Bo Shen

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Educations

2017–present	**Virginia Polytechnic Institute and State University**, *Blacksburg*, VA.
	Ph.D. Candidate in Industrial and Systems Engineering Advisor: Prof. Zhenyu (James) Kong
2013–2017	**University of Science and Technology of China(USTC)**, *Anhui*, China.
	B.S. in Statistics Graduated June 2017

Honors and Awards

2020	Runner-up for INFORMS QSR Industry Data Challenge
2020	Finalists for INFORMS QSR Best Refereed Paper Competition
2019, 2020	Second place of poster competition in INFORMS & HFES Student Poster Competition, ISE, Virginia Tech
2018–2021	ISE Graduate Student Travel Awards, Virginia Tech
2017	Grado Department of Industrial & Systems Engineering Department Fellowship, Virginia Tech
2014–2017	Undergraduate Fellowship, USTC

Research Interests

Smart manufacturing; Additive manufacturing; Reinforcement learning; Bayesian Optimization; Tensor data analytics; Federated learning; Industrial Internet of Things; Adversarial Robustness.

Publications and Working Papers

Journal Papers Published or Accepted

1 **Shen, B.***, Xie, W., & Kong, Z. J. (2020). Clustered Discriminant Regression for High-Dimensional Data Feature Extraction and Its Applications in Healthcare and Additive Manufacturing. *IEEE Transactions on Automation Science and Engineering.* Available at https://ieeexplore.ieee.org/document/9237105

2 **Shen, B.***, Wang, R., Law, A. C. C., Kamath, R., Choo, H., & Kong, Z. J. (2021). Super Resolution for Multi-Sources Image Stream Data using Smooth and Sparse Tensor Completion and its Applications in Data Acquisition of Additive Manufacturing. *Technometrics*, 1-16. Available at https://doi.org/10.1080/00401706.2021.1905074

- Finalists for INFORMS QSR Best Refereed Paper Competition

- Second place of poster competition in INFORMS & HFES Student Poster Competition, ISE, Virginia Tech, 2019

Journal Papers under Review

3 **Shen, B.***, Gnanasambandam, R., Wang, R., & Kong, Z. J. (2020). Multi-Task Gaussian Process Upper Confidence Bound for Hyperparameter Tuning. revision in *IISE Transactions.*

4 **Shen, B.***, Kamath, R., Choo, H., & Kong, Z. J. (2021). Robust Tensor Decomposition based Background/Foreground Separation in Noisy Videos and Its Applications in Additive Manufacturing. submitted to *IEEE Transactions on Automation Science and Engineering.* Available at http://dx.doi.org/10.36227/techrxiv.14561775.v2

Journal Papers in Preparation

5 **Shen, B.***, Xie, W., & Kong, Z. J. (2021). Robust Tensor Principal Component Analysis: Formulation, Algorithm, and Applications. to be submitted to *IEEE Transactions on Pattern Analysis and Machine Intelligence.*

6 **Shen, B.***, Chen, Y., & Kong, Z. J. (2021). A Novel Anomaly Discovery Method and its Applications in Minimizing Measurement Cost in Advanced Manufacturing. to be submitted to *IEEE Transactions on Pattern Analysis and Machine Intelligence.*

7 Chung, J., **Shen, B.***, Law, A. C. C., & Kong, Z. J. (2021). Continuous Reinforcement Learning based Online Decision Making for Quality Assurance of Additive Manufacturing. to be submitted to *IEEE Transactions on Automation Science and Engineering.*

8 Chung, J., **Shen, B.***, & Kong, Z. J. (2021). Sparse Bayesian Learning with Prior Knowledge and Temporally Correlated Solution Vectors with Application to Fault Diagnosis in Multi station Assembly Systems. to be submitted to *Journal of Manufacturing Systems.*

9 Maftouni, M., **Shen, B.***, Law, A. C. C., & Kong, Z. J. (2021). A Mask-guided Attention Deep Learning Model for COVID-19 Diagnosis based on an Integrated CT Scan Images Database. to be submitted to *IISE Transactions on Healthcare Systems Engineering.*

10 Maftouni, M., **Shen, B.***, Law, A. C. C., & Kong, Z. J. (2021). Attention-based Video Object Segmentation of Melting Pool. to be submitted to *IISE Transactions.*

11 Gnanasambandam, R., **Shen, B.***, & Kong, Z. J. (2021). Bayesian Optimization Using Deep Gaussian Process with its Application in Process Optimization for Additive Manufacturing. to be submitted to *ASME Trans. Journal of Manufacturing Science and Engineering*

12 Wang, R., Garcia, D., **Shen, B.***, Ma, X., Kamath, R., Choo, H., Fezzaa, K., & Kong, Z. J. (2021). In-process Multi-physical Melt Pool Characteristics Sensing and Data Correlation in Laser Powder Bed Fusion. to be submitted to *XXXX*

13 **Shen, B.***, & Kong, Z. J. (2022). Federated Learning in Additive Manufacturing. Ongoing

Conference Papers Published or Accepted

14 Maftouni, M., Law, A. C. C., **Shen, B.***, Zhou, Y., Yazdi, N., & Kong, Z. J. (2021). A Robust Ensemble-Deep Learning Model for COVID-19 Diagnosis based on an Integrated CT Scan Images Database. *Proceedings of the 2021 IISE Annual Conference.* Available at ResearchGate Link

  - Runner-up for INFORMS QSR Industry Data Challenge

  - Second place of poster competition in INFORMS & HFES Student Poster Competition, ISE, Virginia Tech, 2020

Teaching Experience

ISE 2214	**Manufacturing Processes Lab (2017 Fall, 2019 Spring, and 2019 Fall):**	*Lab Instructor*
ISE 2014	**Engineering Economy (2018 Fall):**	*Grading and Office hour*
ISE 4404	**Statistical Quality Control (2018 Spring):**	*Grading and Office hour*

Invited Talk

Multi-Task Gaussian Process Upper Confidence Bound for Hyperparameter Tuning

  - INFORMS Annual Meeting, Anaheim, CA, 2021

  - IISE Annual Conference 2020 (Virtual)

Robust Tensor Decompositionbased Background/Foreground Separation in Noisy Videos and Its Applications in Additive Manufacturing

  - INFORMS Annual Meeting, Anaheim, CA, 2021

Super Resolution for Multi-Sources Image Stream Data using Smooth and Sparse Tensor Completion and its Applications in Data Acquisition of Additive Manufacturing

- INFORMS Annual Conference 2020 (Virtual)
- IISE Annual Conference 2020 (Virtual)

Robust Tensor Principal Component Analysis: Formulation, Algorithm, and Applications

- INFORMS Annual Conference 2020 (Virtual)
- INFORMS Annual Conference, Seattle, WA, 2019

Clustered Discriminant Regression for High-Dimensional Data Feature Extraction and Its Applications in Healthcare and Additive Manufacturing

- IISE Annual Conference, Orlando, FL, 2019

Leadership and Service

Session Chair: Data Mining and Machine Learning in Smart Manufacturing, *INFORMS Annual Conference 2021*

Journal Referee: IISE Transactions, IEEE Transactions on Automation Science and Engineering

VP Finance: The INFORMS Student Chapter at Virginia Tech.

Professional Society Memberships

2018–present Member of Institute of Industrial and Systems Engineers (IISE)

2018–present Member of Institute for Operation Research and the Management Sciences (INFORMS)

2018–present Member of Institute of Electrical and Electronics Engineers (IEEE)