

Ryan (Yunsheng) Wang

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Computational Design · Data-Driven Design · Applied Machine Learning

SUMMARY

Ph.D. researcher in Mechanical Engineering with a strong Computer Science foundation, specializing in computational design, surrogate modeling, and engineering simulation workflows. Proven track record of architecting data-driven design pipelines, deploying applied machine learning models, and developing advanced software tools to drive automated recommendation systems.

EDUCATION

Santa Clara University

Ph.D. in Mechanical Engineering

GPA: 3.93/4.00; Research Focus: computational design, data-driven design, applied machine learning

Santa Clara, CA

Sep 2025 – Present

Washington University in St. Louis

M.S. in Imaging Science

St. Louis, MO

Aug 2023 – May 2025

Shenzhen University

B.S. in Computer and Information Science

Shenzhen, China

Sep 2019 – Jun 2023

EXPERIENCE

Lenovo

Algorithm Engineer Intern

Shenzhen, China

May 2024 – Aug 2024

- Engineered an internal knowledge graph for computer components using Neo4j, optimizing product search and configuration.
- Designed a PC setup recommendation chatbot integrating LangChain, OpenAI APIs, and custom prompt templates.
- Awarded the **Lenovo VP Instant Award for AI Innovation** for exceptional contributions to AI-driven user tools.

SELECTED PROJECTS

Small-Data Inverse Design of Parameterized Metamaterials with TabPFN

2026

ASME Journal of Mechanical Design

Santa Clara, CA

- Spearheaded a TabPFN-based inverse design pipeline to predict structural parameters of metamaterials based on target mechanical properties, including stiffness, Poisson's ratio, and relative density.
- Formulated an autoregressive parameter prediction workflow coupled with surrogate-guided refinement to optimize candidates.
- Programmed MATLAB scripts to convert predicted parameters into voxelized unit cells, validated via 3D homogenization.

Semantic Inverse Design of Cellular Structures in Implicit Field Space

2025

ASME IDETC-CIE 2026

Houston, TX

- Created a Python workflow translating user design intent (e.g., lightweight, auxetic) into quantitative mechanical targets.
- Engineered a retrieval pipeline utilizing geometric descriptors and similarity search to identify optimal structures.
- Devised a verification framework to rank retrieved unit cells utilizing surrogate-predicted properties and matching scores.

LLM and Knowledge Graph for Computer Component Recommendation

2024

Lenovo

Shenzhen, China

- Constructed a comprehensive knowledge graph mapping product specs, compatibility constraints, and user requirements.
- Architected a LangChain-powered chatbot leveraging OpenAI APIs and retrieval-augmented generation (RAG).
- Designed reasoning workflows to match requirements with optimized CPU, GPU, memory, and motherboard configurations.

SELECTED PUBLICATIONS

- [1] **Y. Wang**, Z. Yashengjiang, B. Yu, S. Yang, J. Wang. "Semantic Inverse Design of Cellular Structures in Implicit Field Space." *ASME IDETC-CIE*, 2026.
- [2] **Y. Wang**, S. Chen, K. Jin. "Prometheus Chatbot: Knowledge Graph Collaborative Large Language Model for Computer Components Recommendation." *arXiv:2407.19643*, 2024.

TEACHING

Santa Clara University

Santa Clara, CA

- Teaching Assistant for engineering graphics, computer-aided design, and mathematical methods, instructing undergraduate students in SolidWorks, MATLAB, and machine design principles.

SKILLS

Programming: Python, MATLAB, C++, SQL, Git

Modeling & Data Analysis: PyTorch, scikit-learn, TabPFN

Engineering Tools: SolidWorks, COMSOL

Systems: LangChain, OpenAI API, knowledge graphs, retrieval workflows, recommendation systems