Xinyu Jin

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EDUCATION

Hefei University of Technology, Hefei, CHN

Master of Management Science and Engineering — Sep 2023- Jul 2026

Core unit:

• Data Mining • Optimization Method • Matrix Theory • Game Theory

Xi'an University of Architecture and Technology, Xi'An, CHN

Bachelor of Management in Construction Management — Sep 2017- Jul 2021

Core unit:

• Project Control Methods • Probability Theory • Operation Research • Calculus

Research Interest: Product Design, Deep Generative Models, Image Generation, Process Management

RESEARCH EXPERIENCE

Log repair method based on process trace similarity using large language models

Computer Integrated Manufacturing Systems (In Chinese) — DOI: 10.13196/j.cims.2025.BPM16

• Developed a novel process trace repair method using pre-trained large language models to address missing log data and incomplete information.

• Enhanced repair accuracy by incorporating similar process traces and reduced model hallucination via reflection mechanisms and consistency constraints.

• Validated the effectiveness and accuracy of the proposed approach on BPIC datasets.

LogAgent: Leveraging Multi-Agent Collaboration for Log Repair

ACL ARR May — Under Review

• Introduced LogAgent, a novel multi-agent collaboration framework designed to repair missing activities in event logs.

• Designed a system where multiple expert agents predict missing activities from diverse perspectives, mediated by a central agent for final decision-making.

• Investigated the impact of similar trajectory count and consistency iteration rounds on performance, validating LogAgent's effectiveness and efficiency.

Improved CNN-Based Leakage Diagnosis for Fire Pipelines Using Multi-Attention Mechanism

Under Review

• Proposed an enhanced CNN model for fault diagnosis in multi-dimensional time-series sensor data from fire pipelines.

• Implemented a sliding window technique to expand data space and incorporated attribute, temporal, and channel attention mechanisms for efficient feature extraction.

• Validated the method's improved accuracy and efficiency through sensor deployment in a fire water network system and simulated leakage experiments.

A product form generation method based on (model) decoupling and causal relationships

Working Paper

• Developing a product appearance generation approach utilizing β-VAE and its variants to decouple and process appearance features into latent variables.

• Employing causal inference to derive causal relationships from product appearance data distributions, constructing a causal graph to guide novel product form design.

• Aiming to enable agile development of product form designs tailored to user preferences.

Text-Driven Autoregressive Fashion Image Editing Method

Working Paper

• Developing a text-driven fashion image editing method for precise local edits using visual autoregressive (AR) modeling, eliminating the need for auxiliary modalities.

• Incorporating a text-driven editing region localization module to predict target areas in fashion images for localized modifications based on text prompts.

• Focusing on ensuring non-edited image regions remain unaffected and achieving faster generation speeds compared to diffusion models.

WORKING EXPERIENCE

Chery Automobile Co., Ltd., Anhui, CHN

Autonomous Generative Design and Closed-Loop Optimization Tool Prototype for Multimodal Input — Jun 2025-

• Develop a multi-agent collaborative architecture based on the Autogen framework to achieve end-to-end automated design capabilities (Sketch -> Point Cloud Generation -> Aerodynamic Validation).

• Encapsulate and develop specialized design agents, including styling design agents and aerodynamic drag prediction agents; develop corresponding algorithm models for point cloud generation and aerodynamic drag prediction.

• Collect information and generate structured design requirements from ambiguous product design inputs, and rapidly conduct corresponding automotive competitive analysis.

• Research closed-loop optimization mechanisms to achieve automated closed-loop iteration from aerodynamic validation to styling modification.

Aero Engine Corporation of China Shenyang Engine Research Institute, Shenyang, CHN

Group unified control integrated project management platform — Aug 2024-Dec 2024

- Contributed to the development of a unified control and integrated project management platform to support digitalized aero-engine development projects under the AEOS system.
- Collected and organized project data through business research and diagnostic analysis to define project control requirements for equipment development.
- Finished project technical proposals and progress reports based on internal documentation and requirements analysis.

Aero Engine Corporation of China Sichuan Gas Turbine Research Institute, Sichuan, CHN

Automated document formatting software — Apr 2024-Jul 2024

- Developed automated document formatting software for standardized document types (title, body, graphical parts).
- Identified and cataloged formatting attributes (font size, typeface, spacing, bolding) and defined error detection logic.
- Implemented features for automatic correction of font/paragraph errors, annotation of title/chart errors, and generation of error reports.

State Grid Anhui Electric Power Research Institute, Anhui, CHN

Fault Diagnosis System Development — Dec 2023-Oct 2024

- Designed and validated fault diagnostic models and early warning techniques tailored to monitoring link fault characteristics in power systems.
- Improved fault diagnostic algorithms for key components of fire fighting converter stations to enhance fault response capabilities.

China Manned Space Engineering Office, Beijing, CHN

Decision support system for space station operational planning — Sep 2023-Apr 2024

- Supported the design of a decision support system for space station operational planning by analyzing and documenting business workflows.
- Created detailed business process maps and activity dictionaries based on the goals of online business processes, organization, communication, and control decisions.

Shanghai Construction No.4(Group)Co., LTD, Shanghai, CHN

Project Engineer — July 2021-Aug 2023

- Managed project construction drawings and prepared construction organization design documents for unit projects.
- Performed construction estimates and working drawing estimates accurately.
- Supervised construction surveying, leveling, setting-out, and technical disclosure activities.
- Conducted daily site management tasks and assisted in monitoring project schedule, quality, and safety compliance.

ACHIEVEMENT

- The First Prize in 2019 National College Student Mathematics Competition
- The Third Prize of Shaanxi Competition Area in 2019 National University Mathematical Modeling Competition
- The Third Prize of the 2nd National University Students Structural Design Information Technology Competition
- The Third Prize in 2020 ICM American Mathematical Contest in Modeling
- Outstanding Volunteer of China Western International E-Commerce Conference
- Academic Year First-class Scholarship
- Academic Year Second-class Scholarship * 3
- Academic Year Third-class Scholarship * 2
- Academic Year Second-class Innovation Scholarship * 3

SKILLS

Programing Skills

- Proficient in Python, PyTorch for model development and training.
- Proficient in LORA fine-tuning and Prompt Tuning techniques.
- Practical experience training Variational Autoencoders (VAE) and variants, Diffusion Models, Visual Autoregressive Models.

Research & Proposal Skills

- Independent research design and execution capabilities.
- Academic and technical writing for publications and reports.
- Contributed to project proposals and strategic documents:
  - 2024 National Key Research and Development Program (Project Declaration).
  - 2025 National Natural Science Foundation (Research Status and Technology Route Writing).

Collaboration & Communication

- Strong ability to work independently and collaboratively within multidisciplinary teams.
- Effective communication skills for technical and non-technical audiences.