

Qurui Zhang

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Education

Boston University

Master of Science in Data Science

Boston, MA

Jan 2025 – Present

Nanjing University of Posts and Telecommunications

Bachelor of Science in Data Science and Big Data Technology

Nanjing, China

Sept 2020 – Jun 2024

Internship Experience

Data Analysis Intern

Jul 2023 – Sep 2023

SHEIN International Import & Export Co.

Guangzhou, China

- Built Tableau dashboards with interactive maps/filters, boosting analysis efficiency by 30% and supporting market strategy
- Analyzed sales & traffic data to detect anomalies and deliver recommendations that raised new-product conversion rates
- Applied BiLSTM on 1.8M reviews to extract insights, informing product design/marketing and earning team recognition

Selected Projects

BioCopilot: AI-Powered Bioinformatics Analysis Platform

Student Research Assistant, MIT CSAIL | Apr 2025 – Present

- **Multi-Agent System:** Architected multi-layer intent detection framework with AI classification and fuzzy matching, achieving NLU across 15+ bioinformatics tasks. Reduced configuration time by 80%
- **LLM Scientist Agent:** Built domain-expert AI agent for single-cell RNA-seq analysis, providing contextual parameter recommendations to non-expert researchers
- **Pipeline Orchestration:** Designed 3-layer architecture (Planner → Executor → Integrator) with SLURM integration, processing 100+ samples in parallel with 95%+ success rate
- **Multi-Model Integration:** Unified API abstraction for OpenAI GPT-4, DeepSeek, and Anthropic Claude with runtime model switching

Intelligent Tourism LLM Agent System

Project Lead | Sept 2023 – June 2024

- **ReAct Agent Framework:** Built LangChain-based ReAct agent orchestrating 4 tools (knowledge-base search, route planning API, weather check, internet search). Custom ChatGLM3 output parser with streaming callbacks
- **LLM Fine-tuning:** LoRA fine-tuned QWEN-7B on tourism dataset. +49% semantic similarity (0.531→0.791), +53% knowledge matching (53%→81%) via CTKB-EVAL metrics
- **RAG Pipeline:** End-to-end retrieval-augmented generation with piccolo-large-zh vectorization and optimized Top-K retrieval
- **Agent Evaluation:** Comparative analysis showing QWEN-14B achieved 89.28% F1 and 94.94% location parsing accuracy

Deep Reinforcement Learning: LPT3 Algorithm

Project Leader | Jan 2023 – Jun 2023

- Proposed LPT3 algorithm combining LSTM, PER, and TD3 for continuous control tasks
- Achieved +326% and +101% average returns on HopperBulletEnv and HalfCheetahPyBulletEnv with faster convergence
- Published in 2023 China Automation Congress (CAC), November 2023

Technical Skills

- **Programming:** Python (Experienced)
- **ML/DL Frameworks:** PyTorch (Experienced), LangChain (Intermediate)
- **LLM Skills:** LLM Fine-tuning (Intermediate), Multi-Model Integration, Agent Development
- **Data & Tools:** SQL (Intermediate), Git (Intermediate), Tableau, SLURM
- **Specializations:** Machine Learning (Experienced), Deep Learning (Experienced), Data Analysis (Experienced), Reinforcement Learning (Intermediate)