Xinjian Ji

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EDUCATION

Peking University (QS:14) 2023.Sept-2025.Jun
Bachelor degree: Software Engineering
GPA: 3.895/4.0, Rank: 1/94

Dalian University of Technology (985) 2019.Sept-2023.Jun
Bachelor degree: E-commerce
GPA: 91.5/100, Rank: 1/61

RESEARCH EXPERIENCE

Graduation Project: Personalized Intelligent Music Therapy Using Wearable Devices 2024.July - 2025.Jan

- Led the project by independently managing system design, software development, and reporting, while organizing a randomized controlled trial with 90 participants and overseeing data collection and analysis.
- Developed a personalized therapeutic music system by integrating SUNO generative music model with HRV data and LightGBM-based emotion detection. Conducted three randomized experiments, proving significant mood and psychological well-being improvements (p less than 0.01).

A Novel Physical Modeling Approach for Sound Synthesis of Chinese Chime Bells 2024.Oct -2025.Jan
Third author, co-authored with my professor (Under review at PLOS ONE, JCR Q1)
GitHub repository: Link

- Contributed to code development and co-authored the research paper.
- This study introduces a novel physical modeling approach for synthesizing Chinese chime bell sounds using inharmonic digital waveguide techniques. Through acoustic sampling and analysis of a reproduced Marquis Yi of Zeng chime-bell set, which captured its distinctive dual-tone characteristics, two effective synthesis models were developed.

National Undergraduate Innovation and Entrepreneurship Training Program:
A Method for Analyzing Stock Price Volatility Based on Market Sentiment
2021.Mar - 2022.Apr

- Led and managed all aspects of the project, including design, data processing, model development, analysis, and paper submission.
- To address stock price fluctuations, a method was developed to predict volatility by analyzing stock forum commentary sentiment using a BERT-based sentiment analysis model. A corpus of stock forum comments was compiled to train the model, which, combined with XGBoost, was used to predict stock price movements. Additionally, Shewhart control chart theory was applied to provide early warnings of abnormal price fluctuations for companies and investors.

FAR: A Novel Fast API Recommendation Algorithm Based on Static Centrality Annotation and Enhanced Subgraph Evaluation 2023.Jan - 2024.Jul
Paper link: https://chinaxiv.org/abs/202408.00239

- Expanded from a high-grade course project in JAVA (98/100) at PKU, developed and authored the research independently.
- The paper introduces the FAR (Fast API Recommendation) algorithm, which leverages an efficient indexing structure and innovative subgraph evaluation criteria to significantly enhance the speed and accuracy of Mashup recommendations, outperforming current state-of-the-art API recommendation algorithms across multiple metrics.

PROJECT EXPERIENCE

Q1Synth – Add Quantum Gates 2024.Oct - 2024.Dec
GitHub repository: Link
Operational website: Link

- Independently upgraded the original ICCMR Q1Synth—a quantum music synthesizer—by integrating quantum gate operations based on quantum computing and optimizing the user interface, laying the foundation for future quantum music research.

Palace Voices: A Multi-Modal Digital Human System for Cultural Heritage 2024.Sept - 2024.Dec
National First Prize in M-Zone AI+ University Innovation Program

- As the project leader, I designed the system architecture, defined the technical roadmap, and led back-end development.
- The platform combines advanced technologies to offer an immersive, multi-modal experience. Stable Diffusion creates accurate digital replicas of artifacts, while Runway animation brings them to life. Google Cloud, MeloTTS, and SadTalker enable natural conversations with virtual humans, and Suno generates dynamic background music. VR integration lets users explore the Forbidden City and interact with artifacts in a fully immersive environment.

AI-Powered Adaptive Learning: Explainable Recommendation Algorithms in MOOCs 2023.Sept - 2023.Nov
National First Prize in Information Security and Countermeasures Contest

- As a team member, I was responsible for collecting data, developing the model, creating the PPT, and delivering the presentation.
- The project developed an explainable recommendation algorithm for MOOCs to improve personalization and interpretability. Using web scraping, we created the ICourseData dataset with sentiment analysis, and designed the PETER model to predict course ratings and provide personalized recommendations. This model significantly enhances recommendation accuracy and user experience.

NewsRhythm: Development of a Real-Time Hotspot Reporting and Intelligent Dialogue System Based on Large Language Models 2024.Mar - 2024.Jun
Software Copyright - First Author

- As the team leader for this software engineering course project, I led the effort to apply for software copyright, primarily responsible for requirements analysis, functional design, and software development.
- The software, built on the PaddlePaddle framework and integrated with large language models, enables real-time news scraping and summary broadcasting while providing weather alert functionalities to enhance the immediacy of news acquisition. Additionally, it features customizable and adaptive voice modulation. By incorporating the Whisper speech recognition model alongside large language models, the software supports intelligent dialogue capabilities.

PyWhiteBox: A Web-Based White-Box Testing Tool for Python Code 2024.Oct - 2025.Jan
Software Copyright - First Author
GitHub repository: Link

- In the software testing course, I developed PyWhiteBox for peer testing, with a focus on backend and partial frontend implementation. The course received a perfect score (100).
- PyWhiteBox enables users to input Python code, select testing modes (Basic Path, Path Coverage, and Large Model Testing), and automatically generate test flowcharts and detailed test cases, featuring a clean UI and record management.

HONORS AND AWARDS

- National Scholarship for Undergraduate Students of Peking University 2024.Dec
- Merit Student Award of Peking University 2024.Dec
- Merit Graduate of Dalian University of Technology 2023.Jun
- Merit Student Leader of Dalian University of Technology 2020.Dec
- Mitsubishi Chemical Corporation Scholarship of Dalian University of Technology 2020.Nov
- Learning Excellence Scholarship(First Prize) of Dalian University of Technology 2021.Sept
- Innovation and Technology Scholarship of Dalian University of Technology 2021.Sept
- Social Practice Scholarship of Dalian University of Technology 2020.Sept

- National First Prize in Information Security and Countermeasures Contest 2023.Dec
- National First Prize in M-Zone AI+ University Innovation Program 2024.Dec
- M Award in Mathematical Contest in Modeling / Interdisciplinary Contest in Modeling (MCM/ICM) 2022.Dec
- First Prize in Asia-Pacific Mathematical Modeling Competition 2022.Oct
- WorldQuant Gold Medal in Quantitative Finance 2024.Mar
- Second Prize in MathorCup 2022.May
- Second Prize in HuaShu Cup 2021.Sept
- Second Prize in E-commerce Innovation and Entrepreneurship Competition 2021.May

SKILLS

- **Technical Skills:** Python, Java, MATLAB, C/C++, CSS, HTML, JavaScript, MySQL, R, SPSS
- **Non-Technical Skills:** Guitar, Piano, MIDI, DAW scripting (Cubase, FL Studio), Pop Singing, Hip-Hop
- **English Proficiency:** IELTS Academic - Overall: 7.0