

Akash Deep

CONTACT INFORMATION	333 Engineering North Stillwater, OK, 74078	Email: akash.deep@okstate.edu Website: adeep.xyz
ACADEMIC APPOINTMENTS	Oklahoma State University , Stillwater, OK, USA <i>Assistant Professor, School of Industrial Engineering and Management</i>	Fall 2022 - present
EDUCATION	University of Wisconsin-Madison , Madison, WI, USA Doctor of Philosophy, Industrial Engineering <i>Advisors (jointly): Prof. Raj Veeramani & Prof. Shiyu Zhou</i> <i>Dissertation: Data-driven Modeling, Prognosis and Control of Discrete Events in Smart and Connected Systems</i>	2017-2022
	University of Wisconsin-Madison , Madison, WI, USA Masters of Science, Department of Statistics	2019-2020
	Indian Institute of Technology Roorkee , Roorkee, India Bachelor of Technology, Department of Mechanical and Industrial Engineering Major: <i>Production and Industrial Engineering</i> Minor: <i>Computer Science and Engineering</i>	2013-2017
RESEARCH INTERESTS	<ul style="list-style-type: none">• A.I./Data Science for IoT-enabled smart and connected systems• Reliability modeling and optimization for complex engineering systems• Stochastic modeling and closed-loop control• Data-driven experimentation	
RESEARCH GRANTS	<ul style="list-style-type: none">• <i>Jewelers Mutual Insurance Company</i> via UW-Madison PI at OSU: Akash Deep “Research on Data Science and Machine Learning for Business Process Improvement and Automation” Budget: \$10,000	Sep. 2022 - Aug. 2023
JOURNALS	<ol style="list-style-type: none">1. Deep, A., Zhou S., Veeramani D. and Chen Y. (2023) “POMDP-based optimal maintenance planning with time-dependent observations”, <i>European Journal of Operational Research</i> [Just Accepted]2. Deep, A., Zhou S. and Veeramani D. (2022) “HMM-based Joint Modeling of Condition Monitoring Signals and Failure Event Data for Prognosis of Remaining Useful Life”, <i>IEEE Transactions on Reliability</i> DOI: 10.1109/TR.2022.31933533. Sun J., Deep, A., Zhou S. and Veeramani D. (2022) “Industrial System Working Condition Identification using Operation-adjusted Hidden Markov Model”, <i>Journal of Intelligent Manufacturing</i> DOI: 10.1007/s10845-022-01942-z4. Deep, A., Zhou S. and Veeramani D. (2021) “A Data Driven Recurrent Event Model for System Degradation with Imperfect Maintenance Actions”, <i>IISE Transactions</i> DOI:10.1080/24725854.2021.18716875. Deep, A., Zhou S., Veeramani D., Wedge S. and Hardin C. (2021) “Outlier Detection and Online Monitoring of Event Sequences Arising in Customer Service Process with Unknown Event-types”, <i>Quality Engineering</i> DOI:10.1080/08982112.2021.19466966. Bharadwaj A., Deep, A., Veeramani D. and Zhou S. (2021) “A Custom Word Embedding Model for Clustering of Maintenance Records”, <i>IEEE Transactions on Industrial Informatics</i> DOI:10.1109/TII.2021.30795217. Huang, C., Deep, A., Zhou S. and Veeramani D. (2021) “A Deep Learning Approach for Predicting Critical Events using Event Logs”, <i>Quality and Reliability Engineering International</i> DOI:10.1002/qre.2853	

8. **Deep, A.**, Zhou S. and Veeramani D. (2020) “Copula-based Multi-event Modeling and Prediction using Fleet Service Records”, *IISE Transactions*
DOI:10.1080/24725854.2020.1802792
9. **Deep, A.**, Veeramani D. and Zhou S. (2019) “Event Prediction for Individual Unit Based on Recurrent Event Data Collected in Teleservice Systems”. *IEEE Transactions on Reliability*.
DOI:10.1109/TR.2019.2909471.
10. **Deep, A.**, Sharma, Y. and Anbanandam, R. (2017) “Quality Assessment of Academic Websites using Structured Equation Modelling”. *International J. of Management in Education* .
DOI:10.1504/IJMIE.2017.083357.
11. **Deep A.**, Meena, C.S. and Das, A.K. (2017) “Interaction of Asymmetric Films Around Boiling Cylinder Array: Homogeneous Interface to Chaotic Phenomenon”. *ASME Journal of Heat Transfer*.
DOI:10.1115/1.4035312.
12. Meena, C.S., **Deep A.** and Das, A.K. (2017) “Understanding of Interactions for Bubbles Generated at Neighboring Nucleation Sites”. *Heat Transfer Engineering*.
DOI:10.1080/01457632.2017.1338866

- CONFERENCES
1. “HMM-based Joint Modeling Of Condition Monitoring Signals And Failure Event Data For Prognosis”, *INFORMS Annual Meeting*, Indianapolis, IN, USA Oct. 2022
 2. “A POMDP-based Maintenance Planning Of Units Subject To Hard Failure Using Continuous Degradation Signals”, *INFORMS Annual Meeting* Oct. 2021
 3. “Outlier Detection and Online Monitoring of Event Sequences Arising in Customer Service Process”, *Virtual INFORMS Annual Meeting* Nov. 2020
 4. “Copula-based multi-event modeling and prediction using fleet service records ”, *INFORMS Annual Meeting*, Seattle, WA, USA Oct. 2019
 5. “Event Prediction for Individual Unit Based on Recurrent Event Data Collected in Teleservice Systems”, *INFORMS Annual Meeting*, Phoenix, AZ, USA Nov. 2018
 6. “Numerical Simulation of Boiling Heat Transfer Around Tube Bundles in Horizontal Stack”, *23rd National and 1st International ISHMT-ASTFE HMTTC*, India Dec. 2015
 7. “Numerical Analysis of Film Boiling Around Horizontal Cylindrical Surfaces”, *11th International Conference on HEFAT*, Kruger National Park, St. Africa Jul. 2015

TEACHING
EXPERIENCE

• **Oklahoma State University**

- Instructor, IEM 4713: *Systems Simulation Modeling* Spring 2023
- Instructor, IEM 4613: *Production Planning and Control Systems* Fall 2022, Fall 2023
- Instructor, IEM 5613: *Integrated Manufacturing Control Systems* Fall 2022, Fall 2023

• **University of Wisconsin-Madison**

- TA, ISyE 603: *Applied Temporal Data Analytics for Engineers*
- TA, ISyE 510: *Facilities Planning* Fall 2018, Fall 2020

TEACHING
EVALUATIONS

Course	Semester	# Students enrolled	# Evaluations	Average Score
IEM 4613	F 22	46	41 (89.1%)	4.27/5.0*
IEM 5613 (2 sections)	F 22	25	23 (92.0%)	4.90/5.0

- INVITED TALKS
- **CS Katha Barta, School of Computer Sciences, NISER**, Bhubaneswar, India Oct. 2022
Title: Event data analytics for smart and connected systems
 - **Department of Statistics, Oklahoma State University**, USA Mar. 2023
Title: Event data analytics for smart and connected systems
 - **Department of Mechanical and Industrial Engineering, IIT Roorkee**, India May 2023
Title: Research/Higher Studies in Data Science & Machine Learning

AWARDS	<ol style="list-style-type: none"> 1. E. Wayne Kay Graduate Scholarship, Society of Manufacturing Engineers 2021 2. Vinod K. and J Gail Sahney Graduate Student Scholarship 2019, 2020 3. Top 2% out of 2330 teams in Kaggle challenge “Don’t Overfit II” 2019 4. ISyE Department Travel Award, University of Wisconsin-Madison 2018, 2021 5. Working Internships in Science and Engineering, DAAD, Germany 2016 6. Summer Research Fellowship, IAS, INSA, NAS, India 2015
PH.D. COMMITTEE MEMBERSHIP	<ol style="list-style-type: none"> 1. Zhangyue Shi Advisor: Dr. Chenang Liu Fall 2022 2. Majid Akhgar Farsani Advisor: Dr. Juan S. Borrero Fall 2022 3. Ziyang Zhang Advisor: Dr. Chenang Liu Fall 2022
MS THESIS COMMITTEE MEMBERSHIP	<ol style="list-style-type: none"> 1. Main advisor: Aditya Rane 2. Committee Member: Oday Bani Ahmad, Mahyar Mahmoudi, Boris Oskolkov
MS NON-THESIS COMMITTEE MEMBERSHIP	<ol style="list-style-type: none"> 1. Main advisor: Rahul Nomula, Gilberto Galvan Ino, Sanket Sawant 2. Committee Member: Nimeet Doshi, Enrico Laoh, Aditya Shete, Prafulla Balasaheb Sature, Adwait Chabukswar, Adithya Ashwathi
SENIOR DESIGN PROJECTS	<ol style="list-style-type: none"> 1. David Schwartz, Caitlin Mantoath, Chloe Jones Spring 2023 Title: <i>Developing a VBA Program for Automated Recovery Scheduling (Textron Aviation)</i> 2. Luke Ratke, Rachel Bebb, Marco Piña Fall 2022 Title: <i>Inventory Management Plan Creation (Phillips 66)</i>
INDUSTRY PROJECTS – STUDENT LEAD	<ul style="list-style-type: none"> • Research on Data Science and Machine Learning for Business Process Improvement and Automation Sep. 2019 – Aug. 2022 <i>Industry Collaborator: Jewelers Mutual</i> • Industrial Data Analytics for Engine Diagnostics Dec. 2018 – May 2019 <i>Industry Collaborator: Mercury Marine</i> • Data Management and Analytics for Engine Testing Apr. 2018 – Jun. 2018 <i>Industry Collaborator: Mercury Marine</i> • Event Data Modeling and Prediction Oct. 2017 – Feb. 2018 <i>Industry Collaborator: AO Smith</i> • Data-Driven Failure Predictive Analytics for IoT enabled Service Systems Sep. 2017 – Oct. 2017 <i>Industry Collaborator: Toyota Materials Handling North America</i>
DEPARTMENT SERVICE	<ol style="list-style-type: none"> 1. Undergraduate Advisory Committee Fall 2022, Spring 2023

PROFESSIONAL
SERVICE

1. **Referee for,**

- (a) IISE Transactions
- (b) IEEE Transactions on Automation Science
- (c) IEEE Transactions on Reliability
- (d) Reliability Engineering & System Safety
- (e) Journal of Intelligent Manufacturing
- (f) Scientific Reports, Nature
- (g) Journal of Sensors

2. **Conference session organizer,**

- (a) General session: “Advanced Data Analytics for Reliability and Maintenance”,
INFORMS Annual Meeting, Oct. 2022
- (b) General session: “Event Prediction & Analysis”, Virtual INFORMS Annual Meeting, Nov. 2020

3. **Society president**, SME Society student chapter, UW-Madison 2020-21

4. **Professional Affiliations**, SME and INFORMS

5. **Vice Chairperson**, Society of Automotive Engineers, IIT Roorkee 2016-17

6. **Mentor**, Academic Reinforcement Programme, IIT Roorkee 2015