FANSHI MENG

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Education

Georgia Institute of Technology   **Aug 2024 – Dec 2026**
Master of Computer Science and Engineering   *Atlanta, GA*

Beijing Jiaotong University - University of Waterloo Joint Program   **Sep 2019 – Jun 2023**
B.S. in Materials and Nanoscience (Honours)   *Waterloo, CA*
Minor: Computer Science

Technical Skills

Programming Languages: Java, Python, SQL, JavaScript/TypeScript, Go, Kotlin
Frameworks/Platforms: Spring Boot, FastAPI, React, Pytorch, AWS, GCS, Docker, Postman
Database/Tools: MySQL, PostgreSQL, Elastic Search, ChromaDB, Caffeine, Langchain

Experience

University of Waterloo Research Institute   **Sep 2022 – Apr 2023**
Lab Researcher   *Waterloo, Canada*
- Developed aptamer prediction pipeline for 100K+ SELEX sequences using clustering-based embeddings and RNA secondary-structure modeling
- Achieved **ROC-AUC 0.80** and **80% top-k recall** on final-round prediction, surpassing baseline by +0.20 AUC
- Designed stratified validation strategy to prevent data leakage; analyzed cross-target transferability limitations

Projects

Reference Youtube Link for Project Demo Video and Personal Website for Project Summarization
Travel Planner - LightRAG Recommend Engine | *LangChain, FastMCP, LightRAG*   **Oct 2024 - Dec 2024**
- Extracted **1,136 Florida POIs from Google Maps API**, processed through **LightRAG framework** to construct a **knowledge graph** with **2,767 entities** and **6,203 relations** stored in PostgreSQL via pgvector, with **HNSW vector indices** enabling semantic search and top-k retrieval.
- Developed a **FastMCP server** exposing 3 tools (`query_pois`, `get_poi_detail`, `recommend_pois`) with **article-normalization search** handling LLM-generated name variations; integrated with **LangChain 1.0 Agent** via `langchain-mcp-adapters` through stdio transport.
- Implemented custom **LangChain middleware pipeline**: `ContextInjectionMiddleware` for dynamic user context injection (travel history, interests, budget), plus built-in `ModelCallLimitMiddleware` to prevent agent infinite loops.
- Deployed via **LangGraph Dev Server** with LangSmith tracing integration, enabling real-time agent debugging through Studio UI and RESTful API endpoints for thread-based conversation management.

Travel Planner - Backend | *Java/Spring Boot, React, PostgreSQL, LangChain4j*   **Aug 2025 – Nov 2025**
- Developed a full-stack travel planning application with **JWT-based authentication**, password reset flow via email service, and **preference-driven itinerary generation**, supporting 10+ traveler profile parameters including travel pace, activity intensity, and group composition.
- Integrated **LangChain4j** with OpenAI to generate **personalized POI recommendations**: designed prompt templates with **structured output schemas**, implemented retry logic with error feedback, and achieved **async POI generation** using Spring Events to decouple long-running AI tasks from API responses.
- Built RESTful APIs with **Spring Security** for user management and itinerary CRUD operations; configured **environment-based CORS** policies and frontend URL injection for seamless development-to-production deployment.
- Architected React frontend with Material-UI featuring trip setup wizard, map-based POI visualization, and real-time itinerary status tracking; implemented forgot-password flow with token-based email verification.

GradeScopeAI | *Java/Spring Boot, Python/FastAPI, ChromaDB/PostgreSQL*   **May 2025 – Jul 2025**
- Built an educational platform where instructors could manage courses/assignments/submissions and students could join courses by private invitation token, submit work and receive AI/teacher feedback.
- Created a **llm-as-a-judge** pipeline in **Python/FastAPI** integrating **Google Gemini** via **LangChain**.
- Improved feedback quality with a **RAG** pipeline backed by **ChromaDB** (120+ curated IELTS essays and rubrics).
- Built the frontend with **React/TypeScript**, **Material-UI**, **Redux Toolkit**, and **React Router**; consumed **RESTful** APIs via **Axios**. Implemented business logic in **Spring Boot** and persistent user-generated content in **PostgreSQL**.
- Integrated **Google Cloud Storage** for document management and asset delivery.

Staybooking | *Java/Spring Boot, React/JS, PostgreSQL*   **Dec 2024 – Feb 2025**
- Designed and developed a full-stack web app to upload, delete, search, and reserve listings.
- Implemented token-based authentication; designed **PostgreSQL** schema and **Spring Data JPA** repositories.
- Built a user-friendly frontend with **React** and **Ant Design**.
- Integrated **Google Cloud Storage** for image files and a geocoding service for location-based search;