

CAI Yuxuan

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EDUCATION

Tongji University

08/2022-06/2026 (Expected)

- *Major:* Computer Science and Technology
- *GPA:* 4.68; *Average Score:* 91.82

PROJECT EXPERIENCES

Design and Application of a Big-Data-Based Enterprise Valuation Model, Key Developer 12/2023-03/2025

- **Data Mining & Sentiment Analysis:** Utilized web crawling technology to filter data from Baidu Index, Weibo post data and market data. Engineered a Weibo Sentiment Index model leveraging the Bag-of-Words model and Naive Bayes algorithm. Established data correlations with the top 10 Chinese Concept Internet ETF stocks for prediction.
- **Machine Learning Model Development:** Developed Random Forest-based Financial Data Prediction Model and XGBoost-driven Comprehensive Stock Valuation Model. Achieved over 98% accuracy in corporate stock valuation through hybrid integration with the traditional Discounted Cash Flow (DCF) valuation model.
- **WeChat Mini Program Development:** Engineered "Valuation Pro STOCK" (WeChat Native JS/Java/MySQL) deployed as an alpha version on WeChat Open Platform. Awarded National College Student Innovation Project for pioneering integration of big data sentiment factors into corporate stock analysis.

(Project GitHub repository: <https://github.com/RaraCai/Stock-WeApp.git>)

Complex Meteorological Radar Performance Detection System, Key Developer 03/2024-07/2024

- **Modeling & Simulation:** Built models under complex meteorological conditions using Ansys Fluent, Python, and MATLAB. Simulated typical weather scenarios, such as Sea-Land Breeze and Microburst with Wind-Driven Rain (WDR), and extracted multiple key environmental features for AI training.
- **Deep Learning Algorithm Development:** Designed and trained a deep learning model based on the Generalized Approximate Message Passing (GAMP) algorithm. Applied it to radar waveform processing under simulated weather conditions, realized target echo separation and clutter suppression, and improved wind field velocity estimation.
- **AI System Implementation:** Led full-stack development of simulation and detection pipeline, integrating PyTorch-based model with MATLAB backend for real-time processing. Completed integration of key functional modules and validated system performance via test cases of real-world wind field data.

Forest Eagle Eye - A One-Stop Forest Environmental Resources and Information Platform, Project Leader 09/2024-01/2025

- **AI-Enhanced Data Pipeline:** Collected data from Global Forest Watch and the National Forestry and Grassland Science Data Center to construct a custom database named "Forest Eagle Eye" with Python ETL pipelines. Applied unsupervised learning to cluster forest resource features.
- **One-Stop Information Platform Development:** Developed web-based dashboard integrating Gaode Maps API, ECharts, and custom-trained forest type classification model. Architected full-stack (Vue.js/Flask/MySQL) website named "Forest Eagle Eye" with modular design, including a forest encyclopaedia, forestry activities, forums, and a multi-turn AI Q&A system to provide a platform for forest enthusiasts to connect and share.

(Project GitHub repository: <https://github.com/RaraCai/ForestEagleEye.git>)

INTERNSHIP EXPERIENCE

Shensu Science & Technology (Suzhou) Co., Ltd, Product Manager Intern - Data Analysis Direction 07/2024-09/2024

- **NLP-Driven System Development:** Analyzed telecommunication response datasets (both incoming and outgoing) and developed a mathematically quantifiable modeling framework to identify high-frequency demands for intelligent voice Q&A interactions. Participated in NLP-powered speech recognition for the Immunization Outbound Calling Robot deployed in the vaccine campaign of 300,000+ residents in Pudong, Shanghai.
- **Real-time Monitoring Platform Deployment:** Engaged in the programming of the Immunization Outbound Calling Robot's data monitoring B-side platform, which is now used within the company's internal back-end, and implemented real-time data visualization and performance tracking modules, covering 100% of the product's business lines.

- **Cross-Departmental Collaboration:** Led UI/development/marketing teams through 5+ iterative prototypes of immunization robot, aligning technical solutions with user needs via field research. Handled post-launch data feedback and refined models to achieve a 150% growth in conversation rate (from less than 18% to more than 50%).

PUBLICATION

- Cai Yuxuan *Research on the Application of RSA Algorithm in QR Code Anti-counterfeiting Technology*, Published in *Information Recording Materials*, 2024, 25(09): ISSN1009-5624 CN13-1295/TQ
- **RSA Algorithm Optimization:** Explored optimization strategies for the traditional RSA algorithm in large prime factorization and modular exponentiation to enhance cryptographic performance.
 - **QR Code Security Innovation:** Reviewed existing QR code anti-counterfeiting and traceability systems, compared the time performance of different solutions, and provided new perspectives for applying and improving RSA algorithm in QR code technologies.

AWARDS

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| • Third Prize, 2023–2024 Tongji University Scholarship (Top 10%, University Level) | 12/2024 |
| • Second Prize, Growth Group, 10th Tongji University Academic Forum on Student Innovation and Entrepreneurship (University Level) | 12/2024 |
| • Outstanding Peer Mentor, 2023-2024 Tongji University Peer Mentor for Freshman (University Level) | 09/2024 |
| • Second Prize, 7th National Innovation Experience Competition for College Students (National Level) | 06/2024 |
| • Bronze Prize, Tongji University preliminary contest of China International College Students' Innovation Competition 2024 (University Level) | 06/2024 |
| • First Prize, 7th National Innovation Experience Competition for College Students – Shanghai Division (Provincial Level) | 05/2024 |
| • Second Prize, 2022–2023 Tongji University Scholarship (Top 5%, University Level) | 12/2023 |

OTHERS

- Computer Skills:
Programming Languages: C/C++, Python, Verilog HDL, Java, JavaScript, HTML5/CSS3
Deep Learning Frameworks: PyTorch, TensorFlow, model deployment and model fine-tuning
Development Frameworks: Vue, React, full-stack development with front-end/back-end separation
Professional Software: Visual Studio, VS Code, Android Studio, Vivado, Ansys Fluent, Axure, Flutter
You can find more of my projects on my GitHub Profile. RaraCai (Yuxuan Cai) (<https://github.com/RaraCai>)
- Language: IELTS: 8.0
- Hobbies: painting, design, music, video editing