. Louis, MO), Jun 10-12, 2009.
156. S. Sarkar#, K. Mukherjee and A. Ray, "Symbolic analysis of time series signals using generalized hilbert transform", Proceedings of American Control Conference (ACC), (St. Louis, MO), Jun 10-12, 2009.
157. S. Sarkar#, C. Rao and A. Ray, "Estimation of multiple faults in aircraft gas turbine engines", Proceedings of American Control Conference (ACC), (St. Louis, MO), Jun 10-12, 2009.
158. C. Rao, S. Sarkar#, A. Ray, and M. Yasar, "Comparative evaluation of symbolic dynamic filtering for detection of anomaly patterns", Proceedings of American Control Conference (ACC), (Seattle, WA), Jun 11-13, 2008.
159. C. Rao, K. Mukherjee, S. Sarkar#, and A. Ray, "Estimation of multiple parameters in dynamical systems", Proceedings of American Control Conference (ACC), (Seattle, WA), Jun 11-13, 2008.
160. S. Sarkar#, K. Mukherjee, A. Ray, and M. Yasar, "Fault diagnosis and isolation in aircraft gas turbine engines", Proceedings of American Control Conference (ACC), (Seattle, WA), Jun 11-13, 2008.
161. S. Chakraborty, S. Sarkar#, and A. Ray, "Symbolic identification and anomaly detection in complex dynamical systems", Proceedings of American Control Conference (ACC), (Seattle, WA), Jun 11-13, 2008.

2. Books and Book Chapters (Listed are all book chapters)

During current rank at ISU

1. T. Gangopadhyay+, A. LoCurto, J. B. Michael, S. Sarkar, "Deep Learning and Dynamic Mode Decomposition for Characterizing Combustion Instability," 2026. https://doi.org/10.1007/978-3-031-88574-7_12

2. A. K. Singh, A. Singh, S. Sarkar, B. Ganapathysubramanian et. al., “*High-Throughput Phenotyping in Soybean*”, High-throughput Crop Phenotyping (part of a book series on Advanced Concepts and strategies in Plant Sciences (ACSPS)), Springer-Nature, 2021.
3. T. Gangopadhyay+, S. Y. Tan+, Z. Jiang+, S. Sarkar, “*Interpretable Deep Attention Model for Multivariate Time Series Prediction in Building Energy Systems*”, Dynamic Data Driven Application Systems, Springer, 2020.
4. T. Gangopadhyay+, A. Locurto+, J. B. Michael, S. Sarkar, “*Deep Learning Algorithms for Detecting Combustion Instabilities*”, Dynamics and Control of Energy Systems, Springer, 2020.

During previous rank at ISU

5. A. Balu+, S. Ghadai+, G. Young+, S. Sarkar, A. Krishnamurthy, “*A Machine Learning Framework for Decision Support in Design and Manufacturing*”, ASME press, 2019.
6. K. G. Lore+, D. Stoecklein+, M. Davies+, B. Ganapathysubramanian and S. Sarkar, “*Deep learning for engineering big data analytics*”, Big Data Analytics: From Planning to Performance, CRC Press, Taylor & Francis Group, USA 2017.
7. S. Sarkar, Z. Jiang+, A. Akintayo+, S. Krishnamurthy and A. Tewari, “*Probabilistic graphical modeling of distributed cyber-physical systems*”, Cyber-Physical Systems: Foundations, Principles and Applications, Elsevier, 2016.

Prior to ISU appointment

8. A. Srivastav, A. Tewari, B. Dong, S. Sarkar, and M. Gorbounov, “*Localized uncertainty quantification for baseline building energy modeling*”, Automated Diagnostics for Facility Equipment, Systems, and Whole Buildings, Fairmont Press, 2014.
9. S. Sarkar, S. Sarkar, and A. Ray, “*Data-enabled health management of complex industrial systems*”, Fault Detection: Classification, Techniques and Role in Industrial Systems, Nova Science Publishers, December 2013.

3. Formally Invited Seminars and Presentations

- 57 invited talks (54 after joining ISU – 29 at the current rank) at various universities, academic conferences, companies and government labs.

During current rank at ISU

1. *Keynote: Role of AI in Cyber-Agricultural Systems, and Panel: Digital Agriculture and AI*, 2025 K-State AI Symposium, Kansas State University, October 2025.
2. *AI-enabled digital twins for resilient and climate smart agriculture*, Artificial Intelligence in Agriculture Conference, A&M Hotel & Conference Center - College Station, Texas, April 2024.
3. *AI-enabled digital twins for resilient and climate smart agriculture*, Symposium on Application of Cyber-Physical Systems in Agriculture, Taiwan Agricultural Research Institute (TARI), Taichung, Taiwan, March 2024.
4. *AI-enabled digital twins for resilient and climate smart agriculture*, Workshop on US-India Research Initiatives and Opportunities in Digital Agriculture, 30th IEEE International Conference on High Performance Computing, Data, and Analytics, Goa, India, December 2023.
5. *Generative modeling for scientific machine learning*, RTX Physics Informed Machine Learning (PIML) workshop, Virtual, November 2023.
6. *Cyber-Agricultural Systems in Crop Breeding and Production*, Advances and Applications of AI in Crop Breeding and Genetics Symposium, 2023 ASA, CSSA, SSSA International Annual Meeting, October 2023.
7. *Generative modeling for scientific machine learning*, Scientific Machine Learning for Computational Mechanics (SciML4CM), USNCCM 2023, Albuquerque, NM, July 24, 2023.
8. *Facets of Decentralized Deep Learning*, 9th Midwest Workshop on Control and Game Theory at the University of Minnesota Twin Cities in Minneapolis, MN, USA, April 2023.

9. *Digital Twins in Agriculture*, Digital Twin Event at BASF, November 2022.
 10. *Future of Cyber-Physical Systems - Challenges and Opportunities*, NSF CPS PI Meeting Workshop, November 2022.
 11. *The New Paradigm of Cyber-Agricultural Systems*, Keynote address in Asia-Pacific Federation for Information Technology in Agriculture/World Congress on Computers in Agriculture (APFITA/WCCA), November 2022
 12. *AIOT for Sustainable Agriculture*, Smart Agriculture session, IEEE 8th World Forum on Internet of Things (WF-IoT), November 2022
 13. *AIIRA: AI Institute for Resilient Agriculture*, IoT4Ag Seeds of Innovation Series, August 2022
 14. *Vision for Cyber-Ag Systems: AIIRA, COALESCE and beyond*, ABE Faculty Retreat, University of Florida, August 2022
 15. *A cyber physical systems approach to sustainable agriculture*, Computing-Enabled Networked Physical Systems (CNPS) interagency working group (IWG) Meeting, June 2022.
 16. *Facets of Deep Learning in Cyber-Agricultural Systems*, Syngenta, May 2022.
 17. *Cyber-Agricultural Systems: An opportunity for international collaboration*, NSF-MOST Workshop on Cyber Physical Systems (CPS) & Smart and Connected Communities (SCC), March 2022.
 18. *Plant Phenomics and Artificial Intelligence to Glean Information from Plant Sensing Technologies*, Genetics, Genomics and Bioinformatics Symposium, ASAS Midwest Section Meeting, March 2022.
 19. *Role of Interpretable Machine Learning in Cyber-agricultural Systems*, International Conference on Digital Technologies for Sustainable Crop Production (DIGICROP), March 2022.
 20. *Deep Learning for Topology Optimization*, CVPR Tutorial on Distributed Deep Learning on HPC servers for Large Scale Computer Vision Applications topology optimization, June 2021.
 21. *A cyber physical systems approach to agricultural sustainability*, Japanese Society of Agricultural Informatics (JSAI) Annual Conference, May 2021.
 22. *A hands-on introduction to Deep Learning*, Midwest Big Data Summer School, Ames, IA, May 2021.
 23. *Physics-aware Machine Learning for Inverse Design*, Honeywell, May 2021.
 24. *Next Big Research Challenges in CPS*, NSF Invited Workshop, April 2021.
 25. *Building Trust in Deep Learning based Combustion Instability Detection*, International Indo-US online workshop on Application of Machine Learning and Dynamical Systems Approach for Early Detection and Control of Combustion Instabilities, January 2021.
 26. *A cyber physical systems approach to agricultural sustainability*, Workshop on Data Science for Agriculture and Natural Resource Management (DSANRM2020), 8th International Conference on Big Data Analytics (BDA2020), December 2020.
 27. *Machine Learning for Cyber-Physical Systems*, Pennsylvania State University, University Park, PA, October 2019.
 28. *Artificial Intelligence and Machine Learning for Engineering Design and Simulations*, ISU CoMFRE Annual Meeting, Ames, IA, October 2019.
 29. *Deep Learning for Engineering Design and Simulations*, Michigan Technological University, Houghton, MI, October 2019.
- During previous rank at ISU
30. *Deep Learning in digital agriculture: From microscopy to canopy*, Corteva Agriscience, Johnston, IA, June 2019.
 31. *Nuts and Bolts of Deep Learning*, Midwest Big Data Summer School, Ames, IA, May 2019.

32. *Deep Learning for Combustion Instability Diagnostics*, 17th International Conference on Numerical Combustion, Aachen, Germany, May 2019.
33. *Deep Learning for Cyber-Agricultural Analytics*, JST/NSF Big Data areas Joint PI Meeting, Kyoto, Japan, March 2019.
34. *Deep learning for Agricultural analytics*, Keynote address in Asia-Pacific Federation for Information Technology in Agriculture/World Congress on Computers in Agriculture (AFITA/WCCA), IIT Bombay, Mumbai, India, October 2018.
35. *Deep learning in cyber-enabled design and manufacturing*, Georgia Institute of Technology, Atlanta, GA, October 2018.
36. *Robustifying Deep Reinforcement Learning agents under adversarial attacks*, Honeywell, Minneapolis, MN, September 2018.
37. *Probabilistic Graphical Modeling for Building Energy Disaggregation*, Intelligent Buildings Operations workshop, Purdue University, West Lafayette, IN, July 2018.
38. *Machine Learning Approaches for Building Analytics*, Intelligent Buildings Operations workshop, Purdue University, West Lafayette, IN, July 2018.
39. *Engineering analytics with machine learning: Roles of supervised, semi-supervised and unsupervised models*, Tsinghua University, Beijing, China, July 2018.
40. *Engineering analytics with deep learning: a few success stories*, NVIDIA Corporate Headquarters, Santa Clara, CA, February 2018.
41. *A multi-scale data assimilation framework for layered sensing and hierarchical control of disease spread in field crops*, 2nd US-JAPAN (NSF-JST) Workshop on Collaborative Global Research on Applying Information Technology, Tokyo, December 2017.
42. *A multi-scale data assimilation framework for layered sensing and hierarchical control of disease spread in field crops*, NSF CPS PI meeting, Washington DC, November 2017.
43. *Applied deep learning*, Midwest Big Data Summer School, Ames, IA, July 2017.
44. *Spatiotemporal graphical modeling for complex energy systems*, National Renewable Energy Laboratory (NREL), Golden, CO, April 2017.
45. *Spatiotemporal graphical modeling for complex cyber-physical systems*, Department of Statistics, Iowa State University, Ames, IA, February 2017.
46. *Engineering analytics with deep learning*, ExxonMobil Research and Engineering, Annandale, NJ, December 2016.
47. *A deep autoencoder approach to natural low-light image enhancement*, Rockwell Collins Inc., Cedar Rapids, IA, May 2016.
48. *Spatiotemporal graphical modeling for complex cyber-physical systems*, University of Colorado Boulder, CO, March 2016.
49. *Solving hard engineering problems with deep learning*, Department of Mechanical Engineering, Washington State University, WA, March 2016.
50. *Machine learning for plant phenotypic decision-making*, Phenotype Prediction: Image Acquisition and Analysis, Ames, IA, February 2016.
51. *Solving hard engineering problems with deep learning*, Department of Computer Science, Iowa State University, Ames, IA, September 2015.
52. *Research activities at Iowa State in dynamics, control and decision-making: From aerospace to building energy systems*, United Technologies Research Center, East Hartford, CT, March 2015.
53. *Unsupervised aspects in autonomous perception & decision-making*, US Army Research Laboratory, Adelphi, MD, February 2015.
54. *Learning, inference and decision making in human-cyber-physical Systems*, Department of Mechanical Engineering, Iowa State University, Ames, IA, January 2014.

Prior to ISU appointment

55. *Autonomous perception and decision-making in complex cyber-physical systems*, Department of Mechanical Engineering, Missouri University of Science & Technology, Rolla, MO, January 2013.
56. *Health monitoring of human-engineered complex systems: A cyber-physical approach*, Indian Institute of Science, Bangalore, India, June 2011.
57. *Autonomous perception and decision-making in complex cyber-physical systems*, United Technologies Research Center, East Hartford, CT, April 2011.

4. Contributed Presentations

1. *RGBD occlusion detection via deep convolutional neural networks*, NVIDIA GPU Technical Conference, San Jose, CA, March 2015.
2. *Data-driven component level fault detection in aircraft gas turbine engines*, Propulsion Controls and Diagnostic Workshop, Cleveland, OH USA, December 2009.
3. *Statistical estimation of multiple faults in aircraft gas turbine engines*, NASA Aviation Safety Technical Conference, Denver, CO USA, October 2008.

5. Other Scholarly Contributions

1. S. Sarkar, D. Vrabie, M. Krucinski, L. Bertuccelli, T. Lovett, S. Mijanovic, “From smart homes to green cities: role of intelligent diagnostics and control in energy efficient buildings”, *Dynamic Systems & Control Magazine*, ASME Mechanical Engineering, December 2013.

B. Patents, Disclosures, and Technology Transfer

1. G. Henze, J. Smith, S. Sarkar, A. Florita, M. Jacoby, M. Nezhad, A. Saffari and S. Y. Tan, US Provisional Patent Application # 63/180,643 – *Wireless Home Identification and Sensing Platform for Energy Reduction*, filed May 13, 2021.
2. M. J. Giering, K. K. Reddy, V. Venugopalan, S. Sarkar, Multi-modal sensor data fusion for perception systems US Patent (Granted), US11422546B2
3. M. J. Giering, M. Shashanka, S. Sarkar, V. Venugopalan, *Sensor data fusion for prognostics and health monitoring*, International Patent Application WO2016100814A1, US Patent (Granted), US11340602B2, August 23, 2022.
4. S. Bengae, V. Adetola, M. Krucinski, S. Sarkar, A. Srivastav, T. Lovett, K. Mukherjee, A. Ghosh, M. Chen and P. Li, *Automated functional tests for diagnostics and control*, International Patent Application WO2016076946A2, China Patent (Granted), CN107111286B, November 19, 2021.

C. Funded Grants and Contracts

- Total 51 federal, state and industry grants (15 as PI) from a variety of sources including NSF, USDA-NIFA, AFOSR, DARPA, NIH, DOT, DOE, DoD and ARPA-E
- Total funding of approximately \$55.4M (approximately \$7.5M allocated to the Sarkar research group as of 08/2023)

Percentage of fund for my lab mentioned in parenthesis

During previous rank at ISU

Grant 1:

Investigators:	Soumik Sarkar (ISU ME)
Title:	A Knowledge Representation and Information Fusion Framework for Decision Making in Complex Cyber-Physical Systems
Funding agency:	NSF
Dates:	05/15/2015 – 04/30/2018
Total fund:	\$208,406.00 (100%)
Role on project:	PI

Grant 2:
Investigators: Atul Kelkar (ISU ME), Soumik Sarkar (ISU ME)
Title: Agent-based systems approach to building HVAC control
Funding agency: Iowa Energy Center
Dates: 01/01/2015 – 06/30/2016
Total fund: \$103,830.00 (50%)
Role on project: Co-PI

Grant 3:
Investigators: Namrata Vaswani (ISU ECPE), Soumik Sarkar (ISU ME)
Title: Novel Machine Learning based methods for low-light image/video denoising (Phase I & II)
Funding agency: Regents Innovation Fund and Rockwell Collins Inc.
Dates: 01/01/2015 – 06/30/2016
Total fund: \$200,000.00 (50%)
Role on project: Co-PI

Grant 4:
Investigators: Arti Singh (ISU Agronomy), Soumik Sarkar (ISU ME) and others
Title: Using Engineering tools to identify and quantify biotic and abiotic stress in soybean for customizable agriculture production
Funding agency: Iowa Soybean Association
Dates: 10/01/2015 – 09/30/2018
Total fund: \$185,590 (12%)
Role on project: Co-PI

Grant 5:
Investigators: Carolyn J. Lawrence-Dill (ISU GDCB), Soumik Sarkar (ISU ME) and others
Title: Data-Driven Discoveries for Agricultural Innovation
Funding agency: Iowa State University
Dates: 10/01/2015 – 09/30/2018
Total fund: \$750,000 (7%)
Role on project: Co-PI

Grant 6:
Investigators: Soumik Sarkar (ISU ME)
Title: A Neural-Symbolic approach to Real-time Decision-making in Complex Aerospace Systems
Funding agency: AFOSR (Young Investigator Program)
Dates: 04/28/2017 – 10/27/2020
Total fund: \$360,000 (100%)
Role on project: PI

Grant 7:
Investigators: Adarsh Krishnamurthy (ISU ME), Soumik Sarkar (ISU ME)
Title: CM: Machine-Learning Driven Decision Support in Design for Manufacturability
Funding agency: NSF
Dates: 09/01/2016 – 08/31/2021
Total fund: \$491,175 (50%)
Role on project: Co-PI

Grant 8:
Investigators: Soumik Sarkar (ISU ME), Baskar G (ISU ME), Asheesh Singh (ISU Agronomy), Arti Singh (ISU Agronomy)
Title: A multi-scale data assimilation framework for layered sensing and hierarchical control of disease spread in field crops
Funding agency: USDA-NIFA/NSF
Dates: 03/01/2017 – 02/29/2021
Total fund: \$990,471 (25%)
Role on project: PI

Grant 9:
Investigators: Sourabh Bhattacharya (ISU ME), Soumik Sarkar (ISU ME), Baskar G (ISU ME), Asheesh Singh (ISU Agronomy), Arti Singh (ISU Agronomy)
Title: Saliency-driven robotic networks for spatiotemporal plant phenotyping
Funding agency: USDA-NIFA/NSF
Dates: 12/15/2016 – 12/14/2020
Total fund: \$820,021 (20%)
Role on project: Co-PI

Grant 10:
Investigators: Anuj Sharma (ISU CCEE), Soumik Sarkar (ISU ME) and others
Title: PFI: BIC- A Smart Service System for Traffic Incident Management Enabled by Large-data Innovations (TIMELI)
Funding agency: NSF
Dates: 09/01/2016 – 08/31/2020
Total fund: \$1,000,000 (13%)
Role on project: Co-PI

Grant 11:
Investigators: Ulrike Passe (ISU ME), Soumik Sarkar (ISU ME) and others
Title: Big Data for Sustainable Cities & Decision Making
Funding agency: Iowa State University
Dates: 08/01/2016 – 07/31/2019
Total fund: \$375,000 (15%)
Role on project: Co-PI

Grant 12:
Investigators: Thomas Chiou (ISU CNDE), Soumik Sarkar (ISU ME) and Leonard Bond (ISU CNDE)
Title: Thermal Image Reconstruction and Synthesis: Phase I Feasibility Study
Funding agency: Pratt & Whitney
Dates: 11/01/2016 – 01/31/2017
Total fund: \$25,000 (11%)
Role on project: Co-PI

Grant 13:
Investigators: Gregor Henze (UC Boulder), Soumik Sarkar (ISU ME), Anthony Florita (NREL) and Josh Smith (UW)
Title: Battery-free RFID Sensor Network with Spatiotemporal Pattern Network Based Data Fusion System for Human Presence Sensing
Funding agency: ARPA-E
Dates: 06/01/2018 - 02/28/2022
Total fund: \$2,000,000 (18%)
Role on project: PI (ISU)

Grant 14:
Investigators: Anuj Sharma (ISU CCEE), Soumik Sarkar (ISU ME), Chinmay Hegde (ISU ECPE)
Title: Predicting Driving Safety in Advancing Age
Funding agency: University of Nebraska Medical Center (original award from NIH)
Dates: 05/01/2017 - 08/31/2018
Total fund: \$94,639 (30%)
Role on project: Co-PI

Grant 15:
Investigators: Matt Rizzo (University of Nebraska Medical Center), Anuj Sharma (ISU CCEE), Soumik Sarkar (ISU ME), Chinmay Hegde (ISU ECPE)
Title: Modeling multidimensional risk in real-world driver with diabetes
Funding agency: Toyota
Dates: 06/01/2018 - 02/28/2021
Total fund: \$198,664 (33%)
Role on project: Co-PI

Grant 16:
Investigators: Anuj Sharma (ISU CCEE), Soumik Sarkar (ISU ME)
Title: Automating Near Miss Crash Detection Using Existing Traffic Cameras
Funding agency: Iowa DOT
Dates: 07/01/2017 - 12/31/2018
Total fund: \$49,991 (30%)
Role on project: Co-PI

Grant 17:
Investigators: Atul Kelkar (ISU ME), Soumik Sarkar (ISU ME)
Title: Multiagent based mixed centralized and decentralized control of building energy systems
Funding agency: Iowa Energy Center
Dates: 11/10/2014-4/30/2015
Total fund: \$4,922 (50%)
Role on project: Co-PI

Grant 18:
Investigators: Soumik Sarkar (ISU ME)
Title: PSI Scholar award
Funding agency: Iowa State Plant Science Institute
Dates: 1/1/2018-12/31/2023
Total fund: \$450,000 (100%)
Role on project: PI

Grant 19:
Investigators: Sarah Ryan (ISU IMSE), and others, Soumik Sarkar (ISU ME)
Title: NRT-INFEWS: The DataFEWSion Traineeship Program for Innovations at the Nexus of Food Production, Renewable Energy and Water Quality
Funding agency: NSF
Dates: 9/1/2018-8/31/2023
Total fund: \$2,907,236 (0%)
Role on project: Senior Personnel

Grant 20:
Investigators: Soumik Sarkar (ISU ME), Adarsh Krishnamurthy (ISU ME)
Title: Fast Topology Optimization and Shape Style Transfer Using Machine Learning
Funding agency: ANSYS
Dates: 9/1/2018-05/15/2020
Total fund: \$80,000 (50%)
Role on project: PI

Grant 21:
Investigators: Chinmay Hegde (ISU ECPE), Soumik Sarkar (ISU ME), Baskar G (ISU ME)
Title: PALM: Physics-Aware Learning for Microstructure Design
Funding agency: DARPA
Dates: 12/21/2018-06/20/2020
Total fund: \$785,000 (33%)
Role on project: Co-PI

Grant 22:
Investigators: Soumik Sarkar (ISU ME)
Title: CAREER: Robustifying Machine Learning for Cyber-Physical Systems
Funding agency: NSF
Dates: 3/1/2019 – 2/29/2024
Total fund: \$511,620 (100%)
Role on project: PI

Grant 23:
Investigators: Soumik Sarkar (ISU ME), Baskar G, Asheesh Singh, Arti Singh
Title: International Workshop on ML for Cyber-Ag Systems (MLCAS)
Funding agency: USDA-NIFA
Dates: 10/30/2018 – 10/31/2020
Total fund: \$50,000 (25%)
Role on project: PI

During current rank at ISU

Grant 24:
Investigators: Arti Singh (ISU Agronomy), Soumik Sarkar (ISU ME), Baskar G (ISU ME), Asheesh Singh (ISU Agronomy), Daren Mueller (ISU Agronomy), Nirav Merchant (U of Arizona)
Title: FACT: A Scalable Cyber Ecosystem for Acquisition, Curation, and Analysis of Multispectral UAV Image Data
Funding agency: USDA-NIFA
Dates: 9/1/2019 – 8/31/2023
Total fund: \$499,845 (15%)
Role on project: Co-PI

Grant 25:
Investigators: Subhadeep Chakraborty (UTK), Soumik Sarkar (ISU ME), Michael Olson (UTK), Stephen Gilbert (ISU IMSE), Joanne Marshall (ISU)
Title: CPS: Medium: Collaborative Research: Active Shooter Tracking & Evacuation Routing for Survival (ASTERS)
Funding agency: NSF
Dates: 9/1/2019 – 8/31/2023
Total fund: \$1,199,678 (17%)
Role on project: PI (ISU)

Grant 26:
Investigators: Anuj Sharma (ISU CCEE), Soumik Sarkar (ISU ME)
Title: Deep Insight - Deep-net driven approach to estimate driver state from naturalistic data
Funding agency: DOT – Federal Highway Administration (FHWA)
Dates: 9/1/2019 – 8/31/2022
Total fund: \$1,354,417 (11%)
Role on project: Co-PI

Grant 27:
Investigators: Baskar Ganapathysubramanian (ISU ME), Soumik Sarkar (ISU ME), Adarsh Krishnamurthy, NYU, Stanford, NREL
Title: Context-aware learning for inverse design in photovoltaics
Funding agency: ARPA-E
Dates: 3/1/2020 – 2/28/2022
Total fund: \$2,000,000 (15%)
Role on project: Co-PI

Grant 28:
Investigators: Shauna Hallmark (ISU Intrans), Anuj Sharma (ISU CCEE), Soumik Sarkar (ISU ME) and others
Title: Monitoring real-world driver behavior for classification and early prediction of Alzheimer's disease
Funding agency: UNMC (Originally from NIH)
Dates: 06/01/2020 - 02/28/2025
Total fund: \$1,036,538 (25%)
Role on project: Co-PI

Grant 29:
Investigators: Asheesh Singh, Soumik Sarkar (ISU ME), others
Title: SCC-IRG Track 2: Smart Integrated Farm Network for Rural Agricultural Communities (SIRAC)
Funding agency: NSF
Dates: 10/1/2020 - 9/30/2023
Total fund: \$1,499,830 (14%)
Role on project: Senior Personnel

Grant 30:
Investigators: Chad Risko (U Kentucky), Baskar G, Soumik Sarkar (ISU ME), others
Title: RII Track-2 FEC: Data-Enabled Discovery and Design to Transform Liquid-Based Energy Storage (D3TaLES)
Funding agency: NSF
Dates: 9/1/2020 - 8/31/2024
Total fund: \$1,989,220 (10%)
Role on project: Senior Personnel

Grant 31:
Investigators: Rizia Bardhan, Soumik Sarkar (ISU ME), Jonathan Mochel
Title: Multiplexed Immunomarker Screening to Enable Patient-Tailored Immunotherapies
Funding agency: Congressionally Directed Medical Research Programs (CDMRP)
Dates: 9/1/2020 - 8/31/2022
Total fund: \$587,996 (6%)
Role on project: Co-PI

Grant 32:
Investigators: Soumik Sarkar (ISU ME) and others
Title: CPS: Frontier: Collaborative Research: COALESCE: COntext Aware LEarning for Sustainable CybEr-Agricultural Systems
Funding agency: NSF and USDA-NIFA
Dates: 4/15/2021 - 3/31/2026
Total fund: \$7,000,000 (10%)
Role on project: PI

Grant 33:
Investigators: Baskar G, Soumik Sarkar (ISU ME) and others
Title: AI Institute for Resilient Agriculture (AIIRA)
Funding agency: NSF and USDA-NIFA
Dates: 9/1/2021 - 8/31/2026
Total fund: \$20,000,000 (5%)
Role on project: Co-PI

Grant 34:
Investigators: Baskar G, Soumik Sarkar (ISU ME) and others
Title: LEAP-HI: AI-Optimized 3D Printing of Super-Soft Materials for Personalized Sensing
Funding agency: NSF
Dates: 8/1/2021 - 7/31/2026
Total fund: \$2,000,000 (15%)
Role on project: Co-PI

Grant 35:
Investigators: Soumik Sarkar (ISU ME) and others
Title: Translational AI Center (TrAC)
Funding agency: Iowa State University
Dates: 07/01/2021 – 06/30/2024
Total fund: \$450,000 (0%)
Role on project: PI

Grant 36:
Investigators: Anuj Sharma (ISU CCEE), Soumik Sarkar (ISU ME) and others
Title: Navigation System for Snowplows in Low Visibility Situations
Funding agency: Iowa Department of Transportation
Dates: 09/01/2021 – 10/31/2023
Total fund: \$355,429 (20%)
Role on project: Co-PI

Grant 37:
Investigators: Anuj Sharma, Shauna H (ISU CCEE), Soumik Sarkar (ISU ME)
Title: Developing Mechanisms to Detect Driver Risk From Driver State in Diabetes
Funding agency: Toyota Motors
Dates: 07/01/2022 – 12/31/2023
Total fund: \$271,989 (30%)
Role on project: Co-PI

Grant 38:
Investigators: Jessica Bell, Soumik Sarkar (ISU ME) and others
Title: AI Institute for Resilient Agriculture International Collaborations
Funding agency: NSF
Dates: 12/01/2022 – 11/30/2024
Total fund: \$300,000 (0%)
Role on project: Co-PI

Grant 39:
Investigators: Adarsh K, Baskar G, Soumik Sarkar (ISU ME), Manimaran G (ISU EE)
Title: Secure Digital Twin Incorporating Physics-Aware Machine Learning for Additive Manufacturing
Funding agency: UI Labs
Dates: 09/01/2022 – 08/31/2023
Total fund: \$75,000 (25%)
Role on project: Co-PI

Grant 40:
Investigators: Soumik Sarkar (ISU ME) and others
Title: Collaborative Research: DMREF: ML-Enabled Multi-Material Digital-Light Processing of Functional Polymers
Funding agency: NSF
Dates: 10/1/2023 - 9/30/2027
Total fund: \$800,000
Role on project: Co-PI

Grant 41:
Investigators: Soumik Sarkar (ISU ME) and others
Title: Feedback Learning for Machine Perception with System-Level Objectives
Funding agency: Translational AI Center seed fund
Dates: 2022
Total fund: \$20,000
Role on project: Co-PI

Grant 42:
Investigators: Soumik Sarkar (ISU ME)
Title: A feasibility study of the development of a predictive analysis tool to determine risks to global agriculture and food security
Funding agency:
Dates: Jun 2024 – Dec 2024
Total fund: \$50,000
Role on project: PI

Grant 43:
Investigators: Soumik Sarkar (ISU ME) and others
Title: Simulation-based edge-case generation using reinforcement learning
Funding agency: Translational AI Center seed fund
Dates: 2024
Total fund: \$20,000
Role on project: Co-PI

Grant 44:
Investigators: Soumik Sarkar (ISU ME) and others
Title: AI-based real-time atomic force microscopy analysis for structural and translational DNA research
Funding agency: Translational AI Center seed fund
Dates: 2024
Total fund: \$20,000
Role on project: Co-PI

Grant 45:
Investigators: Soumik Sarkar (ISU ME)
Title: A feasibility study of the development of a predictive analysis tool to determine risks to global agriculture and food security Phase 2
Funding agency: DefenseWorx
Dates: Mar 2025 – Jan 2026
Total fund: \$196,000
Role on project: PI

Grant 46:
Investigators: Soumik Sarkar (ISU ME) and others
Title: Planning: AI-Ready Cyber-Agriculture Systems Testbed
Funding agency: NSF
Dates: Aug 2025 – Jul 2027
Total fund: \$200,000
Role on project: AI-AgARENA) (as PI

Grant 47:
Investigators: Soumik Sarkar (ISU ME)
Title: BIO-SHIELD: BIOlogical threat Surveillance through Holistic Information fusion for EarLy warning and Decision support
Funding agency: DoD
Dates: Dec 2025 – Aug 2026
Total fund: \$500,000
Role on project: PI

Grant 48:
Investigators: Soumik Sarkar (ISU ME) and others
Title: Transforming digital marketing strategies through agentic AI and LLMs: a small business to investor approach
Funding agency: Translational AI Center seed fund
Dates: 2025
Total fund: \$20,000
Role on project: Co-PI

Grant 49:
Investigators: Soumik Sarkar (ISU ME) and others
Title: COURAG: Towards Safety and Trustworthiness via Conformal Outlier detection and Uncertainty- and Rulebook-Aware Generative Reinforcement Learning
Funding agency: Translational AI Center seed fund
Dates: 2025
Total fund: \$20,000
Role on project: Co-PI

Grant 50:
Investigators: Soumik Sarkar (ISU ME)
Title: DAISY: Decentralized Agentic Intelligence System for Scientific Inquiry
Funding agency: DOE
Dates: Jul 2026 – Mar 2027
Total fund: \$250,000
Role on project: PI

Grant 51:
Investigators: Soumik Sarkar (ISU ME) and others
Title: Agentic Autonomous UGA Navigation and Plant Manipulation Framework
Funding agency: Translational AI Center seed fund
Dates: 2026
Total fund: \$20,000
Role on project: Co-PI

D. Pending Grants and Contracts

II. TEACHING AND STUDENT MENTORING

A. Instruction for ISU

1. Spring 2023: ME 592 – “Data Analytics and Machine Learning for Cyber-physical Systems Applications”, 3 Credits, No Lab, Section 1 - 17 students, Section 2 – 8 students, no TA
2. Spring 2022: ME 592 – “Data Analytics and Machine Learning for Cyber-physical Systems Applications”, 3 Credits, No Lab, Section 1 - 18 students, Section 2 – 13 students, no TA
3. Fall 2021: ME 280X – “Design and Analysis of Cyber-Physical Systems”, 3 Credits, No Lab, 11 students, no TA
4. Spring 2021: ME 592 – “Data Analytics and Machine Learning for Cyber-physical Systems Applications”, 3 Credits, No Lab, 20 students, no TA
5. Spring 2020: ME 421 – “System Dynamics and Control”, 4 Credits, Lab, 65 students, 1 TA
6. Spring 2020: ME 160 – “Mechanical Engineering Problem Solving with Computer applications”, 3 Credits, No Lab, 31 students, 0.5 Grader
7. Spring 2019: ME 592X – “Data Analytics and Machine Learning for Cyber-physical Systems Applications”, 3 Credits, No Lab, 37 students, no TA
8. Spring 2019: ME 160 – “Mechanical Engineering Problem Solving with Computer Applications”, 3 Credits, No Lab, 36 students, 0.2 TA and 0.3 Grader
9. Spring 2018: ME 592X – “Data Analytics and Machine Learning for Cyber-physical Systems Applications”, 3 Credits, No Lab, 30 students, no TA
10. Fall 2017: ME 421 (2 sections) – “System Dynamics and Control”, 4 Credits, Lab, 147 students, 4 TAs and 1 UTA
11. Spring 2017: ME 592X – “Data Analytics and Machine Learning for Cyber-physical Systems Applications”, 3 Credits, No Lab, 26 students, no TA
12. Fall 2016: ME 370 – “Engineering Measurements”, 3 Credits, Lab, 104 students, 1 TA and 1 Grader
13. Fall 2016: GrSt 565 – “Responsible conduct of Research”, 1 Credit, No Lab, 14 students, no TA
14. Spring 2016: ME 160 – “Mechanical Engineering Problem Solving with Computer Applications”, 3 Credits, No Lab, 35 students, 0.5 TA and 1 Grader
15. Fall 2015: ME 160 – “Mechanical Engineering Problem Solving with Computer Applications”, 3 Credits, No Lab, 35 students, 0.5 TA and 1 Grader
16. Spring 2015: ME 421 – “System Dynamics and Control”, 4 Credits, Lab, 83 students, 2.5 TAs and 1 Grader
17. Fall 2014: ME 421 – “System Dynamics and Control”, 4 Credits, Lab, 63 students, 2.5 TAs and 1 Grader

B. Curricular Development Activity for ISU

1. Led the development of new ISU Engineering Undergraduate Minor on Cyber-Physical Systems (CPS). Developing a new course for the minor: ME 280X: Design and Analysis of Cyber-Physical Systems
2. Developed new experimental graduate course ME 592 – “Data Analytics and Machine Learning for Cyber-physical Systems Applications”

3. Member of the CDC for Dynamic Systems and Control related courses in ME (2015-now)
4. Member of the CDC for Thermal and Fluid related courses in ME (2015-16)

C. Supervision of Students as Major Professor

Graduated (26 PhD – 23 at the current rank, 9 MS – 4 at the current rank)

During previous rank at ISU

1. Kin G. Lore, MS, January 2015 – December 2016, “Deep Learning for Decision Making and Complex Autonomous Systems”, now at the United Technologies Research Center (UTRC).
2. Kundan Kumar, MS, (Adarsh Krishnamurthy, co-advisor), May 2015 – December 2016, “Interactive Data Visualization for Road Traffic System”.
3. Vikas Chawla, MS, (Baskar Ganapathysubramanian, co-advisor), May 2015 – December 2016, “Bayesian network approach to county-level corn yield prediction using historical data and expert knowledge”.
4. Adedotun Akintayo, PhD, (Baskar Ganapathysubramanian, co-advisor), August 2014 – December 2017, “Hierarchical feature extraction from spatiotemporal data for cyber-physical system analytics”, now at Intel.
5. Shuo Wang, PhD, (Anuj Sharma, co-advisor), August 2014 – May 2018, “Traffic speed prediction using big data enabled deep learning”, now at NVIDIA.
6. Linjiang Wu, MS, August 2016 – May 2018, “Spatiotemporal graphical modeling for cyber-physical systems”, now at Ford.
7. Apurva Kokate, MS, August 2016 – May 2018, “A study of Interpretability mechanisms for Deep Networks”, now at Kingland.
8. Zhanhong Jiang, PhD, August 2014 – June 2018, “Distributed Optimization for Control and Learning”, now at Johnson Controls.

During current rank at ISU

9. Zhisheng Zhang, MS, August 2017 – July 2019, “Deep learning for field-based automated high-throughput plant phenotyping”, now an Image data scientist at Bayer Crop Science.
10. Sambuddha Ghosal, PhD, August 2015 – August 2019, “Deep learning for human engineered systems: weak supervision, interpretability and knowledge embedding”, now Postdoc at MIT Media Lab.
11. Truong Tran, MS, (Baskar Ganapathysubramanian, co-advisor), August 2017 – July 2019, “Applying Computer Vision in Plants for Detection of Diseases”.
12. Aditya Balu, PhD, (Adarsh Krishnamurthy, co-advisor) August 2016 – May 2020, “Deep learning and GPU-accelerated algorithms for computer-aided engineering”, now Postdoc at Iowa State.
13. Amitangshu Mukherjee, MS, August 2018 – May 2020, “Adversarial machine learning”. now PhD student at Purdue University.
14. Sambit Ghadai, PhD, (Adarsh Krishnamurthy, co-advisor) August 2016 – July 2020, “A Cybermanufacturing Framework Incorporating Deep Learning and Multi-resolution Voxel Representations”, now Scientist at Intel.
15. Jaydeep Rade, MS, (Adarsh Krishnamurthy, co-advisor) January 2019 – December 2020, “Deep Learning Accelerated Topology Optimization”, now PhD student at Iowa State.
16. Homagni Saha, PhD, August 2016 – May 2021, “Information fusion for decision-making”, now Scientist at Danfoss.
17. Yasaman Esfandiari, PhD, August 2018– December 2021, “Robust and Scalable Deep Learning for Cyber-physical Systems”, now Scientist at HRL Labs.
18. Tryambak Gangopadhyay, PhD, August 2017 – March 2022, “Trustworthy Deep Learning for Cyber-Physical Systems”, now Scientist at Amazon.
19. Xian Lee, PhD, August 2017 – March 2022, “Deep learning for robust and efficient design in cyber-physical systems”, now Scientist at Hitachi.

20. Arya Ketabchi Haghighat, PhD, (Anuj Sharma, co-advisor), January 2016 – March 2022, “Transportation Safety Enhancement by Implementing Computer Vision Based Models in Intelligent Transportation Systems”, now Scientist at HRL Labs.
21. Koushik Nagasubramanian, PhD, (Baskar Ganapathysubramanian, co-advisor) August 2016 – August 2022, “Plant phenotyping with limited annotation: Doing more with less”, now Scientist at Bayer Crop Science.
22. Luis G. Riera, PhD, August 2017 – December 2022, “Deep Learning for Autonomous Perception and Decision-making”, now Scientist at Data61, CSIRO.
23. Sin Yong Tan, PhD, August 2017 – December 2022, “Multimodal sensor fusion and multisource distributed learning in cyber-physical systems”, now Scientist at Musco Lighting.
24. Kai Liang Tan, PhD, January 2018 – December 2022, “Deep Learning for Decision Making in Cyber-Physical Systems” now Scientist at Intel.
25. Archana Venkatachalapathy, PhD, (Anuj Sharma, co-advisor) August 2016 – December 2022, “Investigating the relation between user physiology and traffic environment to identify its impact on their road behavior”, now Scientist at Walmart.
26. Matthew E Carroll, PhD, (Asheesh K. Singh, co-advisor) August 2017 - December 2022, “Development of digital phenotyping methods for breeding applications in stress phenotyping, spatial adjustments, and end season yield prediction”, now Scientist at Iowa Soybean Association.
27. Fateme Fotouhi, PhD, (Arti Singh, co-advisor) August 2019 – July 2023, “Deep Learning for Autonomous Intelligent Agents”, now Scientist at Canon.
28. Ethan Herron, PhD, (Adarsh Krishnamurthy, co-advisor) May 2020 – 2026.
29. Joshua Waite, PhD, January 2020 – 2024, now Data Scientist, Translational AI Center (TrAC), Iowa State University.
30. Souradeep Chattopadhyay, PhD, January 2021 – 2026.
31. Jesse Lane, PhD, August 2020 – 2023, now Principal Research Engineer, Collins Aerospace.
32. Jiale Feng, PhD, July 2021 – 2024.
33. Hsin-Jung Yang, PhD, August 2021 – 2026.
34. Mahsa Khosravi, PhD, May 2022 – 2026.
35. Muhammad Arshad, PhD, January 2023 – 2026, now Software Engineer (AI), Waymo.
- In progress
36. Qisai Liu, PhD, August 2020 – May 2025, work in progress – degree expected May 2025.
37. Zahid Hasan, PhD, July 2021 – May 2025, work in progress – degree expected May 2025.
38. Timilehin Ayanlade, PhD, January 2022 – December 2025, work in progress – degree expected December 2025.
39. Nastaran Saadati, PhD, August 2022 – May 2027, work in progress - degree expected May 2027.
40. Adele Haghighat, PhD, August 2022 – May 2025, work in progress – degree expected May 2025.
41. Nitesh Subedi, PhD, Summer 2024 – work in progress.
42. Shreyan Ganguly, PhD, Fall 2024 – work in progress.
43. Alloy Das, PhD, Fall 2025 – work in progress.
44. Lucas Nerone Rillo, PhD, Fall 2025 – work in progress.
45. Henry Kim, PhD, Summer 2026 – work in progress.
46. Manas Sewatkar, PhD, work in progress.

47. Yongyun Song, PhD, Summer 2026 – work in progress.
48. Harshada Anavkar, PhD (M.S. leading to Ph.D.), Fall 2025 – work in progress.
49. Tirtho Roy, PhD (M.S. leading to Ph.D.), Summer 2024 – work in progress.

D. Service on Graduate Student Committees

1. Hamid Emadi, (2021) PhD, ME, committee member (Major professor: Sourabh Bhattacharya)
2. Venkatesh Chinde, (2018) PhD, ME, committee member (Major professor: Atul Kelkar)
3. Venkatesh Chinde, (2015) MS, ECPE, committee member (Major professor: Atul Kelkar)
4. Nicholas Haberl, (2016) MS, ME, committee member (Major professor: Song-Charng Kong)
5. Ryan Ogren, (2015), MS, ME, committee member (Major professor: Song-Charng Kong)
6. Spencer Pfeifer, (2017) PhD, ME, committee member (Major professor: Baskar Ganapathysubramanian)
7. Subhrajit Sinha, (2018) PhD, ECPE, committee member (Major professor: Umesh Vaidya)
8. Nigel Lee, (2016) MS, ME, committee member (Major professor: Baskar Ganapathysubramanian)
9. Hsiang Sing Naik, (2016), MS, ME, committee member (Major professor: Baskar Ganapathysubramanian)
10. Arvind Ranganathan, (2016), MS, CCEE, committee member (Major professor: Anuj Sharma)
11. Gavin Young, (2017) MS, ME, committee member (Major professor: Adarsh Krishnamurthy)
12. Nikita Tiwari, (2017) MS, CCEE, committee member (Major professor: Anuj Sharma)
13. David Peiffer, (2017) MS, IE, committee member (Major professor: Matt Frank)
14. Abhinav Prakash, (2018) MS, CS, committee member (Major professor: Anuj Sharma)
15. Yi Liu, (2017) MS, ME, committee member (Major professor: Song-Charng Kong)
16. Ashton Archer, (2017) MS, ME, committee member (Major professor: Theodore Heindel)
17. Balaji Pokuri, (2018), PhD, ME, committee member (Major professor: Baskar Ganapathysubramanian)
18. Seyyed-Shaho Alaviani, (2019), PhD, EE, committee member (Major professor: Nicola Elia)
19. Sahiti Nallagonda, (2018), MS, ME, committee member (Major professor: Ming-Chen Hsu)
20. Zehui Jiang, (2018), PhD, Economics, committee member (Major professor: Dermot Hayes)
21. Julie Bothell, (2020), PhD, ME, committee member (Major professor: Theodore Heindel)
22. Ryan Ogren, (2019), PhD, ME, committee member (Major professor: Song-Charng Kong)
23. Tingting Huang, (2018), PhD, CCEE, committee member (Major professor: Anuj Sharma)
24. Revanth Somayajula, (2018), MS, CS, committee member (Major professor: Anuj Sharma)

25. Vamsi Krishna, (2018), MS, CS, committee member (Major professor: Anuj Sharma)
26. Kyle Parmley, (2018), PhD, Agronomy, committee member (Major professor: Asheesh Singh)
27. Lakshay Ahuja, (2018), MS, CS, committee member (Major professor: Anuj Sharma)
28. Shruti Sahu, (2018), MS, CS, committee member (Major professor: Baskar Ganapathysubramanian)
29. Gulnihal Kucuksayacigil, (2018), PhD, EE, committee member (Major professor: Nicola Elia)
30. Himanshu Sharma, (2019), PhD, ME, committee member (Major professor: Baskar Ganapathysubramanian)
31. Onur Bingol, (2019), PhD, ME, committee member (Major professor: Adarsh Krishnamurthy)
32. Tianshuang Gao, (degree expected in 2022), PhD, ME, committee member (Major professor: Sourabh Bhattacharya)
33. Xin Huang, (2018), MS, ME, committee member (Major professor: Adarsh Krishnamurthy)
34. Holly Baiotto, (2020), MS, ME, committee member (Major professor: Eliot Winer)
35. Varsha Mouli, (2020), MS, CS, committee member (Major professor: Anuj Sharma)
36. Tongge Huang (2020), PhD, CE, committee member (Major professor: Anuj Sharma)
37. Yi Liu (2022), PhD, ME, committee member (Major professor: Juan Ren)
38. Soumyabrata Talukder (degree expected in 2023), PhD, EE, committee member (Major professor: Ratnesh Kumar)
39. Sangeeth Balakrishnan (2019), MS, ME, committee member (Major professor: Baskar Ganapathysubramanian)
40. Jonathan Shook (2021), PhD, Plant Breeding, committee member (Major professor: Asheesh Singh)
41. Clayton Carley (degree expected in 2022), PhD, Plant Breeding, committee member (Major professor: Asheesh Singh)
42. Keivan Ebrahimi (2019), PhD, EE, committee member (Major professor: Umesh Vaidya)
43. Vesal Ahsani (2019), PhD, CE, committee member (Major professor: Anuj Sharma)
44. Thanh Nguyen (2020), PhD, EE, committee member (Major professor: Chinmay Hegde)
45. Saeed Arabi (2022), PhD, CE, committee member (Major professor: Anuj Sharma)
46. Rahul Singh (2019), MS, CS, committee member (Major professor: Samik Basu)
47. Adam Kohl (degree expected in 2022), PhD, ME, committee member (Major professor: Eliot Winer)
48. Anthony Locurto (degree expected in 2022), PhD, ME, committee member (Major professor: James Michael)
49. Archana Venkatachalapathy (2019), MS, CE, committee member (Major professor: Anuj Sharma)
50. Biswajit Khara (degree expected in 2023), PhD, ME, committee member (Major professor: Baskar Ganapathysubramanian)
51. Yanchao Wang (degree expected in 2023), PhD, ABE, committee member (Major professor: Matthew Darr)
52. Ashirwad Barnwal (2022), PhD, CE, committee member (Major professor: Anuj Sharma)

53. Sriramjee Singh (2022), PhD, Economics, committee member (Major professor: Dermot Hayes)
54. Atousa Zarindast (degree expected in 2023), PhD, CE, committee member (Major professor: Anuj Sharma)
55. Harman Singh Sangha (degree expected in 2023), PhD, ABE, committee member (Major professor: Matthew Darr)
56. Anjana Deva Prasad (2021), MS, ME, committee member (Major professor: Adarsh Krishnamurthy)
57. Hao Lu (degree expected in 2023), PhD, ME, committee member (Major professor: Chao Hu)
58. Manoj Rajanna (degree expected in 2023), PhD, ME, committee member (Major professor: Ming-Chen Hsu)
59. Smrithi Ajit (degree expected in 2023), PhD, CE, committee member (Major professor: Jonathan Wood)
60. Harshil Shah (2021), PhD, ME, committee member (Major professor: Adarsh Krishnamurthy)
61. Matthew Carroll (degree expected in 2022), PhD, Agronomy, committee member (Major professor: Asheesh Singh)
62. Michael Poole (2021), MS, HCI, committee member (Major professor: Stephen Gilbert)
63. Amit Singh (2021), MS, ME, committee member (Major professor: Beiwen Li)
64. Shengwen Xie (2021), PhD, ME, committee member (Major professor: Juan Ren)
65. Arian Jafari (2020), PhD, ME, committee member (Major professor: Adarsh Krishnamurthy)
66. Subhadipto Poddar (2020), PhD, CE, committee member (Major professor: Anuj Sharma)
67. Mayur-Shivaji Patil (2020), MS, ME, committee member (Major professor: Juan Ren)
68. Seyed Mirnezami (2019), PhD, ME, committee member (Major professor: Baskar Ganapathysubramanian)
69. Viraj Shah (2019), MS, EE, committee member (Major professor: Chinmay Hegde)

E. Supervision of Post-Doctoral Students and Professional Staff

1. Chao Liu, August 2015 – August 2017, Project: Spatiotemporal graphical modeling, currently Research Assistant Professor, Tsinghua University.
2. Adedotun Akintayo, March 2018 – June 2018, Project: Deep learning for traffic analytics, currently Scientist at Intel.
3. Onur Bingol, September 2019 – March 2020, Project: Deep learning for autonomous systems.
4. Aditya Balu, December 2021 – now, Data Scientist at Translational AI Center (TrAC)

F. Supervision of Independent Study and Undergraduate Research

1. Kin G. Lore, August 2014 – December 2014, Deep Learning for designing microfluidic channels (Undergraduate Research)
2. Mannooj Chandrasekaran, November 2014 – December 2014, Multi-agent planning for environment monitoring (Undergraduate Research)
3. Jeffrey Heylman, January 2015 – May 2015, Semi-parametric modeling of building zones for supervisory controls (Independent Study)
4. Adam Kohl, January 2015 – December 2015, Data-driven model learning for building supervisory controls (Independent Study)
5. Adrian Chan, January 2015 – May 2015, Mobile sensor networks (Independent study)

6. Abdulrahman Alnagar, Summer 2015, Building diagnostics (REU)
 7. Sohail Suryavanshi, August 2015 – December 2015, Cyber-physical security (Undergraduate Research)
 8. Hsiang Sing Naik, May 2016 – August 2016, Bayesian Networks (Graduate Independent Study)
 9. Seyed Vahid Mirnezami, August 2016 – December 2016, Machine Learning (Graduate Independent Study)
 10. Balaji Pokuri, August 2016 – December 2016, Machine Learning (Graduate Independent Study)
 11. Minhao Wang, August 2016 – December 2016, Deep Autoencoders (Independent Study)
 12. Hunter Kelderman, January 2016 – May 2016, VOLLTRON platform (Undergraduate Research)
 13. Timothy Wilkie, August 2016 – December 2017, Distributed Optimization (Undergraduate Research)
 14. Himanshu Sharma, August 2017 – December 2017, Machine Learning (Graduate Independent Study)
 15. Zhisheng Zhang, January 2017 – May 2017, Robotics (Undergraduate Independent Study)
 16. Paige Boor, January 2017 – May 2020, Combustion diagnostics (Undergraduate Honors Research)
 17. Kai Liang Tan, August 2017 – December 2017, Self-driving cars (Undergraduate Independent Study)
 18. Aaron Havens, August 2017 – December 2017, Tracking and control (Undergraduate Independent Study)
 19. Matthew Hopkins, June 2017 – July 2017, Robotics (High School student internship)
 20. Haley Primrose, June 2017 – July 2017, Robotics (High School student internship)
 21. Peggy Reichard, June 2017 – July 2017, robotics in STEM education (High School teacher internship)
 22. Genyi Huang, June 2018 – July 2018, Time series analysis (Undergraduate Research)
 23. Aakanksha, June 2019 – July 2019, Deep Reinforcement Learning (Undergraduate Research)
 24. Briton Bauerly, May 2019 – December 2020, Robotic Perception (Undergraduate Research)
 25. Ethan Herron, January 2020 – April 2020, Design and Manufacturing (Undergraduate Research)
 26. Qisai Liu, January 2020 – August 2020, Robotics (Undergraduate Research)
 27. Mason Drees, August 2020 – May 2021, Cyber-Physical Systems (Undergraduate Research)
 28. Felipe Leguizamo, September 2021 – now, Reinforcement Learning (Undergraduate Research)
 29. Yingying Huang, September 2021 – May 2022, Reinforcement Learning (Undergraduate Honors Program Research)
- G. Non-ISU Instruction (e.g. Short Courses, Workshops, Training)
1. Short course on Robust Machine Learning: Attacks and Defenses (at Iowa State, August – September, 2018)
 2. NVIDIA Deep Learning Institute workshop (at Iowa State, November 2018)

III. INSTITUTIONAL SERVICE

A. University-Level Service

1. Founder and Director of Translational AI Center (July 2021 - now)
2. Data Science Curriculum Coordination Committee (January 2020 - now)
3. Member of the Data-driven Science Initiative (DDSI) Faculty steering committee (August 2015 – June 2017)

B. College-Level Service

1. Member of the college level data science curriculum brainstorming group (August 2017 - now)

C. Department-Level Service

1. Member of the 5-year Strategic Planning committee (2021)
2. Member of the Faculty search committee (2018-19)
2. Member of the Graduate Education committee (2016-18)
3. Member of the Faculty search committee (2015-16)
4. Member of the ME 5-year strategic planning committee (2015)
5. Member of the curriculum development committee (CDC) for Dynamic Systems and Control related courses in ME (2015-now)
6. Member of the CDC for Thermal and Fluid related courses in ME (2014-15)

IV. PROFESSIONAL SERVICE

A. Editorial and Review Service for Manuscripts

1. Associate Editor, Frontiers in Robotics and AI: Sensor Fusion and Machine Perception (April 2014 - present)
2. Editorial Board Member, Journal of Big Data Analytics in Transportation, Springer Nature (July 2018 - present)
3. Associate Editor, Plant Phenomics, a Science partner journal (September 2018 - present)
4. Associate Editor, Indian Control Conference (ICC) 2019
5. Organizing Committee member, Modeling, Estimation and Control Conference (MECC) 2021
5. Guest Editor, special issue on Image Analysis and Machine Learning for Cyber-Agricultural Systems, Plant Phenomics, a Science Partner Journal, 2020

Reviewer

1. International Journal of Control
2. Aerospace Science and Technology
3. International Journal of Prognostics and Health Management
4. International Journal of Information Technology and Decision Making
5. Journal of Aerospace Engineering (I Mech E Part G)
6. International Journal of Distributed Sensor Networks
7. American Control Conference (ACC)
8. Conference on Decision & Control (CDC)
9. ASME Turbo Expo (Gas Turbine Technical Congress & Exposition)
10. Annual Conference of the PHM Society
11. European Conference of the PHM Society
12. Neurocomputing (Elsevier)
13. Information Sciences (Elsevier)
14. Signal Processing (Elsevier)
15. Journal of Advances in Information Fusion

16. AIAA Journal
17. IEEE Transactions on Industrial Informatics
18. Applied Energy (Elsevier)
19. Journal of Signal Processing Systems (Springer)
20. Sensors
21. ASME Dynamic Systems and Control Conference (DSCC)
22. IEEE Transactions on Control Systems Technology
23. Neural Information and Processing Systems (NeurIPS) conference
24. Building and Environment
25. IEEE Transactions on Automatic Control
26. Book Chapter for “Industrial Internet of Things: Cybermanufacturing Systems”
27. Physica A
28. International Conference on Learning Representation (ICLR)
29. International Conference on Machine Learning (ICML)
30. Pattern Recognition
31. Knowledge Discovery and Data mining (KDD) conference
32. Energy and Buildings
33. Computers and Electronics in Agriculture (Elsevier)
34. Asia-Pacific Federation for Information Technology in Agriculture (AFITA)/ World Congress on Computers in Agriculture (WCCA)
35. IEEE Conference on Computer Vision and Pattern Recognition (CVPR)
36. Plant Phenomics, a *Science* Partner Journal
37. ASME Journal of Mechanical Design
38. Nature Machine Intelligence
39. Patterns
40. IEEE Transactions on Multimedia
41. IEEE Transactions on Control of Network Systems
42. Combustion Science and Technology
43. IEEE Transactions on Intelligent Transportation Systems
44. Association for the Advancement of Artificial Intelligence (AAAI) Conference
45. Modeling, Estimation and Control Conference (MECC)

B. Service to Professional Societies

1. Member, Mechatronics Technical Committee, ASME Dynamical Systems and Control Division (August 2013 – July 2016)

C. Grant Review Activities

1. NSF Cyber Physical Systems Program review panelist (2021)
2. NSF AI Institute Program review panelist (2021)
3. NSF Cyber Physical Systems Program review panelist (2020)
4. NSF CIVIC Program review panelist (2020)
5. NSF Cyber Physical Systems Program ad-hoc reviewer (2019)
6. NSF Cyber Physical Systems Program review panelist (2018)
7. Austrian Science Fund Wittgenstein Award review panelist (2018)
8. NSF Cyber Physical Systems Program review panelist (2017)

9. DOE Building Technology Office (BTO) BENEFIT Program review panelist (2017)
10. NSF Cyber Physical Systems Program review panelist (2016)

D. Government, Educational, or Corporate Advisory Committees

E. Other Professional Service

1. Organizing committee member, Human-machine Interaction workshop, UTRC 2012
2. Chair, Annual College of Engineering Research Symposium, Penn State 2010
3. Vice-president, Engineering Graduate Student Council, Penn State 2008-09
4. Full Member, Sigma Xi, The Scientific Research Society (2013-15)
5. Member, American Society of Mechanical Engineers (ASME) 2008 - now
6. Member, Institute of Electrical and Electronics Engineers (IEEE) 2008 - now

V. OUTREACH, COMMUNITY ENGAGEMENT AND OTHER ACTIVITIES

A. Outreach Activities

1. Organizer of the workshop Fourth International workshop on Machine learning in Cyber-agriculture systems, MLCAS IV, Ames, IA, October, 2022.
2. Organizer of the workshop Third International workshop on Machine learning in Cyber-agriculture systems, MLCAS III, Virtual, November, 2021.
3. Organizer of the workshop Second International workshop on Machine learning in Cyber-agriculture systems, MLCAS II, Ames, IA, September, 2019.
4. Organizer, CPS-Ag workshop at NSF CPS PI meeting 2018
5. Organizer of the workshop (First International workshop on Machine learning in Cyber-agriculture systems – MLCAS I), Asia-Pacific Federation for Information Technology in Agriculture (AFITA)/ World Congress on Computers in Agriculture (WCCA), October 2018
6. Program committee member, Smart Farming workshop at CPS-Week 2018
7. Organizer of the workshop (Machine Learning for Prognostics and Health Management), ACM SIGKDD 2017 Conference on Knowledge Discovery & Data Mining, August 2017
8. Organizer of the workshop (Machine Learning for Prognostics and Health Management), ACM SIGKDD 2016 Conference on Knowledge Discovery & Data Mining, August 2016
9. Organizer of the workshop (Collaborative Sensing, Learning, and Control in Human-Machine Systems), American Control Conference, July 2016
10. Organizer and Invited session chair (Nonlinear Time-series Analysis for Intelligent Decision-making), American Control Conference, July 2015
11. Invited to workshop panel on Advanced Controls for Buildings to Grid Integration at the Pacific Northwest National Lab (PNNL), Seattle, WA, March 2015

B. Community Engagement Activities

Sustained effort and leadership since 2016 in building a thriving research community of Cyber-Agricultural systems (CAS) which is poised to have significant societal impact in terms of sustainability and food security. Engaging farmers and other stakeholders with CAS researchers via establishing the MLCAS event is a key contribution in this regard.