Kenny Xu

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Skills

Languages: Python, C++, SQL, R, Matlab, Java, JavaScript, TypeScript, HTML, CSS, Matlab, Assembly

Tools & Frameworks: PyTorch, TensorFlow, Hugging Face Transformers, LangChain, OpenAI API, Codex, Docker, Git, AWS, Azure, Google Cloud, CI/CD, VSCode, OpenCV

Experience

AI Engineer *Mountain View, CA*
WindQuiet Technology, Inc. *Dec 2024 – Present*

- Developed and deployed an **LLM-powered RAG system** with fine-tuned transformers, enabling natural language querying of technical documentation and telemetry, reducing troubleshooting latency below 300 ms.
- Designed and implemented automated ML platforms leveraging **AWS, Docker, and GitHub Actions** for streamlined **CI/CD**, accelerating model deployment and iteration speed from days to hours.
- Integrated **NLP** and **transformer**-based pipelines into microgrid control systems for real-time optimization and anomaly detection.

AI Researcher *Hoboken, NJ*
OriGen.AI, Inc. *May 2024 – Aug 2024*

- Built **transformer-based GCN/CNN models** for physics-informed simulations, significantly improving accuracy of reservoir modeling.
- Automated workflows and pipelines using **Docker and AWS IaC**, facilitating rapid prototyping and deployment of models.
- Developed ML-driven anomaly detection systems with integrated dashboards for proactive operational insights.

AI Researcher *Tempe, AZ*
Prognostic Analysis & Reliability Assessment Lab *Aug 2020 – May 2024*

- Developed **transformer-based architectures** incorporating domain-specific physics constraints, enhancing performance in large-scale time-series forecasting tasks.
- Led the creation of real-time ML predictive maintenance frameworks, embedding **CI/CD practices** and automated deployment processes.
- Collaborated on interdisciplinary projects for NASA, DOE, and DOT leveraging AI-driven predictive analytics.

Projects

LLM-Powered Microgrid Knowledge Assistant *Feb 2025*

- Developed a **LangChain-based Retrieval-Augmented Generation (RAG)** system using transformer models for interactive natural-language-based troubleshooting.
- Enhanced system accuracy and retrieval efficiency through advanced prompt engineering and vector database integration.

LLM-Driven Multi-Agent Framework for Simulation *July 2024*

- Designed a multi-agent AI system leveraging **LLMs** for automated simulation strategy generation, evaluation, and optimization.
- Integrated transformer-based NLP techniques for real-time scenario analysis and report generation, coupled with **RL-based optimization**.

Education

Arizona State University *Tempe, AZ*
Ph.D. in Mechanical Engineering, GPA: 4.0 / 4.0 *Aug 2020 – May 2024*

Washington University in St. Louis *St. Louis, MO*
M.S. in Mechanical Engineering, GPA: 3.8 / 4.0 *Aug 2018 – May 2020*

Tianjin University *Tianjin, China*
B.E. in Mechanical Engineering, GPA: 3.7 / 4.0 *Sep 2014 – Jun 2018*

Publications

1. **Xu, Qihang**, Yutian Pang, Zhiming Zhang and Yongming Liu. Data-Driven Governing Equation Identification of Near Terminal Air Traffic Flow Dynamics. *Journal of Air Transport Management*, 2025. (Accepted)
2. **Xu, Qihang**, Yutian Pang and Yongming Liu. Airspace Sectorization based on Machine Learning Enhanced Workload Prediction and Clustering Methods. *Journal of Air Transport Management*, 2024.
3. **Xu, Qihang**, Yutian Pang, Xuesong Zhou, and Yongming Liu. Pigat: Physics-informed graph attention transformer for air traffic state prediction. *IEEE Transactions on Intelligent Transportation Systems*, 2024
4. **Xu, Qihang**. Physics-guided machine learning in air traffic flow prediction and optimization. Technical report, Arizona State University, 2024
5. **Xu, Qihang**, Yutian Pang, and Yongming Liu. Air traffic density prediction using bayesian ensemble graph attention network (began). *Transportation Research Part C: Emerging Technologies*, 2023
6. **Xu, Qihang** and Ramesh K Agarwal. Blood flow simulations of particle trapping in models of arterial bifurcations. In *Fluids Engineering Division Summer Meeting*. American Society of Mechanical Engineers, 2020
7. **Xu, Qihang** and Ramesh K Agarwal. Numerical simulation of particle trapping in laminar and turbulent t-junction flows. In *AIAA AVIATION 2020 FORUM*, 2020

Patents

1. **Airspace Sectorization based on Machine Learning Enhanced Workload Prediction and Clustering Methods**. U.S. Provisional Patent Application No. 63/783,710.