

EDUCATION

MicroMaster of Statics and Data Science, *Massachusetts Institute of Technology* Feb. 2021 — 2023

- Coursework: Data Analysis: Statistical Modeling and Computation in Applications, Machine Learning with Python-From Linear Models to Deep Learning, Fundamentals of Statistics, Probability - The Science of Uncertainty and Data

Bachelor of Information Technology, *Queensland University of Technology* Jul. 2022 — Jun. 2023

- Coursework: Information Security, High Performance and Parallel Computing, Capstone Project, Enterprise Architecture

Bachelor of Software Engineering, *Jinling Institute of Technology* Jun. 2019 — Jun. 2023

- Average Score: 93.83/100, GPA: 4.14/4.5, Ranking 1/48
- Coursework: Software Engineering, Linear Algebra and Space Analytic Geometry, Computer Systems, Database Management, Building IT Systems, Data Structure and Algorithms, Web Development, Operating System, Networks, Business in the Cloud, Management

SKILLS

Tools and Languages	Zotero, LaTeX(Overleaf), Non-linear note(Obsidian, Notion), Python(PyTorch, Numpy, Pandas), Linux, JavaScript (Vue)/HTML, Go, C/C++, SQL, Bash, AWS, Git, Docker, Markdown, Google
Mastered Skills	Data structures & Algorithms, Software design, Mathematical optimization & modeling, Cybersecurity, IT Operations
Communication Skills	Asynchronous communication, Communication based on context, English (IELTS 8.0/9.0), Chinese Mandarin (Native)

ACTIVITIES

Publications

[1] W. Gui, Y. Zeng, and Z. Xia, "Singing voice detection algorithm based on a scaled dot-product attention embedded convolutional neural network," in *Proceeding of the 16th National Conference on Man-machine Speech Communication*. Xuzhou, Jiangsu, China, Oct. 2021, pp. 256–264.

[2] W. Gui, Z. Xia, R. Gong, and G. Wang, "Singing Voice Detection Based on Feature Attention Deep Neural Network," in *2nd Annual International Conference on Artificial Intelligence and Applications (ICAIA2022)*. Wuhan, Hubei, China, Dec. 2022. Accepted.

Intellectual Properties

• A multi-thread courier bill recognizing software based on paddleOCR	Software copyright (2022SR0573840)
• A delivery SMS pickup code extracting software based on MobileNet	Software copyright (2022SR0574212)
• A private cloud-based job collection and analysis system	Software copyright (2022SR0440287)
• A singing voice detection system based on PyTorch	Software copyright (2021SR1178933)
• A 3D simulation teaching software of animal cells	Software copyright (2017SR378755)
• One-hand multi-joint recognition and interactive collaboration software	Software copyright (2017SR378766)
• A visual recognition device and recognition method	Patent (CN201711104508.6)
• A fingerprint recognition method	Patent (CN201711112733.4)
• A method for a sweeping robot to establish cruising coordinate system	Patent (CN201610917156.5)

Competitions

• The First International English Ability Challenge For College Students	Worldwide, Jun. 2022, Silver Award
• China Collegiate Algorithm Design & Programming Challenge Contest	National, Mar. 2022, Silver Medal
• China Robot and AI Competition	National, Nov. 2020, Team First prize
• National Software and Information Technology Talent Contest	Provincial, Nov. 2020, First prize
• Programming Ability Test	National, Dec. 2019, No. 1 among 1195 competitors
• National Olympiad in Informatics	National, Dec. 2015 & Dec. 2018, Second prize
• Jiangsu Olympiad in Informatics	Provincial, Nov. 2014, First prize

Awards

• China National Scholarships (top 60 thousand / 27 million, 0.2%)	Ministry of Education of the P. R. China, November 2022
• QUT International Merit Scholarship - Science	Queensland University of Technology, May 2022
• Merit Student	Jinling Institute of Technology, Oct. 2021
• Advanced Student of Competitions	Jinling Institute of Technology, Oct. 2021
• Excellent Student Scholarship	Jinling Institute of Technology, Dec. 2020

EXPERIENCE

Research Intern

May. 2022 — Sep. 2022

Imperial College London, Data Science Institute

Remote

Application of multi-scale image target detection in material science

- Manual analysis in material science is unreliable and tedious.
- In this cooperative research project, we proposed a hierarchical network that combines YOLO with SegFormer to detect effectively, segment and finally calculate the area of residues and dislocation loops.
- Results show that our approach has achieved outstanding performance.

Research Intern

Mar. 2022 — Dec. 2022

The Hong Kong University of Science and Technology (Guangzhou)

Guangzhou, Guangdong, China

Novel model on 3D Dental Scans

- This is an ongoing research project. High-quality models and annotations are scarce in dentistry. So we are working on finding a new method to transfer models between different dataset domains effectively.
- My major role in this project includes paper writing, visualization and programming.

Tutor

Sep. 2022 — Present

JR Academy

Brisbane, Queensland, Australia

- Providing tutoring service of on-campus courses to university students.

Research Assistant

Dec. 2021 — Jul. 2022

AI Lab of Software Engineering School, Jinling Institute of Technology

Nanjing, Jiangsu, China

Singing Voice Detection

- End-to-end singing voice detection is fundamental and challenging.
- We proposed a model with multiple scaled dot-product modules based on the Resnet backbone.
- Result shows that our network has a 1.8% improvement in accuracy and a 1.3% improvement in F-measure than previous works.

Project Hoster

May 2021 — May 2022

Jinling Institute of Technology

Nanjing, Jiangsu, China

Aquaculture uncrewed ship

- It is unaffordable and inconvenient for shrimp farmers to operate large vessels.
- We implemented a ship solution including avoidance (Vector Field Histogram), formation (Plane System), water monitoring (STM32 MCU), feeding, and IoT integration (Alibaba Cloud). The committee accepts
- Our ship has won national competition prizes and the outcome.

Casual Software Engineer

Aug. 2019 — Aug. 2022

Suzhou Mingguang Software Co, LTD. (List No. 691306)

Suzhou, Jiangsu, China

Jiangsu Equity Exchange Center Technology Innovation Board Listed Enterprise

- I developed enterprise management solutions, including virtualized working space, customer management system, offsite-data autonomy, and transparent VPN system across multiple sites.

Olympiad in Informatics Contestant

Aug. 2014 — Apr. 2021

- Algorithms and codes are developed and written in this ACM-ICPC contest.
- Data Structure: Linked List, Queue, Stack, Heap, Hash Table, Segment Tree, Trie Tree, Dict
- Algorithms: Brute-force, Greedy, Recursion, Dichotomous, divide-and-conquer, Dynamic programming, Simulation
- Graph Theory: Shortest Path, Spanning tree, Disjoint-set, Bipartite chart, Tarjan, LCA
- Number theory: Greatest Common Divisor, Least Common Multiple, Erichsen sieve method, extended euclidean algorithm, fast exponentiation, Equations of congruence

Open source projects

Jan. 2015 — Present

Github

- Author of live2d-widget.js: A out-of-box Live2D dynamic widget on web pages, written by JavaScript. **1.4k stars**. The project used Webpack and Continuous integration to improve compatibility and workflow. I implemented a painless injection to the web page by modifying the DOM Tree through Shadow DOM. I also implemented Lazy load and CORS.
- Contributor of hexo: A blog framework powered by Node.js. After a bug trace, I located its source and submitted a PR to solve the bug caused by unexpected filter input.
- Contributor of cmdr: A console emulator on Windows. I submitted a PR written by Batch to enable the checking of custom args.
- Contributor of hexo-blog-encrypt: An encrypt plugin for Hexo blog, written by JavaScript. I submitted a PR written to refactor the project using Web Crypto API and to remove jQuery dependencies. Enhanced security is implemented by introducing salt, using PBKDF2 & SHA256 to derive keys, using AES256-CBC to encrypt data, and HMAC to verify message authentication codes. Finally, I fine-tuned the sequence to improve compatibility with plugins like MathJax, which depends on EventListener.