

SHIFU YAN

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PROFILE

A competent, motivated Ph.D. student in **Machine/Deep learning, Data mining** with applications in **industrial big data** including **Anomaly/Outlier detection, Statistical process monitoring, and Product quality prediction**. Possesses specific expertise in Algorithms (neural networks, statistical theory), Programming (Python, MATLAB, Julia, C, and SQL). Good at team-working, communicating, solving problems in projects.

EDUCATION

East China University of Science and Technology <i>Ph.D. in Control Science and Engineering</i>	Shanghai, China <i>Sep 2017 – Jun 2022 (expected)</i>
East China University of Science and Technology <i>B.S. in Automation GPA: 3.75/ 4.0 (#2 / 84)</i>	Shanghai, China <i>Sep 2013 - Jun 2017</i>

WORK EXPERIENCE

Red Avenue Group <i>Data Scientist Intern</i>	Shanghai, China <i>Aug 2018 - Aug 2020</i>
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- Description: Responsible for processing data from historical and real-time database, analyzing the correlation between different attributes, using machine learning algorithms to reduce the frequency of laboratory analysis and improve production efficiency.

HONORS

Second prize, National Post-Graduate Mathematical Contest in Modeling, 2020
CSC Fellowship, 2020
ZHANG-JIANGSHU Fellowship, 2019
Outstanding student award, 2014-2019
First prize, Academic scholarship, 2016-2018
Outstanding Graduate in Shanghai, 2017
National Scholarship in China (#1/84), 2016
First prize, National automation application competition, Rockwell Automation, 2016
Shanghai Scholarship (#4/84), 2015
Second prize, National mathematical modeling competition, 2015

PROJECTS

Decentralized quality monitoring of PTA production based on neural networks	<i>Sep 2017 - present</i>
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- Description: Research projects by National Natural Science Foundation. Responsible for developing neural network based algorithms to improve the predictive performance of key performance indicators in PTA production, and detect quality-related anomalies for reducing unnecessary losses.

Plant-level nonlinear fault diagnosis based on deep correlation feature learning	<i>Sep 2018 - present</i>
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- Description: Research projects by National Natural Science Foundation. Responsible for fusing statistical algorithms and neural networks for feature engineering and improve the classification performance of nonlinear faults.

Neural network based Delay Master Equations

Jun 2020 – Feb 2021

- Description: A research project for developing neural network based algorithms for the stochastic models in gene expression and predict the behaviors of genes.

Data-driven prediction of product quality during tire material production

Aug 2018 - Aug 2020

- Description: Responsible for feature engineering and modeling the production process using support vector machine, intelligent optimization algorithm, neural networks. Develop *Python* software for guiding the production to increase profit. Two Chinese public patents and a registered software have been published.

Custom product design based on rapid modeling and 3D printing

Jan 2016 - Jun 2017

- Description: Responsible for developing a VBA plug-in for rapid modeling in SolidWorks according to the model components required by customers, and use 3D printing to make personalized molds.

PUBLICATIONS

Journal papers:

1. **Shifu Yan** and Xuefeng Yan. “Design teacher and supervised dual stacked auto-encoders for quality-relevant fault detection in industrial process.” *Applied Soft Computing*, vol. 81, Aug. 2019. (IF: 5.472)
2. **Shifu Yan** and Xuefeng Yan. “Quality-Driven Autoencoder for Nonlinear Quality-Related and Process-Related Fault Detection Based on Least-Squares Regularization and Enhanced Statistics.” *Industrial & Engineering Chemistry Research*, vol. 59, no. 26, pp. 12136-12143, June, 2020. (IF: 3.573)
3. **Shifu Yan** and Xuefeng Yan. “Using Labeled Autoencoder to Supervise Neural Network Combined with k -Nearest Neighbor for Visual Industrial Process Monitoring.” *Industrial & Engineering Chemistry Research*, vol. 58, no. 23, pp. 9952-9958, May. 2019. (IF: 3.573; Supplementary Cover)
4. **Shifu Yan** and Xuefeng Yan. “Joint monitoring of multiple quality-related indicators in nonlinear processes based on multi-task learning.” *Measurement*, vol. 165, 108158, Dec. 2020. (IF: 3.364)
5. **Shifu Yan**, Junping Huang and Xuefeng Yan. “Monitoring of quality-relevant and quality-irrelevant blocks with characteristic-similar variables based on self-organizing map and kernel approaches.” *Journal of Process Control*, vol. 73, pp. 103-112, Jan. 2019. (IF: 3.624)
6. **Shifu Yan**, Qingchao Jiang, Haiyong Zheng and Xuefeng Yan. “Quality-relevant dynamic process monitoring based on dynamic total slow feature regression model.” *Measurement Science and Technology*, vol. 31, 2020. (IF: 1.857)
7. Junping Huang[‡], **Shifu Yan**[‡] and Xuefeng Yan. “Robust chemical process monitoring based on CDC - MVT - PCA eliminating outliers and optimally selecting principal component.” *Canadian Journal of Chemical Engineering*, vol. 97, no. 6, pp. 1848-1857, 2019. (IF: 1.687)
8. Qingchao Jiang, **Shifu Yan**, Xuefeng Yan, Hui Yi, and Furong Gao. “Data-Driven 2D Deep Correlated Representation Learning for Nonlinear Batch Process Monitoring.” *IEEE Transactions on Industrial Informatics*, vol. 16, no. 4, pp. 2839 - 2848, 2020. (IF: 9.112)
9. Qingchao Jiang, **Shifu Yan**, Xuefeng Yan, Shutian Chen and Jinggao Sun. “Data-driven individual-joint learning framework for nonlinear process monitoring.” *Control Engineering Practice*, vol. 95, 2020. (IF: 3.193)
10. Qingchao Jiang, Shifu Yan, Hui Cheng and Xuefeng Yan. “Local-Global Modeling and Distributed Computing Framework for Nonlinear Plant-Wide Process Monitoring with Industrial Big Data.” *IEEE Transactions on Neural Network and Learning Systems*, 2020. (IF: 8.793)

Patents:

1. Step-by-step modeling for multi-component prediction of industrial p-tertylphenol synthesis reaction (in Chinese), CN110867216A, 2020.
2. A method for predicting the quality of phenolic resin products under the uncertainty of raw materials (in Chinese), CN111103420A, 2020.