Junliang Lyu

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EDUCATION

Southern Methodist University (SMU) Dallas, TX

Master of Science in Computer Science, Expected Dec 2026 | GPA: 3.40 / 4.00

Relevant Coursework: Machine Learning in Python, Algorithm Engineering, Database Systems, Software Engineering

TECHNICAL SKILLS

Programming Languages: Python, Java, JavaScript, SQL (MySQL), HTML/CSS
Frameworks & Tools: React, Flask, Django, Streamlit, AstrBot, Docker, Git, GitHub
Backend & Systems: REST APIs, JWT Authentication, Docker Compose, OOP, Layered Architecture
Databases: MySQL (schema design, ER modeling, query optimization), SQLite (WAL / concurrency tuning)
AI & ML: OpenAI-compatible APIs, RAG, FAISS / vector search, GraphCodeBERT, CodeBERT, XGBoost, scikit-learn, PyTorch

EXPERIENCE

IT & Network Support — Mingjin Furniture Co., Ltd. Mar 2023 - Jun 2023

Dongguan, Guangdong, China - 500-person manufacturer (~60 computer-equipped office staff)

- Wrote Python scripts to automate the finance team's recurring spreadsheet workflows — consolidating multi-department Excel reports and distributing them — removing repetitive manual merging.
- Co-managed company-wide IT across ~60 workstations: operating-system deployment, network setup and configuration, and day-to-day hardware/software troubleshooting alongside one other technician.

PROJECT EXPERIENCE

Multi-Channel AI Chatbot Platform (Independent Project) 2026

- Built a multi-channel Python chatbot platform across QQ and Discord with modular plugins, API-based LLM routing, RAG/memory integration, and configurable moderation; QQ production deployment served a 5,000+ member community and processed 5,689 requests over 22 days.
- Resolved SQLite write-lock contention under 300+ active-user load using WAL mode and targeted PRAGMA tuning, eliminating observed database-lock errors without additional infrastructure.
- Containerized AstrBot and NapCatQQ with Docker Compose, health checks, local-only admin interfaces, and Docker-internal OneBot networking; extended plugins for moderation and time-aware behavior.

Airport Luggage Handling App (Team Project) 2026

- Built a full-stack web application with a React/Vite frontend and Flask REST API backend supporting 4 operational roles (Airline, Gate, Ground Staff, Admin).
- Designed the MySQL schema with UML/ER diagrams; implemented JWT authentication with bcrypt-hashed credentials and role-based access control across all endpoints.

AI Code Search Engine (Research Project with SMU Faculty) 2025

- Built a semantic code search engine using GraphCodeBERT embeddings and FAISS over a 300K-snippet subset of CodeSearchNet, enabling natural-language retrieval by semantic similarity.
- Designed a modular preprocessing -> embedding -> FAISS indexing -> retrieval pipeline with an MRR/Recall evaluation harness, benchmarking 7 retrieval approaches under one setup.
- Reached MRR 0.50 on a held-out test set, versus 0.31 for CodeBERT and 0.09 for a token-overlap baseline.

House Price Prediction - Data Mining (Team Project) 2026

- Built an end-to-end ML pipeline on the Ames Housing dataset (2,930 samples), reducing 138 raw features to 107 predictors through multi-stage feature engineering and selection.
- Benchmarked Lasso, Random Forest, and XGBoost via 5-fold cross-validation with grid search; XGBoost reached $R^2 = 0.93$ (RMSE = $22,947), reducing prediction error 32% versus Lasso.
- Identified Overall Quality and Total Square Footage as dominant predictors and applied a log transform to stabilize variance across price ranges.

ADDITIONAL INFORMATION

Awards: Dean's List; University Merit Scholarship
Work Authorization: F-1 STEM OPT (eligible for up to 3 years of work authorization; no H-1B lottery required during the OPT period)