Rukun (Eric) Qiao

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Professional Summary

Ph.D. in Artificial Intelligence & Computer Vision from Peking University with a proven track record of designing, deploying and optimizing end-to-end AI/LLM solutions at scale. Expert in Python and modern ML/LLM frameworks. Skilled in **classical ML and deep learning for computer vision**. Hands-on experience with **microservices architectures** (FastAPI, Docker), PostgreSQL and vector databases, CI/CD automation in Azure. Strong collaborator in remote agile teams, adept at Git-based source control, containerization, and full-stack TypeScript development.

Skills & Technologies

Programming Languages: Python, C++, C#, JavaScript

Machine Learning & AI: 3D Vision & Depth Sensor, Deep Learning Architectures (CNN, ResNet, RNN, LSTM), Generative Modal Prototypes (NeRF, 3DGS)

Framework & Libraries: PyTorch, Scikit-learn, OpenCV, NumPy, pandas, MATLAB

Infrastructure & DevOps: Cloud-based AI integrations, Cloud deployment, Database management, Docker, CI/CD pipelines, Shell scripting.

Education

Peking University | Ph.D. in Artificial Intelligence **Beijing, China**

School of Intelligence Science and Technology *Sep. 2016 – Jul. 2024*

Kyushu University | Visiting Scholar Program **Fukuoka, Japan**

Graduate School of Information Science and Electrical Engineering *Sep. 2018 – Mar. 2019*

Peking University | B.Sc. in Artificial Intelligence **Beijing, China**

School of Electronic Engineering and Computer Science *Sep. 2012 – Jul. 2016*

Industry Experience

Independent Work | Engineering & Automation Projects *Sep. 2020 – Now*

- **Full-Stack Home Inventory App (ongoing)**: Independently designed PostgreSQL schema, built FastAPI microservices, and developed React Native/Expo front-end; established GitHub Actions CI/CD to auto-deploy to Azure deployments; outlined the LLM-driven NLP pipeline for future natural-language inventory updates.
- **AI Integration & Automation:** Created a WhatsApp-based AI chatbot using ChatGPT, allowing direct AI interactions via messaging; Developed a WhatsApp bot for real-time sports schedule updates, hosted on Azure App Services.

- **Developed & Deployed a Home Network & Media System:** Configured a QNAP NAS for centralized file management with automated backups. Implemented a Jellyfin-based media streaming solution with AI-assisted video classification, enabling seamless cross-device entertainment.

SenseTime | Machine Learning Researcher *Sep. 2020 – Jul. 2021*

- SenseTime is a leading AI company specializing in computer vision, deep learning, and smart city applications.
- Focused on 3D scene reconstruction on mobile platforms, a core research topic within the Peking University – SenseTime Joint Laboratory of Machine Vision.
- Developed a multi-view stereo system combining deep learning and classical optimization, enabling high-accuracy 3D reconstruction on mobile devices. Optimized ML algorithms for edge deployment, reducing computational overhead for real-time applications.

BOE Technology | Computer Vision Engineer *Oct. 2018 – Sep. 2019*

- BOE Technology is a global leader in display solutions, AIoT, and semiconductor technologies.
- Contributed to BOE's initial exploration into smart home applications, providing technical support from our research lab. Developed an autonomous SLAM system using stereo cameras for real-time robot navigation.
- Led collaborative testing and system integration, ensuring seamless deployment in real-world environments.

Research Achievements

Research Highlights

Keywords: Computer Vision, Deep Learning, Robotics, 3D Scanning

- Developed a disparity estimation network leveraging temporal correlation in structured light systems, reducing computing cost by about 50% for robotic vision applications.
- Pioneered the integration of neural implicit functions for structured light systems, enhancing depth estimation accuracy with minimal input patterns, and provide insightful research direction for structured light researches.

Publications

- **Rukun Qiao**, Hiroshi Kawasaki and Hongbin Zha, "TIDE: Temporally Incremental Disparity Estimation via Pattern Flow in Structured Light System," in *IEEE Robotics and Automation Letters*, pp.5111-5118, April 2022.
- **Rukun Qiao**, Hiroshi Kawasaki and Hongbin Zha, "Online Adaptive Disparity Estimation for Dynamic Scenes in Structured Light Systems," in *IEEE/RSJ International Conference on Intelligent Robotics and Systems,* 2023.
- **Rukun Qiao**, Hiroshi Kawasaki and Hongbin Zha, "Depth Estimation in Structured Light Systems via Neural Implicit Functions," in *International Conference on 3D Vision,* 2024.