FACULTY VITA

Date: 06/22/2021
Name: Soumik Sarkar
Department: Mechanical Engineering
Current Rank: Associate Professor
Citizenship: Indian, Permanent resident of the United States of America

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

Associate Professor, Department of Mechanical Engineering, Iowa State University, July 2019 – now
Associate Professor (courtesy), Department of Computer Science, Iowa State University, July 2019 – now
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

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. Walter W Wilson Faculty Fellow in Engineering, Iowa State University (2020)
2. Iowa State University Early Achievement in Research Award (2020)
3. NSF CAREER Award (2019)
4. Iowa State College of Engineering Early Achievement in Research Award (2019)
5. Scholar of Plant Science Institute (PSI), Iowa State University (2018)
6. NVIDIA Deep Learning Institute (DLI) University Ambassador (2017)
7. AFOSR Young Investigator Program (YIP) award (2017)
8. ASHRAE Science and Technology for the Built Environment Best Paper Award (2015)
9. NSF CISE Research Initiation Initiative (CRII) award (2015)
10. Black & Veatch Faculty Fellowship from College of Engineering, Iowa State University (2014)

II. SCHOLARSHIP AND RESEARCH/CREATIVE ACTIVITIES

A. Scholarship

- *Total of 196 publications including 76 peer reviewed journal papers (60 after joining ISU, 52 with ISU students/postdocs), Total 8 book chapters (6 after joining ISU, all with ISU students/postdocs) and 112 peer reviewed conference papers (92 after joining ISU, 77 with ISU students and postdocs).*

- *My published work received a cumulative **4010 citations with h-index of 33 and i10 index of 82** according to the Google scholar website (data collected on 06/22/2021).*

- *High impact papers in Proceedings of the National Academy of Sciences (**PNAS**, IF: 9.661, 100 pctl), **Nature Computational Science**, **Trends in Plant Science** (IF:11.91, 98 pctl), **Applied Energy** (IF: 7.18, 98 pctl), **IEEE Transactions on SMC B** (IF: 6.22), **Scientific Reports** (IF: 4.259, 100 pctl), 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%) 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 ISU appointment

1. L.G. Riera+, M. E. Carroll+, Z. Zhang+, J. Shook+, S. Ghosal+, T. Gao+, A. Singh, S. Bhattacharya, B. Ganapathysubramanian, A. K. Singh, and <u>S. Sarkar</u>, "*Deep Multi-view Image Fusion for Soybean Yield Estimation in Breeding Applications*", **Plant Phenomics**, 2021.

2. W. Guo, M. E. Carroll+, A. Singh, T. L. Swetnam, N. Merchant, S. Sarkar, A. K. Singh, and B. Ganapathysubramanian. "*UAS-Based Plant Phenotyping for Research and Breeding Applications*", **Plant Phenomics**, 2021.
DOI: https://doi.org/10.34133/2021/9840192

3. J. Shook+, T. Gangopadhyay+, L. Wu+, B. Ganapathysubramanian, <u>S. Sarkar</u>, A. K. Singh, "*Crop yield prediction integrating genotype and weather variables using deep learning*", **PLoS ONE** 16(6): e0252402., 2021.
DOI: https://doi.org/10.1371/journal.pone.0252402

4. K. Nagasubramanian+, T. Jubery+, F. F. Ardakani+, S.V. Mirnezami+, A.K. Singh, A. Singh, S. Sarkar, B. Ganapathysubramanian, "*How useful is active learning for image-based plant phenotyping?*", **Plant Phenome Journal**. 2021; 4:e20020.
https://doi.org/10.1002/ppj2.20020.

5. X. Y. Lee[+], J. R. Waite[+], C-H Yang[+], B. S. S. Pokuri[+], A. Joshi[+], A. Balu[+], C. Hegde, B. Ganapathysubramanian, and <u>S. Sarkar</u>. "*Fast inverse design of microstructures via generative invariance networks*", **Nature Computational Science** 1, no. 3 (2021): 229-238. DOI: https://doi.org/10.1038/s43588-021-00045-8

6. T. Gangopadhyay[+], V. Ramanan[+], A. Akintayo[+], P. K. Boor*, S. Sarkar, S. R. Chakravarthy, <u>S. Sarkar</u>, "*3D Convolutional Selective Autoencoder For Instability Detection in Combustion Systems*", **Energy and AI**, Vol. 4, June 2021.
    DOI: https://doi.org/10.1016/j.egyai.2021.100067

7. Y. Esfandiari[+], A. Balu[+], K. Ebrahimi[+], U. Vaidya, N. Elia, and <u>S. Sarkar</u>. "*A fast saddle-point dynamical system approach to robust deep learning*", **Neural Networks** 139 (2021): 33-44. DOI: https://doi.org/10.1016/j.neunet.2021.02.021

8. C. Liu[+], K.G. Lore[+], Z. Jiang[+], S. Sarkar, "*Root-cause analysis for time-series anomalies via spatiotemporal graphical modeling in distributed complex systems*", **Knowledge-Based Systems**, January 2021, https://doi.org/10.1016/j.knosys.2020.106527

9. K.L. Tan[+], A. Sharma, S. Sarkar, "*Robust Deep Reinforcement Learning for Traffic Signal Control*", **Journal of Big Data Analytics in Transportation**, December 2020, DOI: https://doi.org/10.1007/s42421-020-00029-6.

10. Z. Jiang[+], C. Liu[+], B. Ganapathysubramanian, D. J. Hayes, <u>S. Sarkar</u>, "*Predicting county-scale maize yields with publicly available data*", **Scientific Reports**, September 2020, DOI:https://doi.org/10.1038/s41598-020-71898-8.

11. A. Singh, S. Jones[+], B. Ganapathysubramanian, S. Sarkar, D. Mueller, K. Sandhu[+], K. Nagasubramanian[+], "*Challenges and Opportunities in Machine-Augmented Plan Stress Phenotyping*", **Trends in Plan Science** - Cell Press, August 2020, DOI:https://doi.org/10.1016/j.tplants.2020.07.010.

12. S. V. Mirnezami[+], T. Young[+], T. Assefa[+], S. Prichard, K.Nagasubramanian[+], K. Sandhu[+], S. Sarkar, S. Sundararajan, M. E. O'Neal, B. Ganaphathysubramanian, A. Singh, "*Automated trichome counting in soybean using advanced image-processing techniques*", **Applications in Plant Sciences**, 8(7), e11375, 2020.

13. X.Y. Lee[+], S. Saha, S. Sarkar, B. Giera, "*Companion Journal: Two Photon lithography additive manufacturing: Video dataset of parameter sweep of light dosages, photo-curable resins, and structures*", **Data in Brief**, August 2020, 106119.

14. X.Y. Lee[+], S. Saha, S. Sarkar, B. Giera, "*Automated detection of part quality during two-photon lithography via deep learning*", **Additive Manufacturing**, Volume 36, December 2020, 101444.

15. Kevin G. Falk[+], Talukder Zaki Jubery[+], Jamie A. O'Rourke[+], Arti Singh, Soumik Sarkar, Baskar Ganapathysubramanian, Asheesh K. Singh, *Soybean root system architecture traits study through genotypic, phenotypic and shape-based clusters*, **Plant Phenomics**, 2020.

16. Z. Jiang, V. Chinde, A. Kohl[+], A. G. Kelkar, and S. Sarkar. *Supervisory Control and Distributed Optimization of Building Energy Systems*, in **ASME journal of Dynamics, Systems and Control**, 2020.

17. H. Saha[+], C. Liu, Z. Jiang, and S. Sarkar. *Data-driven performance monitoring of dynamical systems using Granger causal graphical models*, in **ASME journal of Dynamics, Systems and Control**, 2020.

18. Kevin G. Falk[+], Talukder Z. Jubery[+], Seyed V. Mirnezami[+], Kyle A. Parmley[+], Soumik Sarkar, Arti Singh, Baskar Ganapathysubramanian, and Asheesh K. Singh. *Computer vision and machine learning enabled soybean root phenotyping pipeline*. **Plant Methods**, 16, 5 (2020) doi:10.1186/s13007-019-0550-5.

19. Aditya Balu[+], Sahiti Nallagonda[+], Fei Xu[+], Adarsh Krishnamurthy, Ming-Chen Hsu, and Soumik Sarkar. *A deep learning framework for diagnostics and patient-specific design of bioprosthetic heart valves*. **Scientific Reports**, 9, 18560 (2019) doi:10.1038/s41598-019-54707-9

20. Kyle Parmley[+], Race Higgins[+], Baskar Ganapathysubramanian, Soumik Sarkar, and Asheesh Singh, *Machine Learning Approach for Prescriptive Plant Breeding*, **Scientific Reports**, 9, 17132 (2019) doi:10.1038/s41598-019-53451-4

21. B. S. S. Pokuri[+], S. Ghosal[+], A. Kokate[+], S. Sarkar, B. Ganapathysubramanian, "*Interpretable deep learning for guided microstructure-property explorations in photovoltaics*", **Nature (npj) Computational Materials** 5, 95 (2019) doi:10.1038/s41524-019-0231-y

22. X. Y. Lee[+], A. Balu[+], D. Stoecklein, B. Ganapathysubramanian, S. Sarkar, "*A Case Study of Deep Reinforcement Learning for Engineering Design: Application to Microfluidic Devices for Flow Sculpting*", **ASME Journal of Mechanical Design – Special Issue: Machine Learning for Engineering Design**), 2019.

23. K. Parmley[+], K. Nagasubramanian[+], S. Sarkar, B. Ganapathysubramanian, A. K. Singh, "*Development of Optimized Phenomic Predictors for Efficient Plant Breeding Decisions using Phenomics Assisted Selection in Soybean Plant Phenomics*", **Plant Phenomics (a Science Partner Journal)**, 2019.

24. K. Nagasubramanian[+], S. Jones[+], A. K. Singh, S. Sarkar, A. Singh, B. Ganapathysubramanian, "*Plant disease identification using explainable 3D deep learning on hyperspectral images*", **Plant Methods**, 2019.

25. S. Ghosal[+], B. Zheng, S. C. Chapman, A. B. Potgieter, D. R. Jordan, X. Wang, A. K. Singh, A. Singh, M. Hirafuji, S. Ninomiya, B. Ganapathysubramanian, S. Sarkar, W. Guo, "*A weakly supervised deep learning framework for sorghum head detection and counting*", **Plant Phenomics (a Science Partner Journal)**, 2019.

26. C. Liu[+], M. Zhao, A. Sharma, S. Sarkar, "*Traffic Dynamics Exploration and Incident Detection Using Spatiotemporal Graphical Modeling*", **Journal of Big Data Analytics in Transportation**, Volumes 1, Number 1, Pages 37-55, 2019.

27. H.Saha[+], A.R.Florita , G.P.Henze, <u>S.Sarkar</u>, "*Occupancy sensing in buildings: A review of data analytics approaches*", **Energy and Buildings**, Volumes 188–189, Pages 278-285, 2019.

28. T. Han, C. Liu, L. Wu[+], S. Sarkar, D. Jiang, "*An adaptive spatiotemporal feature learning approach for fault diagnosis in complex systems*", **Mechanical Systems and Signal Processing**, Volume 117, Pages 170-187, 2019.

29. T. Gao[+], H. Emadi[+], H. Saha[+], J. Zhang[+], A. Lofquist[+], A. Singh, B. Ganapathysubramanian, S. Sarkar, A. Singh, and S. Bhattacharya. "*A Novel Multirobot System for Plant Phenotyping*" **Robotics** 7, no. 4 (2018): 61.

30. K. Nagasubramanian[+], S. Jones[+], S. Sarkar, A. K. Singh, A. Singh, B. Ganapathysubramanian, "*Hyperspectral band selection using genetic algorithm and support vector machines for early identification of charcoal rot disease in soybean stems*", **Plant Methods**, 14:86, 2018.

31. A. Ott, J. C. Schnable, C. Yeh, L. Wu[+], C. Liu[+], H. Hu, C. L. Dalgard, S. Sarkar and P. S. Schnable, "*Linked read technology for assembling large complex and polyploid genomes*", **BMC Genomics** 19, no. 1 (2018): 651

32. A. K. Singh, B. Ganapathysubramanian, <u>S. Sarkar</u>, and A. Singh. "*Deep Learning for Plant Stress Phenotyping: Trends and Future Perspectives*" **Trends in Plant Science**, 2018.

33. A. Akintayo[+], G. Tylka, A. K. Singh, B. Ganapathysubramanian, A. Singh and <u>S. Sarkar</u>, "*A deep learning framework to discern and count microscopic nematode eggs*", **Scientific Reports,** Article Number: 9145, 2018**.**

34. L. Wu[+], C. Liu[+], T. Huang[+], A. Sharma, <u>S. Sarkar</u>, "*Traffic sensor health monitoring using spatiotemporal graphical modeling*", **International Journal of Prognostics and Health Management**, Vol 9, 2018.

35. A. Akintayo[+] and <u>S. Sarkar</u>, "*Hierarchical symbolic dynamic filtering of streaming non-stationary time series data*", **Signal Processing**, Vol 151, pages 76-88, 2018.

36. S. Ghosal[+], D. Blystone[+], A. K. Singh, B. Ganapathysubramanian, A. Singh and <u>S. Sarkar</u>, "*An explainable deep machine vision framework for plant stress phenotyping*", **Proceedings of the National Academy of Sciences (PNAS)**, Vol 115, No 18, pages 4613-4618, 2018.

37. S. Ghadai[+], A. Balu[+], S. Sarkar, A. Krishnamurthy, "*Learning localized features in 3D CAD models for manufacturability analysis of drilled holes*", **Computer Aided Geometric Design**, Vol 62, pages 263-275, 2018.

38. P. Chakraborty[+], Y. A. Gyamfi, S. Poddar[+], V. Ahsani[+], A. Sharma and <u>S. Sarkar</u>, "*Traffic congestion detection from camera images using deep convolutional neural networks*", **Transportation Research Record (TRR): Journal of the Transportation Research Board**, No. 18-04687, 2018.

39. T. Huang[+], C. Liu[+], A. Sharma, <u>S. Sarkar</u>, "*Traffic system anomaly detection using spatiotemporal pattern networks*", **International Journal of Prognostics and Health Management**, Vol 9, pages: 12, 2018.

40. C. Liu[+], A. Akintayo[+], Z. Jiang[+], G.P. Henze, <u>S. Sarkar</u>, "*Multivariate exploration of non-intrusive load monitoring via spatiotemporal pattern network*", **Applied Energy**, Vol 211, pages 1106-1122, 2018.

41. K. G. Lore[+], D. Stoecklein[+], M. Davies[+], B. Ganapathysubramanian and <u>S. Sarkar</u>, "*A deep learning framework for causal shape transformation*", **Neural Networks**, Vol 98, pages 305-317, 2018.

42. Z. Jiang[+], K. Mukherjee, <u>S. Sarkar</u>, "*Generalized gossip-based subgradient method for distributed optimization*", **International Journal of Control**, pages 1-17, November 2017.

43. C. Liu[+], S. Ghosal[+], Z. Jiang[+] and <u>S. Sarkar</u>, "*An unsupervised anomaly detection approach using energy-based spatiotemporal graphical modeling*", **Cyber-Physical Systems**, Vol 3, Issues 1-4, 2017.

44. H. Naik[+], J. Zhang[+], T. Assefa[+], A.Lofquist[+], S. Sarkar, D. Ackerman[+], A. Singh, A. K. Singh, B. Ganapathysubramanian, "*A real-time phenotyping framework using machine learning for plant stress severity rating in soybean*", **Plant Methods**, Vol 13, 2017.

45. J. Zhang[+], H. Naik[+], T. Assefa[+], S. Sarkar, R. V. Chowda Reddy[+], A. Singh, B. Ganapathysubramanian, and A. Singh, "*Computer vision and machine learning for robust phenotyping in genome-wide studies*", **Scientific Reports**, Article Number: 44048, 2017.

46. Z. Jiang[+], C. Liu[+], A. Akintayo[+], G. Henze, <u>S. Sarkar</u>, "*Energy prediction using spatiotemporal pattern networks*", **Applied Energy**, Vol 206, pages 1022-1039, 2017.

47. V. Chinde[+], K. Krishna[+], A. Kelkar, R. Pasumarthy, S. Sarkar, N.M. Singh, "*A passivity based power shaping control of building HVAC systems*", **Journal of Dynamic Systems, Measurement and Control**, Vol 139, Issue 11, 2017.

48. D. Stoecklein[+], K. G. Lore[+], M. Davies[+], B. Ganapathysubramanian and <u>S. Sarkar</u>, "*Deep learning for flow sculpting: insights into efficient learning using scientific simulation data*", **Scientific Reports**, Article number: 46368, 2017.

49. T.Jubery[+], J. Shook[+], K.Parmley[+], J. Zhang[+], H. Naik[+], R. Higgins[+], S. Sarkar, A. Singh, A. K. Singh, B. Ganapathysubramanian, "*Deploying Fourier coefficients to unravel soybean canopy diversity*", **Frontiers in Plant Science**, Vol 7, 2017.

50. C. Liu[+], Y. Gong[+], S. Laflamme, B. Phares, <u>S. Sarkar</u>. "*Bridge damage detection using spatiotemporal patterns extracted from dense sensor network*", **Measurement Science and Technology (Special Feature on Dense Sensor Networks for Mesoscale SHM)**, Vol 61, No. 1, 2017.

51. K. G. Lore[+], A. Akintayo[+], and <u>S. Sarkar</u>, "*LLNet: a deep autoencoder approach to natural low-light image enhancement*", **Pattern Recognition**, Vol 61, pages 650-662, 2017.

52. <u>S. Sarkar</u>, V. Venugopalan, K. Reddy, J. Rayde, M. Giering and N. Jaitly, "*Deep learning for automated occlusion edge detection in RGB-D frames*", **Journal of Signal Processing Systems (Special Issue on Dynamic Data-driven Application Systems (DDDAS))**, Vol 88, Issue 2, pages 205-217, 2017.

53. A. Akintayo[+], K. G. Lore[+], S. Sarkar, <u>S. Sarkar</u>. "*Prognostics of combustion instabilities from hi-speed flame video using a deep convolutional selective autoencoder*", **International Journal of Prognostics and Health Management (Special Issue on Big Data and Analytics)**, Vol 7, 2016.

54. <u>S. Sarkar</u> and A. Srivastav, "*A composite discretization scheme for symbolic identification of complex systems*", **Signal Processing**, Vol 125, pages 156-170, 2016.

55. A. Singh, B. Ganapathysubramanian, A. K. Singh and S. Sarkar, "*Machine learning for high-throughput stress phenotyping in plants*", **Trends in Plant Sciences (TIPS)**, Vol 21, Issue 2, p110-124, 2016.

56. K. G. Lore[+], D. Stoecklein[+], M. Davies[+], B. Ganapathysubramanian and <u>S. Sarkar</u>, "*Hierarchical feature extraction for efficient design of microfluidic flow patterns*", **Journal of Machine Learning Research**, NIPS 2015 workshop on Feature Extraction: Modern Questions and Challenges, pages 213-225, 2015.

57. D. K. Jha[+], P. Chattopadhyay[+], <u>S. Sarkar</u> and A. Ray, "*Path planning in GPS-denied environments via collective intelligence of distributed sensor networks*", **International Journal of Control**, Vol 89, No. 5, pages 984-999, 2015.

58. S. Bengea, P. Li, S. Sarkar, S. Vichik, V. Adetola, K. Kang, F. Leonardi, T. Lovett, A. Kelman, "*Fault-Tolerant optimal control of a building heating, ventilation and air conditioning system*", **ASHRAE Journal of Science and Technology for the Built Environment (formerly HVAC&R Research)**, Vol 21, No. 6, pages 734-751, 2015.

59. S. Sarkar and K. Mukherjee, "*Event-triggered decision propagation in proximity networks*", Invited paper for the Inaugural issue of **Frontiers in Robotics and AI: Sensor Fusion and Machine Perception**, Vol 1, 2014.

60. S. Sarkar, <u>S. Sarkar</u>, N. Virani, A. Ray, M. Yasar, "*Sensor fusion for fault detection & classification in distributed physical processes*", Invited paper for the Inaugural issue of *Frontiers in* **Robotics and AI: Sensor Fusion and Machine Perception**, Vol 1, 2014.

Prior to ISU appointment

61. S. Sarkar, S. Sarkar, K. Mukherjee, A. Ray, and A. Srivastav, "*Multi-sensor information fusion for fault detection in aircraft gas turbine engines*", **Proceedings of the I Mech E Part G: Journal of Aerospace Engineering**, Vol 227, No. 12, pages 1988-2001, 2013.

62. A. Ray, S. Phoha, and S. Sarkar, "*Behavior prediction for decision & control in cognitive autonomous systems*", **New Mathematics and Natural Computation: Special**

Issue on Engineering of the Mind, Cognitive Science and Robotics, Vol 9, No. 3, pages 1-9, 2013.

63. S. Sarkar, K. Mukherjee, S. Sarkar, and A. Ray, "*Symbolic dynamic analysis of transient time series for fault detection in gas turbine engines*", **Journal of Dynamic Systems, Measurement, and Control, Transactions of the ASME**, Vol 135, Issue 1, pages 14506 (6 pages), 2013.

64. S. Sarkar#, K. Mukherjee, and A. Ray, "*Distributed decision propagation in proximity networks*", **International Journal of Control**, Vol. 86, No. 6, pages 1118-1130, 2013.

65. S. Sarkar#, K. Mukherjee, A. Ray, A. Srivastav, and T. Wettergren, "*Equilibrium thermodynamics for heterogeneous packet transmission in communication networks*", *IEEE* **Transactions on Systems, Man, and Cybernetics, Part B**, Vol 42, No. 4, pages 1083-1093, 2012.

66. S. Sarkar#, K. Mukherjee, X. Jin, and A. Ray, "*Optimization of symbolic feature extraction for pattern classification*", **Signal Processing**, Vol 92, No. 3, pages 625-635, 2012.

67. S. Chakraborty, S. Sarkar#, and A. Ray, "*Symbolic identification for fault detection in aircraft gas turbine engines*", **Proceedings of the I Mech E Part G: Journal of Aerospace Engineering**, Vol 226, No. 4, pages 422-436, 2012.

68. S. Sarkar#, X. Jin, and A. Ray, "*Data-driven fault detection in aircraft engines with noisy sensor measurements*", **Journal of Engineering for Gas Turbines and Power**, Vol 133, No. 8, pages 081602 (10 pages), 2011.

69. X. Jin, Y. Guo, S. Sarkar#, A. Ray, and R.M. Edwards, "*Anomaly detection in nuclear power plants via symbolic dynamic filtering*", **IEEE Transactions on Nuclear Science**, Vol 58, No.1, pages 277-288, 2011.

70. S. Sarkar#, C. Rao and A. Ray, "*Statistical estimation of multiple faults in aircraft gas turbine engines*", **Proceedings of the I Mech E Part G: Journal of Aerospace Engineering**, Vol 223, No.4, pages 415-424, 2009.

71. S. Sarkar#, K. Mukherjee and A. Ray, "*Generalization of Hilbert transform for symbolic analysis of noisy signals*", **Signal Processing**, Vol 89, Issue 6, pages 1245-1251, 2009.

72. C. Rao, K. Mukherjee, S. Sarkar# and A. Ray, "*Statistical estimation of multiple parameters via symbolic dynamic filtering*", **Signal Processing**, in Vol 89, Issue 6, pages 981-988, 2009.

73. C. Rao, A. Ray, S. Sarkar# and M. Yasar, "*Review and comparative evaluation of symbolic dynamic filtering for detection of anomaly patterns*", **Signal, Image, and Video Processing**, Vol 3, Issue 2, pages 101-114, 2009.

74. S. Chakraborty, S. Sarkar#, S. Gupta and A. Ray, "*Damage monitoring of refractory wall in a generic entrained-bed slagging gasification system*", **Proceedings of the I Mech E Part A: Journal of Power and Energy**, Vol 222, No. 8, pages 791-807, 2008.

75. S. Sarkar#, M. Yasar, S. Gupta, A. Ray and K. Mukherjee, "*Fault detection and isolation in aircraft gas turbine engines: part II validation on a simulation test bed*", **Proceedings of the I Mech E Part G: Journal of Aerospace Engineering**, Vol 222, No. 3, pages 319-330, 2008.

76. S. Gupta, A. Ray, S. Sarkar# and M. Yasar, "*Fault detection and isolation in aircraft gas turbine engines: part I underlying concept*", **Proceedings of the I Mech E Part G: Journal of Aerospace Engineering**, Vol 222, No. 3, pages 307-318, 2008.

2. Articles in Peer-Reviewed Journals – In Review

3. Peer-Reviewed Conference Proceedings, Bulletins, or Reports – In Print/Accepted

During ISU appointment

1. J. Rade[+], S. Sarkar, A. Krishnamurthy, J. Ren, A. Sarkar, "*AI Guided Measurement of Live Cells Using AFM*", **Modeling, Estimation and Control Conference (MECC)**, (Austin, TX), October 24-27, 2021.

2. S. Ghadai[+], X. Y. Lee[+], A. Balu[+], S. Sarkar, A. Krishnamurthy, "*Multi-resolution 3D CNN for Learning Multi-scale Spatial Features in CAD Models*", **SIAM Conference on Geometric and Physical Modeling (GD/SPM21)**, Virtual, Sept 27-29, 2021.

3. Y. Esfandiari[+], S. Y. Tan[+], Z. Jiang, A. Balu[+], E.D. Herron[+], C. Hegde, S. Sarkar, "*Cross-Gradient Aggregation for Decentralized Learning from Non-IID data*", **International Conference on Machine Learning (ICML)**, Virtual, July 18-24, 2021.

4. A. Saffari[+], S. Y. Tan[+], M. Katanbaf[+], H. Saha[+], J. Smith, S. Sarkar, "*Battery-Free Camera Occupancy Detection System*", **5th International Workshop on Embedded and Mobile Deep Learning (EMDL)**, Virtual, June 24-25, 2021.

5. A. Balu[+], Z. Jiang, SY. Tan[+], C. Hedge, Y. M. Lee, S. Sarkar, "*Decentralized Deep Learning Using Momentum-Accelerated Consensus*", **IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)**, (Toronto, Canada), June 6-11, 2021.

6. T. Gangopadhyay[+], S. Y. Tan[+], Z. Jiang, R. Meng, S. Sarkar, "Spatiotemporal Attention for Multivariate Time Series Prediction and Interpretation", **IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)**, (Toronto, Canada), June 6-11, 2021.

7. X.Y. Lee[+], Y. Esfandiari[+], K.L. Tan[+], S. Sarkar, "*Query-based Targeted Action-Space Adversarial Policies on Deep Reinforcement Learning Agents*", **International Conference on Cyber-Physical Systems (ICCPS)**, (Nashville, TN), May 19-21, 2021.

8. A. Sarkar, J. Waite[+], S. Sarkar, "*Deep learning for fast Atomic Force Microscopy data analytics*", **65th Biophysical Society Annual Meeting**, Virtual, Feb 22-26, 2021.

9. T. Gangopadhyay[+], J. Shook[+], A. K. Singh, S. Sarkar, "*Interpreting the Impact of Weather on Crop Yield Using Attention*", **Workshop on AI for Earth Sciences, Neural Information Processing Systems (NeurIPS)**, Virtual, December 6-12, 2020.

10. Y. Esfandiari[+], S.Y. Tan[+], Z. Jiang, A. Balu[+], C. Hegde, <u>S. Sarkar</u>, "*Local Gradient Aggregation for Decentralized Learning from Non-IID data*", **Optimization for Machine Learning Workshop, Neural Information Processing Systems (NeurIPS)**, Virtual, December 6-12, 2020.

11. M. Cho[+], A. Joshi[+], X.Y. Lee[+], A. Balu[+], B. Ganapathysubramanian, S. Sarkar, C. Hegde, "*Differentiable Programming for Piecewise Polynomial Functions*", **Learning Meets Combinatorial Algorithms Workshop, Neural Information Processing Systems (NeurIPS)**, Virtual, December 6-12, 2020.

12. Z. Jiang, X.Y. Lee[+], S.Y Tan[+], A. Balu[+], Y.M. Lee, C. Hegde, <u>S. Sarkar</u>, "*Adaptive Gradient Tracking In Stochastic Optimization*", **Optimization for Machine Learning Workshop, Neural Information Processing Systems (NeurIPS)**, Virtual, December 6-12, 2020.

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106. 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.

107. 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.

108. 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.

109. 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.

110.   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.

111.   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.

112.   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.

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

During ISU appointment

1. A. K. Singh, A. Singh, S. Sarkar, B. Ganapathysubramainan 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.

2. T. Gangopadhyay[+], S. Y. Tan[+], Z. Jiang[+], <u>S. Sarkar</u>, "*Interpretable Deep Attention Model for Multivariate Time Series Prediction in Building Energy Systems*", **Dynamic Data Driven Application Systems**, **Springer**, 2020.

3. T. Gangopadhyay[+], A. Locurto[+], J. B. Michael, <u>S. Sarkar</u>, "*Deep Learning Algorithms for Detecting Combustion Instabilities*", **Dynamics and Control of Energy Systems, Springer**, 2020.

4. A. Balu[+], S. Ghadai[+], G. Young[+], S. Sarkar, A. Krishnamurthy, "*A Machine Learning Framework for Decision Support in Design and Manufacturing*", **ASME press**, 2019.

5. K. G. Lore[+], D. Stoecklein[+], M. Davies[+], B. Ganapathysubramanian and <u>S. Sarkar</u>, "*Deep learning for engineering big data analytics*", **Big Data Analytics: From Planning to Performance, CRC Press**, **Taylor & Francis Group**, USA 2017.

6. <u>S. Sarkar</u>, 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

7. 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.

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.

5. Formally Invited Seminars and Presentations

- *37 invited talks (34 after joining ISU) at various universities, companies and government labs.*

During ISU appointment

1. *A cyber physical systems approach to agricultural sustainability*, **Japanese Society of Agricultural Informatics (JSAI) Annual Conference**, May 2021.

2. *A hands-on introduction to Deep Learning*, **Midwest Big Data Summer School**, Ames, IA, May 2021.

3. *Physics-aware Machine Learning for Inverse Design*, **Honeywell**, May 2021.

4. *Next Big Research Challenges in CPS,* **NSF Invited Workshop**, April 2021.

5. *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.

6. *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.

7. *Machine Learning for Cyber-Physical Systems*, **Pennsylvania State University**, University Park, PA, October 2019.

8. *Artificial Intelligence and Machine Learning for Engineering Design and Simulations*, **ISU CoMFRE Annual Meeting**, Ames, IA, October 2019.

9. *Deep Learning for Engineering Design and Simulations*, **Michigan Technological University**, Houghton, MI, October 2019.

10. *Deep Learning in digital agriculture: From microscopy to canopy*, **Corteva Agriscience**, Johnston, IA, June 2019.

11. *Nuts and Bolts of Deep Learning*, **Midwest Big Data Summer School**, Ames, IA, May 2019.

12. *Deep Learning for Combustion Instability Diagnostics*, **17th International Conference on Numerical Combustion,** Aachen, Germany, May 2019.

13. *Deep Learning for Cyber-Agricultural Analytics*, **JST/NSF Big Data areas Joint PI Meeting**, Kyoto, Japan, March 2019.

14. *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.

15. *Deep learning in cyber-enabled design and manufacturing*, **Georgia Institute of Technology**, Atlanta, GA, October 2018.

16. *Robustifying Deep Reinforcement Learning agents under adversarial attacks*, **Honeywell**, Minneapolis, MN, September 2018.

17. *Probabilistic Graphical Modeling for Building Energy Disaggregation*, **Intelligent Buildings Operations workshop, Purdue University**, West Lafayette, IN, July 2018.

18. *Machine Learning Approaches for Building Analytics*, **Intelligent Buildings Operations workshop, Purdue University**, West Lafayette, IN, July 2018.

19. *Engineering analytics with machine learning: Roles of supervised, semi-supervised and unsupervised models*, **Tsinghua University**, Beijing, China, July 2018.

20. *Engineering analytics with deep learning: a few success stories*, **NVIDIA Corporate Headquarters**, Santa Clara, CA, February 2018.

21. *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.

22. *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.

23. *Applied deep learning*, **Midwest Big Data Summer School**, Ames, IA, July 2017.

24. *Spatiotemporal graphical modeling for complex energy systems*, **National Renewable Energy Laboratory (NREL)**, Golden, CO, April 2017.

25. *Spatiotemporal graphical modeling for complex cyber-physical systems*, **Department of Statistics, Iowa State University**, Ames, IA, February 2017.

26. *Engineering analytics with deep learning*, **ExxonMobil Research and Engineering**, Annandale, NJ, December 2016.

27. *A deep autoencoder approach to natural low-light image enhancement*, **Rockwell Collins Inc.**, Cedar Rapids, IA, May 2016.

28. *Spatiotemporal graphical modeling for complex cyber-physical systems*, **University of Colorado Boulder**, CO, March 2016.

29. *Solving hard engineering problems with deep learning*, **Department of Mechanical Engineering, Washington State University**, WA, March 2016.

30. *Machine learning for plant phenotypic decision-making*, **Phenotype Prediction: Image Acquisition and Analysis**, Ames, IA, February 2016.

31. *Solving hard engineering problems with deep learning*, **Department of Computer Science, Iowa State University**, Ames, IA, September 2015.

32. *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.

33. *Unsupervised aspects in autonomous perception & decision-making*, **US Army Research Laboratory**, Adelphi, MD, February 2015.

34. *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

35. *Autonomous perception and decision-making in complex cyber-physical systems*, **Department of Mechanical Engineering, Missouri University of Science & Technology**, Rolla, MO, January 2013.

36. *Health monitoring of human-engineered complex systems: A cyber-physical approach*, **Indian Institute of Science**, Bangalore, India, June 2011.

37. *Autonomous perception and decision-making in complex cyber-physical systems*, **United Technologies Research Center**, East Hartford, CT, April 2011.

6. 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.

7. Other Scholarly Contributions

1. <u>S. Sarkar</u>, 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. S. Bengea, 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*, **US Patent Application** Serial No. 62/078,735, filed November 12, 2014, and International Application Docket No. PA-0022699-US.

2. S. Chakraborty, S. Sarkar, S. Gupta, and A. Ray, *Method and system for monitoring refractory walls in slagging gasification systems*, PSU Invention Disclosure No. 2009-3597, **U.S. Patent Application** Serial No. 61/265,272, Publication Date: December 03, 2009.

C. Funded Grants and Contracts

- *Total 31 federal, state and industry grants (9 as PI) from a variety of sources including NSF, USDA, AFOSR, DARPA and ARPA-E*

- *Total funding of approximately $23.5M of which approximately $5M was allocated to the Sarkar research group*

Percentage of fund for my lab mentioned in parenthesis

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 customable 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 - 05/31/2021
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:	1/1/2018-12/31/2020
Total fund:	$225,000 (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 (ISU ME), Asheesh Singh (ISU Agronomy), Arti Singh (ISU Agronomy), N. Merchant (U Arizona)
Title:	FACT: A Scalable Cyber Ecosystem for Acquisition, Curation, and Analysis of multispectral UAV image data
Funding agency:	USDA-NIFA
Dates:	07/01/2019 - 06/31/2022
Total fund:	$500,000 (20%)
Role on project:	Co-PI

Grant 24:

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 – 8/31/2022
Total fund:	$1,199,678 (17%)
Role on project:	PI (ISU)

Grant 25:

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 26:

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 27:

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

Grant 28:
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 29:
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 30:
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 31:
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

D. Pending Grants and Contracts

III. TEACHING AND STUDENT MENTORING

A. Instruction for ISU

1.   Spring 2021: ME 592 – "Data Analytics and Machine Learning for Cyber-physical Systems Applications", 3 Credits, No Lab, 20 students, no TA

2.   Spring 2020: ME 421 – "System Dynamics and Control", 4 Credits, Lab, 65 students, 1 TA

3. Spring 2020: ME 160 – "Mechanical Engineering Problem Solving with Computer applications", 3 Credits, No Lab, 31 students, 0.5 Grader

4. Spring 2019: ME 592X – "Data Analytics and Machine Learning for Cyber-physical Systems Applications", 3 Credits, No Lab, 37 students, no TA

5. Spring 2019: ME 160 – "Mechanical Engineering Problem Solving with Computer Applications", 3 Credits, No Lab, 36 students, 0.2 TA and 0.3 Grader

6. Spring 2018: ME 592X – "Data Analytics and Machine Learning for Cyber-physical Systems Applications", 3 Credits, No Lab, 30 students, no TA

7. Fall 2017: ME 421 (2 sections) – "System Dynamics and Control", 4 Credits, Lab, 147 students, 4 TAs and 1 UTA

8. Spring 2017: ME 592X – "Data Analytics and Machine Learning for Cyber-physical Systems Applications", 3 Credits, No Lab, 26 students, no TA

9. Fall 2016: ME 370 – "Engineering Measurements", 3 Credits, Lab, 104 students, 1 TA and 1 Grader

10. Fall 2016: GrSt 565 – "Responsible conduct of Research", 1 Credit, No Lab, 14 students, no TA

11. Spring 2016: ME 160 – "Mechanical Engineering Problem Solving with Computer Applications", 3 Credits, No Lab, 35 students, 0.5 TA and 1 Grader

12. Fall 2015: ME 160 – "Mechanical Engineering Problem Solving with Computer Applications", 3 Credits, No Lab, 35 students, 0.5 TA and 1 Grader

13. Spring 2015: ME 421 – "System Dynamics and Control", 4 Credits, Lab, 83 students, 2.5 TAs and 1 Grader

14. 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 592X – "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 (6 PhD, 9 MS)

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.

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.

In progress

17. Koushik Nagasubramanian, PhD, (Baskar Ganapathysubramanian, co-advisor) August 2016 – July 2021, work in progress – degree expected August 2021.

18. Ethan Herron, PhD, (Adarsh Krishnamurthy, co-advisor) May 2020 – August 2024, work in progress – degree expected August 2024.

19. Tryambak Gangopadhyay, PhD, August 2017 – July 2022, work in progress – degree expected August 2022.

20. Luis G. Riera, PhD, August 2017 – July 2021, work in progress – degree expected August 2021.

21. Xian Lee, PhD, August 2017 – July 2022, work in progress – degree expected August 2022.

22. Sin Yong Tan, PhD, August 2017 – July 2022, work in progress – degree expected August 2022.

23. Kai Liang Tan, PhD, January 2018 – December 2022, work in progress – degree expected December 2022.

24. Joshua Waite, PhD, January 2020 – December 2024, work in progress – degree expected December 2024.

25. Fateme Fotouhi, PhD, August 2019 – July 2023, work in progress – degree expected August 2023.

26. Souradeep Chattopadhyay, PhD, January 2021– December 2024, work in progress – degree expected December 2024.

27. Yasaman Esfandiari, PhD, Fall 2018– May 2021, work in progress – degree expected May 2021.

28. Jesse Lane, PhD, August 2020 – May 2023, work in progress – degree expected May 2023.

29. Qisai Liu, MS, August 2020 – May 2022, work in progress – degree expected May 2022.

D. Service on Graduate Student Committees

1. Hamid Emadi, (degree expected in 2018) 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, (degree expected in 2021), 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. Nathan Scheirer, (degree expected in 2020), PhD, Aero, committee member (Major professor: Stephen Holland)

27. Kyle Parmley, (2018), PhD, Agronomy, committee member (Major professor: Asheesh Singh)

28. Lakshay Ahuja, (2018), MS, CS, committee member (Major professor: Anuj Sharma)

29. Shruti Sahu, (2018), MS, CS, committee member (Major professor: Baskar Ganapathysubramanian)

30. Gulnihal Kucuksayacigil, (2018), PhD, EE, committee member (Major professor: Nicola Elia)

31. Himanshu Sharma, (2019), PhD, ME, committee member (Major professor: Baskar Ganapathysubramanian)

32. Onur Bingol, (2019), PhD, ME, committee member (Major professor: Adarsh Krishnamurthy)

33. Tianshuang Gao, (degree expected in 2020), PhD, ME, committee member (Major professor: Sourabh Bhattacharya)

34. Xin Huang, (2018), MS, ME, committee member (Major professor: Adarsh Krishnamurthy)

35. Holly Baiotto, (degree expected in 2020), MS, ME, committee member (Major professor: Eliot Winer)

36. Varsha Mouli, (degree expected in 2020), MS, CS, committee member (Major professor: Anuj Sharma)

37. Tongge Huang (degree expected in 2021), PhD, CE, committee member (Major professor: Anuj Sharma)

38. Yi Liu (degree expected in 2021), PhD, ME, committee member (Major professor: Juan Ren)

39. Soumyabrata Talukder (degree expected in 2022), PhD, EE, committee member (Major professor: Ratnesh Kumar)

40. Sangeeth Balakrishnan (2019), MS, ME, committee member (Major professor: Baskar Ganapathysubramanian)

41. Jonathan Shook (degree expected in 2020), PhD, Plant Breeding, committee member (Major professor: Asheesh Singh)

42. Clayton Carley (degree expected in 2021), PhD, Plant Breeding, committee member (Major professor: Asheesh Singhtha)

43. Keivan Ebrahimi (2019), PhD, EE, committee member (Major professor: Umesh Vaidya)

44. Vesal Ahsani (2019), PhD, CE, committee member (Major professor: Anuj Sharma)

45. Thanh Nguyen (degree expected in 2020), PhD, EE, committee member (Major professor: Chinmay Hegde)

46. Saeed Arabi (degree expected in 2020), PhD, CE, committee member (Major professor: Anuj Sharma)

47. Rahul Singh (2019), MS, CS, committee member (Major professor: Samik Basu)

48. Adam Kohl (degree expected in 2022), PhD, ME, committee member (Major professor: Eliot Winer)

49. Anthony Locurto (degree expected in 2022), PhD, ME, committee member (Major professor: James Michael)

50. Archana Venkatachalapathy (2019), MS, CE, committee member (Major professor: Anuj Sharma)

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.

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 Heylmun, 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, VOLLTTRON 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 2018, Combustion diagnostics (Undergraduate 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 – now, Cyber-Physical Systems (Undergraduate 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)

IV. INSTITUTIONAL SERVICE

A. University-Level Service

1. Founder and Director of Center for Translational AI Research and Education (July 2021 -)

2. 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 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)

V. 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

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 AI Institute Program review panelist (2021)

2. NSF Cyber Physical Systems Program review panelist (2020)

3. NSF CIVIC Program review panelist (2020)

4. NSF Cyber Physical Systems Program ad-hoc reviewer (2019)

5. NSF Cyber Physical Systems Program review panelist (2018)

6. Austrian Science Fund Wittgenstein Award review panelist (2018)

7. NSF Cyber Physical Systems Program review panelist (2017)

8. DOE Building Technology Office (BTO) BENEFIT Program review panelist (2017)

9. 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

VI. OUTREACH, COMMUNITY ENGAGEMENT AND OTHER ACTIVITIES

A. Outreach Activities

1. Organizer of the workshop Second International workshop on Machine learning in Cyber-agriculture systems, MLCAS II, Ames, IA, September, 2019.

2. Organizer, CPS-Ag workshop at NSF CPS PI meeting 2018

3. 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

4. Program committee member, Smart Farming workshop at CPS-Week 2018

5. Organizer of the workshop (Machine Learning for Prognostics and Health Management), ACM SIGKDD 2017 Conference on Knowledge Discovery & Data Mining, August 2017

6. Organizer of the workshop (Machine Learning for Prognostics and Health Management), ACM SIGKDD 2016 Conference on Knowledge Discovery & Data Mining, August 2016

7. Organizer of the workshop (Collaborative Sensing, Learning, and Control in Human-Machine Systems), American Control Conference, July 2016

8. Organizer and Invited session chair (Nonlinear Time-series Analysis for Intelligent Decision-making), American Control Conference, July 2015

9. 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