

## HEXU YANG

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### EDUCATION

**SINGAPORE MANAGEMENT UNIVERSITY** Aug 2023 - Jan 2025  
Master of IT in Business (Artificial Intelligence)

**SOUTHWESTERN UNIVERSITY OF FINANCE & ECONOMICS(SWUFE)** Aug 2016 - Jul 2020  
Bachelor of Science in Financial Engineering

### WORKING EXPERIENCE

**SYNCARTA PRIVATIVE LIMITED** –Singapore May 2025 - Oct 2025

#### Full-Stack Software Engineer

- Developed full-stack web application for real-time PVC card customization with multi-language support and AI-powered design tools
- Built high-fidelity rendering engine using Canvas API, generating print-ready 300/600 DPI images with material-specific processing
- Deployed production system on AWS EC2 with Node.js/Express backend, achieving 24/7 uptime via PM2 and Nginx
- Implemented modular AI integration featuring background removal, image expansion, and style transfer capabilities with zero-modification architecture pattern
- Tech Stack: JavaScript (ES6+), Node.js, Express.js, Canvas API, AWS EC2, Nginx, PM2, HTML5/CSS3

**PAN-CHINA CERTIFIED ACCOUNTANTS (PCCA)** –Chongqing, China Jul 2020 - Sep 2021

#### Business Advisory Audit

**SOUTHWEST SECURITIES (FINANCIAL SERVICES)** – Chongqing, China Jul 2018 - Aug 2018

#### Quantitative Intern Analyst

### ACADEMIC PROJECTS

**Natural Language Processing - RAG System (Python)** Aug 2024

- Designed and deployed a Retrieval-Augmented Generation (RAG) system for personalized marketing content generation using Google Cloud AlloyDB and Vertex AI. Implemented semantic search with pgvector embeddings (768-dim) and evaluated LLM outputs (Gemini-1.0-pro and Chatgpt-4o) using Coherence, Relevancy, and Contextual Precision metrics. Compared multiple prompting strategies (zero-shot, few-shot) for optimal content generation.

**Recommender System - Movie Recommendation (Python)** Aug 2024

- Developed hybrid movie recommendation system combining content-based and collaborative filtering approaches. Implemented matrix factorization techniques (WMF, BPR, BiVAE) and integrated LibFM for factorization machines. Merged MovieLens and TMDb datasets with feature engineering to generate personalized top-50 recommendations, demonstrating proficiency in both individual and collaborative filtering methods.

**AI System Evaluation - Backdoor Detection (Python)** May 2024

- Developed and evaluated multiple backdoor detection techniques (SODA, Neural Cleanse, Activation Clustering) for deep learning models. Analyzed 5 backdoored models across MNIST and CIFAR-10 datasets, implementing state-of-the-art defense mechanisms to identify and mitigate backdoor attacks in neural networks.

**Applied Machine Learning - Earthquake Aftershock Prediction (Python)** Feb 2024

- Predicted earthquake aftershocks using 40-year seismic data (59K+ events) by implementing Random Forest, Gradient Boosting, and Neural Networks. Achieved  $R^2$ : 0.269 through feature engineering and temporal pattern analysis.

**Big Brother Surveillance System (SQL)** Feb 2024

- Utilized Mysql to build a schema about the Big Brother Surveillance System to store and retrieve data, also created several stored procedures and triggers for different use by coding with SQL.

### ADDITIONAL

- Technical Skills: Python, SQL, Machine Learning, Reinforcement Learning, Deep Learning, NLP, Excel
- <https://github.com/Hosheaaa>