

Yutong Zhang

(267)506-8497 | yutongz@vt.edu | 1145 Perry Street, Blacksburg, VA

EDUCATION

Virginia Tech	08/2018 – 06/2023(Expected)
Ph.D. in Industrial and Systems Engineering (with track in Operations Research)	GPA: 3.96/4.00
<i>Relative Courses:</i> data analytics and large-scale stochastic optimization dynamic programming surrogate modeling measure	
Temple University, Fox School of Business	08/2016 – 05/2018
M.S. of Statistics	GPA: 3.84/4.00
<i>Relative Courses:</i> statistical inferences sampling theory categorical data analysis time series analysis design of experiment	
University of Science and Technology of China, School of the Gifted Young	08/2013 – 06/2017
B.S of Statistics	
<i>Relative Courses:</i> probability random process multivariate statistical analysis survival analysis	

PUBLICATIONS

-
- **Y. Zhang**, X. Chen. Empirical uniform bounds for heteroscedastic metamodeling. In *Proceedings of Winter Simulation Conference (WSC)*. (2022)
 - **Y. Zhang**, X. Chen. Information consistency of stochastic kriging and its implications. In *Proceedings of Winter Simulation Conference (WSC)*. (2021)
 - **Y. Zhang**, L. Wang, X. Chen, R. Jin. System information and hypothesis tests of significant factors to performance in a Fog manufacturing system. In *Proceedings of IISE Annual Conference*. (2020).
 - **Y. Zhang**, L. Wang, X. Chen, R. Jin. Fog computing for distributed family learning in cyber-manufacturing modeling. In *2019 IEEE conference on Industrial cyber physical systems (ICPS)*. (2019)

RESEARCH EXPERIENCE

Virginia Tech	Blacksburg, VA
<i>Research Assistant</i>	<i>08/2020 – Now</i>
<ul style="list-style-type: none">• Proved the consistency of stochastic kriging from the prediction perspective and recommended the “dense but shallow” design• Proposed the predictive variance reduction (PVR) and expected classification improvement (ECI) level set estimation methods• Applied the proposed methods to the service system and improved the F1 score by 26% and reduced the RMSE by 52% compared to the state-of-the-art methods• Applied the proposed methods to the inventory problem and improved the F1 score by 18% and reduced the RMSE by 36% compared to the state-of-the-art methods• Proposed the empirical uniform bounds for heteroscedastic metamodeling• Guaranteed the achievement of the target simultaneous coverage probability with slightly wider confidence intervals	

Virginia Tech	Blacksburg, VA
<i>Research Assistant</i>	<i>09/2018 – 01/2020</i>
<ul style="list-style-type: none">• Built an edge computing platform as a demonstration of Fog manufacturing by ten Raspberry Pis and AWS• Implemented the distributed machine learning pipelines in Python and stored the computation results in MySQL• Collected system performance data in SQLite and visualized all metrics via Grafana dashboard in a real-time manner• Identified the influential factors of the system by multivariate hypothesis testing and improved system performances accordingly• Predicted system performances via robust linear regression and random forests regression using <i>numpy</i> and <i>scikit-learn</i> in Python• Detected more than 95% of system anomalies by EWMA control charts	

University of Science and Technology of China	Hefei, Anhui, China
<i>Senior Design</i>	<i>09/2016 – 05/2017</i>
<ul style="list-style-type: none">• Conducted the exploratory data analysis using <i>tidyverse</i> and visualized the data features using <i>ggplot2</i> in R given a data set• Implemented multi-dimensional scaling, clustering analysis, principal component analysis (PCA) in R	

PROJECT EXPERIENCE

Automatic Thresholding by Reconstruction Error in Unsupervised Anomaly Detection	08/2022 – 09/2022
<i>QSR data challenge in INFORMS 2022 Annual Meeting</i>	
<ul style="list-style-type: none">• Implemented long short-term memory (LSTM) autoencoders for end-of-line (EOL) vehicle component data from Ford company• Built automatic thresholding algorithm for unsupervised anomaly detection based on reconstruction error• Improved the classification accuracy to 100% on the prediction set	

SKILLS

Programming languages: Python (numpy, scikit-learn, pandas) | R (tidyverse) | SQL | MATLAB | LaTeX | VBA | Gurobi | AMPL
Visualization: Python (matplotlib) | R (ggplot2, shiny) | MATLAB | Grafana