

# 杨晓君 Xiaojun Yang

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## Education

2021.9-2024.6	Master of Engineering, Department of Automation, Tsinghua University	Beijing
2023.8-2023.9	Program(Representation Learning of Time Series), Computer Science Department, KAIST	Korea
2017.9-2021.6	Bachelor of Engineering, School of Control Science and Engineering, Shandong University	Jinan

## Languages

IELTS 7.0 CET6 566

## GPA

Master 3.87/4.0 Bachelor 4.84/5.0

## Publication(during master)

- [1] Yang X., Xiong Z., Ye H., Zhang T. Multi-Operating Condition Time Series Anomaly Detection Based on Domain Adaptation[J]. IFAC-PapersOnLine, 2024, 58(14): 817-822.
- [2] Yang X., Wan C., Zhang T., Xiong Z. Feature Extraction of Sequence Data Based on LSTM and Its Application to Fault Diagnosis of Industrial Process[C]. Proceedings of the 2022 IEEE 11th Data Driven Control and Learning Systems Conference (DDCLS' 22), Emeishan, Sichuan, China, May 13-15, 2022: 693-698.
- [3] Wan C., Zhang T., Yang X., Xiong Z. Multiple Recurrent Neural Networks Based Fault Diagnosis Model for Multi-Mode Process[C]. Proceedings of the 2022 IEEE 11th Data Driven Control and Learning Systems Conference (DDCLS' 22), Emeishan, Sichuan, China, May 13-15, 2022: 687-692.
- [4] Yang X., Xiong Z. Multi-Operating Condition Time Series Anomaly Detection Based on Domain Adaptation[C]. Proceedings of the 2023 Annual Meeting of the Chinese Chemical Society (2023 CIESC), Guangzhou, China, November 27-29, 2023. (In Chinese)

## Research Interest

multimodality, representation learning, computer vision, large language models, reinforcement learning or interdisciplinary fields related to psychology and sociology

I am open-minded and eager to explore any opportunity to deepen my understanding in related fields

## Practice in Academic Fields

### National Key R&D Project

2022.1 – 2024.6

Intelligent Key Technologies for Strategic Mineral Processing (No. 2021YFC2902701)

- Conducted on-site field research in Jinchang, Gansu Province, focusing on mineral processing operations
- Developed anomaly detection mechanisms for time series data in mineral processing, utilizing LSTM and Transformer models with domain adaptation and contrastive learning techniques
- Published three academic papers and completed a master's thesis based on this research

### IFAC ADCHEM 2024

*Multi-operating condition time series anomaly detection based on domain adaptation*

First author

- Develop anomaly detection for multi-operating condition time series
- Introduces domain adaptation and contrastive learning methods and designs an end-to-end model structure to enhance the performance, achieving >92% accuracy for unknown conditions on open dataset TEP

### Stair Recognition & Localization Algorithm

2022.5-2022.6

Course Project(Rated Excellent)

Team Leader

- Led research on staircase recognition algorithms, conducting in-depth comparisons using models such as ResNet, KNN, and SVM
- Innovatively applied ensemble learning and transfer learning for optimization

### Subset Selection Algorithm

2021.11-2021.12

Course Project(Rated Excellent)

Team Leader

- Translated matrix theory into algorithmic implementation to solve constrained low-rank approximation problems, with extensions to image feature extraction
- Applied methods including exhaustive search, Singular Value Decomposition (SVD), Rank-Revealing QR (RRQR) decomposition, and a two-stage strategy
- Improved the roulette wheel selection algorithm to reduce time complexity

## Sina Weibo Interaction Prediction (NLP)

2021.11-2021.12

- Collaborated with team members to build a predictive model for post interactions on Sina Weibo, based on users' historical behavior
- Responsible for data cleaning and feature engineering, including content and sentiment analysis of posts
- Developed an ensemble model combining Random Forest and rule-based adjustments to improve prediction accuracy

## Professional Experience

### China Unicom Intelligent Networking Technology

2024.8-Present

- Autonomous Driving Synthetic Data Generation: Led the adaptation of a Waymo-based video generation model (Diffuser) to automotive client data. Built a multimodal fusion pipeline (LiDAR, images, pose) to create high-quality synthetic imagery with controlled vehicle trajectories and diverse corner cases, enhancing simulation and training robustness.
- Advanced Video Editing: Utilized techniques like FreeVS and MagicDrive DiT for video viewpoint transformation, new trajectory generation, and dynamic weather editing to expand dataset diversity.
- LLM-Powered Q&A System: optimized a prompt-engineered Q&A system for internal reports using LLMs and enterprise databases, achieving 99% query accuracy.
- Connected Vehicle Analytics: Built automated video analytics pipelines on MinIO data infrastructure to streamline processing for connected vehicle environments.

### Apple Computer Trading (Shanghai) Co., Ltd(Internship)

2023.12-2024.3

- Designed and implemented data analysis solutions using Python, including store upgrade evaluations and retail performance analysis
- Built analytical models to support business decision-making for business operations

### Beijing Zhixiang Technology Co., Ltd.(Internship)

2022.6-2022.9

- Conducted research on “smart meter inaccuracy modeling” using Python
- Estimated electrical network topology using meter data, with a focus on model optimization and time shift correction

## Skills

Computer: Python (Proficient), MATLAB, SQL, Docker, Jupyter, NumPy, Pandas

ML Frameworks: PyTorch, Scikit-Learn, TensorFlow

## Awards

- National Scholarship, 2018, 2019, 2020
- Shandong University First-Class Academic Scholarship, 2018, 2019, 2020
- Outstanding Volunteer and Excellent Individual in Social Practice, Shandong University
- Outstanding Graduate of Shandong Province, 2021
- Bachelor's Degree with Honors, Shandong University
- First Prize, National Undergraduate Electronic Design Contest, 2019
- First Prize, National Undergraduate Mathematics Competition, 2018
- Comprehensive Scholarship, Tsinghua University, 2023, 2024
- Best Paper Award, 2023 CIESC Conference

## Personal Statement

I am strongly curious about new things and can learn fast. During my undergraduate studies, although I took limited formal programming courses, I proactively learned Python by myself and successfully completed my bachelor's thesis and later my graduate research—back then, large language models were not yet in the spotlight.

I have great creativity. My master's research focused on time series data. Inspired by advances in computer vision, I developed a Transformer-based domain adaptation model that significantly improved fault diagnosis accuracy in industrial settings with unknown conditions.

I am suitable for working at collaborative environments. For example, during a summer program in South Korea, I joined Data Mining Lab in KAIST, where I learned cutting-edge representation learning techniques and engaged in stimulating academic discussions that broadened my perspective.

Beyond academics, I value diverse life experiences. I participated in teaching support as a volunteer and waste sorting social practices, which deepened my connection with society. In Tsinghua, I joined morning jogging team where I strengthen my body and we not only run but also sharing books, go hiking, play badminton, and have picnics which helped me build lasting friendships across disciplines and generations.

I also have a passion for reading, writing, cooking, and photography—anything that brings a touch of beauty and creativity into everyday life.