



Rick Liao (Liao Jie-Ren)

Deep Learning Engineer, Speech Recognition & Audio Processing Engineer, LLMs

Application Engineer

Zhonghe, New Taipei City, Taiwan

Profile

- Experienced in LLM fine-tuning and prompt engineering, with expertise in LLM application development and integrated WebUI design, especially in Whisper and code generation[#].
- Skilled End-to-End ASR Developer: 7 years of experience building STT engines using Kaldi and end-to-end (deep learning) solutions[#].
- Proficient in deep learning model pruning and quantization[#].
- GitHub: <https://www.github.com/xrick>[#].

Work Experience

AI-LLM Engineer - Maple Leaf Information Technology, Singapore

Feb 2025 – Present

- LLM Fine-tuning: Responsible for fine-tuning DeepSeek-R1:7b with internal company data, increasing search accuracy by approximately 2% using LoRA[#].
- LLM RAG Web Apps Development:
 - DQE RAG Application: Improved design fault-finding efficiency by about 10%~15%[#].
 - SalesRAG: Enhanced product information search efficiency by about 30%~40%[#].
- **Projects:**
 - Design Quality Estimation RAG Application
 - SalesRAG Application
 - PdfRAG Application
 - Design of Aiagent + n8n automation workflow software

Senior AI Engineer - Lian Yi Tong Co., Ltd.

Sep 2023 – Sep 2024

- Online Customer Q&A Web Application:
 - Designed and developed a web application for online customer service, accelerating customer understanding of products and resolving queries. Utilized LLM to analyze speech content and enhance understanding of customer needs[#].
- Intelligent Socket Fire and Smoke Alarm Detection Model:
 - Developed a sound event classification model for highly resource-constrained environments, achieving 96.8% accuracy and compressing the model from 18.9MB to under 100KB[#].
 - Adopted Microsoft FLAML framework to develop an AutoML system for rapid model training and adaptation to diverse customer requirements[#].

Digital Speech & Audio Algorithm Engineer - Goertek Taiwan Co., Ltd.

Dec 2019 – Mar 2022

- Data Analysis Web Application Development:
 - Developed a speech spectrum analysis web application using Python, FastAPI, and Matplotlib[#].
- Edge Device Deep Learning Model Development:
 - Developed deep learning VAD and voice command models for microphone chips, achieving recognition rates of 96% and over 80% compression[#].
 - Developed abnormal sound detection models for cooling fans using time-domain audio features and machine learning algorithms; implemented on Raspberry Pi Zero for factory use in an anechoic chamber[#].

NLP & Deep Learning Technology Deputy Manager - ADATA-Lung Chen Xing

Dec 2017 – Dec 2018

- Web Services Programming:
 - Built dialogue engine RESTful Web APIs using Python[#].
 - Developed distributed crawlers for text data collection[#].
- Chatbot Engine Construction:
 - Developed a rule-based chatbot engine combined with machine learning to automate user commands such as auto-dialing, ticket booking, and weather inquiries[#].
 - Built NLP pipelines to accelerate corpus processing and debugging[#].
 - Developed the initial Kaldi-based ASR engine[#].
- Deep Learning Team Building:
 - Established a deep learning algorithm team of 6 members[#].

- Planned short-term (1–3 years) team development strategies[#].

.NET Software Engineer - Fong Shuo Technology

Sep 2012 – Mar 2017

- Developed .NET WinForm applications for NCSIST projects[#].
- Developed ASP.NET web applications for NCSIST internal information systems[#].

iOS Developer - Zoaks Ltd. Co.

Mar 2009 – Sep 2011

- Developed marketing iOS apps, including:
 - Coca-Cola 125th Anniversary App: Coke Collector
 - Kanebo Beauty Magazine
 - FamilyMark initial version[#].

Software Team Leader - Yilan County Information Network Center

Sep 2000 – Sep 2009

- Managed software development teams and coordinated project assignments[#].
- Oversaw project progress and team communications[#].
- Conducted requirements gathering and analysis[#].
- Analyzed and designed software system architectures and solved core algorithmic problems[#].
- Reported project progress and coordinated functional or other issues[#].
- Explored feasibility of new projects and R&D initiatives[#].

Education

- **Ph.D. Candidate, Department of Computer Science and Information Engineering, National Taiwan Normal University**
2018 – 2027
Speech Recognition, Speech Enhancement, Voice Commands, Chat Engine Design, Few-shot Deep Learning, Meta-learning (Meta-Learning)[#]
- **M.S., Department of Information and Computer Education, National Taiwan Normal University**
2003 – 2006
Heuristic Meta Optimization Algorithm, Software Design Patterns and Architectures[#]

Skills

- Deep Learning Model Training
- Deep Learning Model Pruning and Quantization
- Speech Signal Processing
- Automated Speech and Text Scoring Utilizing LLMs
- Automated Speech Mispronunciation Detection Utilizing LLMs
- Python Programming
- PyTorch / TensorFlow
- LLM RAG
- LLM Fine-tuning using LoRA
- LangChain and LangGraph
- PostgreSQL
- NoSQL: Redis, MongoDB
- Milvus Vector Database
- Docker and Kubernetes[#]

Languages

- English — Advanced[#]

