LINGJI KONG

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EDUCATION

Northwestern University, McCormick School of Engineering — Sep. 2022 – Mar. 2024
M.S. in Computer Science — GPA: 3.89 / 4.00

University of Washington Seattle, Paul G. Allen School of Computer Science and Engineering — Sep. 2018 – Jun. 2022
B.S. in Computer Science; B.S. in Applied and Computational Math and Science — GPA: 3.84 / 4.00

- **Honors & Rewards:** cum laude, Dean's List (2018-2022), Alumni Scholarship

WORK EXPERIENCE

Could Resilience Intern — Nov. 2024 – Present
PingCAP — Sunnyvale, CA

- Developed a RESTful API using FastAPI and SQLAlchemy for an AIOps system, enabling automated issue mitigation.
- Employed LangChain to process and embed historical issue reports from Jira; built a Multi Vector Retriever with FAISS; developed a RAG chatbot powered by GPT-4o, allowing IT teams to query past incidents and automate mitigation strategies.
- Reduced the average on-call workload by 33% through improved automation and intelligent issue resolution.

Research Assistant — Mar. 2023 – Present
Xenobot Lab at Northwestern University — Evanston, IL

- Encoded complex robot designs into a latent space using a VAE, enabling adaptive robot evolution in diverse environments; batch-trained VAEs on a cluster of 16 H100 GPUs, using Docker and PyTorch Lightning for efficient distributed training.
- Achieved a 20x speedup in synthetic dataset generation by vectorizing calculations and shifting it to GPU using PyTorch.
- Developed and implemented a universal controller using a graph transformer, trained with reinforcement learning.
- Built project page using HTML and CSS, providing a visually engaging platform to showcase research findings: Project Page.

Machine Learning Engineer Intern — May 2021 – Sep. 2021
Chinese Academy of Sciences, Suzhou Institute of Biomedical Engineering and Technology — Suzhou, China

- Implemented data pipelines for preprocessing large-scale medical image datasets, reducing processing time by 60%.
- Combined 2D convolutional networks with attention mechanism, boosting diagnostic accuracy from 80.81% to 85.86%.
- Utilized Qt to develop a cross-platform GUI for medical professionals, integrating model predictions to enhance diagnostics.

PUBLICATIONS & ACHIEVEMENTS

Li, M., Kong, L., & Kriegman, S., "Generating Freeform Endoskeletal Robots," In *the International Conference on Learning Representations (ICLR 2025)*, Open Review.

Silver Medal – Kaggle Competition: *Atmospheric Physics Prediction* (July 2024). Ranked 47th out of 693 teams. Designed and implemented an ensemble of deep neural networks, shared as an open-source solution.

H. Sun *et al*., "SAH-NET: Structure-Aware Hierarchical Network for Clustered Microcalcification Classification in Digital Breast Tomosynthesis," in *IEEE Transactions on Cybernetics*, vol. 54, no. 4, pp. 2345-2357, April 2024, doi: 10.1109/TCYB.2022.3211499.

PROJECTS

Fine-tuning LLMs for Complex Tasks — Northwestern University — Mar. 2024 – Mar. 2024

- Enhanced summarization models' generalizability across different domains; utilized Sentence-BERT to embed and retrieve the most relevant documents; incrementally fine-tune the PEGASUS model on the selected documents and improved the ROUGE scores (R-1/R-2/R-L) from 34/14/24 to 35/17/27.
- Developed a system to retrieve the prompt giving a pair of unmodified and modified texts; generated training data using Gemini; fine-tuned the Mistral model with LoRA, increasing the similarity score from 0.59 to 0.66.

Text-to-3D-Mold for Soft Robotics Web Application — Xenobot Lab — Sep. 2023 – Dec. 2023

- Developed a full-stack web application to automate the 3D printing pipeline for silicone soft robots; generated the SDK for API from Amazon API Gateway and hosted the frontend in an AWS S3 bucket.
- Implemented text search in user interface using JavaScript, allowing clients to utilize Shape-E to generate, preview, and download custom mold designs from text prompts.
- Utilized AWS Lambda functions to monitor S3 bucket PUT events, triggering real-time processing of uploaded 3D mesh file.

TECHNICAL SKILLS

Languages: Python (Flask, FastAPI), JavaScript (React, TypeScript), C++, C#, SQL, R, Matlab, Bash
Libraries: Pandas, XGBoost, SciPy, scikit-learn, Tableau, Matplotlib, ggplot2
Frameworks: Git, AWS, Hadoop, Spark/PySpark, Node.js, PyTorch Lightning, Hugging Face, Neptune, LangChain