

Marshall Chen Hongpo

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Work Experience

Data Engineer Intern

Jul 2023 - Jan 2024

Amplified Industries Inc | Boston, MA

- Implemented ELK Stack using Terraform, reducing data analysis processing time by 25%
- Configured Fluentbit for Kubernetes clusters, reducing troubleshooting time by 50%
- Migrated database architecture to AWS TimescaleDB clusters, boosting query performance by 30%
- Increased unit test coverage by 80% using pytest, resulting in significantly fewer production bugs

AI Software Engineering Intern

May 2022 - Dec 2022

Cynapse Pte Ltd | Singapore

- Trained classification and object detection models with TensorFlow and PyTorch, achieving 93% accuracy in identifying workplace safety violations through video analytics
- Optimized model performance through advanced data augmentation, reducing overfitting by 28%
- Collaborated on CI/CD pipelines for ML model deployment, decreasing deployment time by 40%

Projects

Cointegrated Cryptocurrency Pairs Trading System(WIP)

Jan 2025 - Present

- Built a trading system that spots profitable crypto pairs using statistical relationships (cointegration)
- Data pipeline combines price feeds from Binance with X(Twitter) sentiment analysis in Python
- Backtester showing 18% returns with strong risk metrics (2.1 Sharpe) on mean-reverting pairs

Mean Reversion Trading & Options Analysis Framework(WIP)

Jan 2025 - Present

- Built a vectorized Python backtesting tool to compare strategy returns against market benchmark
- Technical Indicators (Bollinger Bands, Z-Score) to generate buy/sell signals for Mean-reversion strategy
- Option pricing using Monte Carlo simulation and Black-Scholes models
- Current trade strategies showing 40% more consistent gains than market

[Pixel Jumper](#)

Jan 2025 - Mar 2025

- Developed a retro endless runner game using React, TypeScript, and Tailwind CSS, implementing efficient algorithms for procedural level generation
- Optimized performance using component memoization and state management techniques

[Personal Portfolio Website](#)

Jan 2025 - Mar 2025

- Built a responsive personal website with Next.js, React, and Tailwind CSS to showcase projects and technical skills.
- Deployed on Vercel with a custom domain (chenhongpo.com) for real-time updates and global accessibility.

[SQL Query Cost Estimator](#)

Feb 2024 - Apr 2024

- Developed Python tool estimating PostgreSQL query costs pre-execution for optimization insights.
- Implemented SQL parsing to identify costly operations like joins, scans, filters.
- Applied heuristic cost model based on operation types/cardinalities to predict relative resource usage.

[TextRank and Pagerank Implementation](#)

Jan 2024 - Mar 2024

- Analyzed Google's PageRank algorithm and its NLP adaptation, TextRank, for text summarization.
- Researched algorithm mechanics, mathematical foundations, and efficiency characteristics.
- Investigated implementation and scaling strategies for these graph algorithms for deployment.
- Authored report detailing findings on algorithm behavior and optimization opportunities.

[Eye-Tracking for Stress Management](#) | [Luleå University of Technology, Sweden](#) | Jan 2023 - May 2023

- Created a real-time lighting system integrating Philips Hue bulbs and Tobii Pro Glasses 2 eye-tracking hardware.
- Analyzed pupil movement patterns in real-time to infer stress levels.
- Developed a webhook-based data pipeline to transmit eye tracking metrics, automatically adjusting ambient lighting based on stress indicators.

Hackathons

[AI Medical Chatbot](#) | Grab HackForGood 2022, Singapore

Apr 2022 - Jun 2022

- Developed, deployed a medical chatbot using PyTorch, Flask and REST APIs for healthcare queries.
- Achieved response times <500ms with 91% accuracy during testing across 10,000 queries.

Education/Research

Bachelor of Computing (Honors), in Computer Science

Aug 2020 - Dec 2024

Nanyang Technological University | Singapore

- Specialization: Artificial Intelligence, Data Science & Analytics
- Research Project: [Network Analysis on fMRI Data](#) - ML classification on brain networks
- Modules: *Algorithm Design & Analysis, Software Engineering, OOP, Database System Principles, Linear Algebra, AI, ML, Neural Network & Deep Learning, P & S for Computing*

Semester Abroad

Jan 2023 - Jun 2023

Luleå University of Technology | Luleå, Sweden

- Completed Master's-level courses in Neural Networks and Deep Learning, achieving Distinction.
- Excelled in coursework, resulting in an offer for a Teaching Assistant position.

NUS High School of Math and Science (Honors) | Singapore

Jan 2012 – Nov 2017

- Singapore Mathematical Olympiad: Gold (2012), Silver (2013)

Leadership and co-curricular activities

Chief Programmer, Hall 2 Dinner and Dance Committee (NTU)

Jul 2021 – Aug 2022

- Planned "Back to School" themed D&D event for hundreds of participants at an external hotel; liaised with external sponsors.

Cultural Secretary, Hall 2 Hall Council (NTU)

Jul 2020 – Jun 2021

- Served as communication channel between cultural groups and hall office; planned events like talent shows.
- Supported other hall council members in their planning of events and duties.

Commando Soldier | Singapore Armed Forces

Jan 2018 - Dec 2019

- Awarded Commanding Officer's commendation letter for 2 years straight for outstanding work

Skills

- **Programming:** Python, Java, C, JavaScript, TypeScript, React, Node.js, Next.js, Flask, Tailwind CSS, PyTorch, TensorFlow
- **Data & Cloud:** PostgreSQL, AWS (EC2, S3, Lambda, TimescaleDB), Docker, Kubernetes, ELK Stack,
- **Other:** Git, Agile, Machine Learning, Data Augmentation, Unit Testing
- **Languages:** English (Native), Chinese (Native), Japanese (A2), German (A1)