

Amanda Chan

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EDUCATION

University of Pennsylvania

Aug 2023 - May 2025

M.S. in Engineering in Data Science (Department of Computer and Information Science)

GPA: 3.83/4.00

Courses: Machine Learning, Natural Language Processing, Deep Learning, Data Structures & Algorithms, Database Management

Hong Kong University of Science and Technology

Sep 2019 - Jul 2023

B.S. in Physics

Honors: HKSAR Government Scholarship Fund, Lee Hysan Overseas Scholarship, Dean's List

SKILLS

Programming Languages: Python (LangChain, LlamaIndex, PyTorch, TensorFlow, Pandas, PySpark), JavaScript (React), SQL

AI Agent & ML Skills: AI Agents (LangChain, RAG pipeline, Multi-tool orchestration), Large Language Models (ChatGPT, LLaMA, Gemini), Deep Learning (Transformers, RNN, LSTM)

Platforms & Tools: GitHub, Docker, Google Cloud, Amazon Web Services, Streamlit, OpenAI API, MySQL, NoSQL

EXPERIENCE

AI Engineer

Jun 2025 – Present

GitHub Repository: github.com/amandachantech/ai-agent-multitool

United States

[AI Agent | LangChain | RAG | OpenAI API | Streamlit | Python Modular Design]

AI Multi-Tool Agent for Document, PDF, and CSV QA

- Developed a unified **AI agent** capable of handling natural language queries across **multiple data formats** (plain text, PDF documents, and CSV files) using **LangChain** and a **RAG pipeline**.
- Implemented **modular agent classes** for scalable reasoning, enabling context-aware retrieval and dynamic tool selection for different query types.
- Built an interactive **Streamlit** application with integrated **charting tools** (bar, line, scatter), allowing users to visualize structured data analysis results.
- Engineered robust **API handling, error management**, and improved model response consistency with **GPT-4-turbo**.

Machine Learning Engineer Intern

Aug 2024 – May 2025

Wharton Research Data Services

United States

[LLM | RAG | Langchain | OpenAI API | Chatbot]

Optimizing Retrieval-Augmented Generation (RAG) for Financial Document Analysis

- Developed a **Retrieval-Augmented Generation (RAG)** system using **Langchain**, **OpenAI**, and **Gemini APIs** to answer finance-related queries from **SEC filings**, including 10-K and 10-Q reports.
- Designed and executed experiments comparing embedding models (BCEmbedding vs. OpenAI Embeddings) and retrieval methods (BCEReranking vs. Reciprocal Rank Fusion) to optimize system performance.
- Enhanced **retrieval accuracy** from 21% to 50% and **answer accuracy** from 16% to 42%.
- Researched and implemented **table-based QA** techniques—including **TableRAG** and **text2SQL** approaches—boosting table-based answer accuracy from **32% to 97%**.

Image-Based Recipe Generation and Optimization with LLM (Capstone Project)

Nov 2024 – Dec 2024

University of Pennsylvania Nov 2024 – Jan 2025

United State

[Multimodal | Vision-Language Model | Computer Vision | Natural Language Processing | Model Fine-Tuning]

- Developed an automated recipe generation system** integrating computer vision (CV) and natural language processing (NLP) to generate structured recipes from food images.
- Enhanced baseline (InverseCooking) with prompt engineering and fine-tuning:** Used microsoft/git-base-coco for food descriptions, refined recipe fluency with TinyLlama-1.1B-Chat (Extension 1, score: 0.398), and fine-tuned it on 400 image-recipe pairs for more structured outputs (Extension 2, score: 0.418).
- Implemented an LLM-based evaluation framework** assessing content similarity, structure, clarity, and usability.
- Fine-Tuned LLM outperformed the strong baseline (0.326) by 28.2%**, demonstrating significant improvement in recipe quality.