Xiao Du

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EDUCATION

New Jersey Institute of Technology **Newark, NJ**
Phd in Information System *Aug 2025 – Jun 2029(Expected)*

Cornell University **Ithaca, NY**
Master of Engineering in System Engineering *Aug 2024 – Jun 2025(Expected)*
GPA: 3.527/*4.0*

- **Courses:** Model Based Systems Engineering, Systems Analysis Behavior and optimization, system Engineering Project, Project Management and Leadership for Complex Systems, Introduction to Machine Learning, Deep Learning, Multidisc Design Optimization, AI for HSE

University of California, Irvine, Donald Bren School of Information and Computer Sciences **Irvine, CA**
Bachelor of Science in Computer Science *Sep 2021 - May 2024*
GPA: 3.331/*4.0*

- **Courses:** Introduction to Probability and Statistics for CS, Introduction to Linear Algebra, Discrete Mathematics for CS, Introduction to Software Engineering, Applications of Probability in CS, Data Structure Implementation and Analysis, Embedded Software & Associated Lab, Human Computer Interaction

Fort Hays State University **Hays, KS**
Academy of Mathematics and Science Program *Aug 2019 - May 2021*

- **Courses:** Analytic Geometry and Calculus, Programming with Python, Computer Science I&II, Big Data Analysis, Elements of Statistics

INTERNSHIP EXPERIENCE

Zijin Mountain Artificial Intelligence Research Institute
Digital home care service robot **Remote, China**
AI and Robotics Development Intern *Jan 2024- May 2024*

- Participated in the Little Robot Artificial Intelligence project, assisting in realizing AI functions such as deep machine learning and natural language processing to learn and recognize the user's voice.
- Utilized microphone array and voice wake-up technology combined with software and noise reduction algorithms to quickly and accurately understand customer needs.
- Applied big data analysis models and database calls to process customer instructions and provide the requested information efficiently.
- Used machine learning methods integrated with customer personal data to predict their physical condition. Generated customized health management plans based on the predicted physical condition and customer-specific data.

China Merchants Securities **Nanjing, China**
Investment Analyst Intern *Jun 2023 - Aug 2023*

- Designed portfolios based on stock market trading strategies and utilized futures and options for hedging and arbitrage. Managed a personal stock portfolio and simulated futures and options trading.
- Gathered information from financial websites and analyzed publicly-traded companies using Python, and investigated factors influencing national debt price changes, such as month, economic forecasts, market demand, and liquidity, using SPSS for statistical analysis.
- Researched reasons behind high prices in certain ST stocks, considering delisting forecasts and reorganization expectations. Explored low PE ratios in bank stocks caused by deposit accounting practices.
- Analyzed and applied single-leg, stock insurance, and covered call strategies. Identified funds with stable returns to optimize portfolio composition while exploring fund advisory services.
- Utilized SQL to organize client data for database management, ensuring accurate investment services and documentation.

CITIC Securities Co., Ltd. **Nanjing, China**
Structured Finance Department Intern *May 2022 - Aug 2022*

- Assisted in data collection and organization for ABS and REITs projects using Excel, and integrated asset pool data by applying statistical methods in Python for risk analysis.
- Conducted due diligence on underlying assets to ensure compliance and collaborated with cross-functional teams to structure and

execute complex financial transactions.
- Modeled cash flow scenarios using financial software to predict the performance of structured products and utilized Tableau for data visualization to identify and present market deviations.
- Prepared offering documents and investor presentations to facilitate the issuance of ABS and REITs, while monitoring and reporting on the performance of existing structured finance portfolios to identify potential areas of concern.
- Engaged in market research to stay updated on emerging trends and regulatory changes in the structured finance sector.

Nanjing Diancheng Internet Technology Co., Ltd. **Nanjing, China**
Backend Development & Database Intern *Jun 2021 - Jul 2021*
- Implemented advanced database tasks on MySQL, ensuring data consistency and integrity, and conducted regular performance tuning and database optimization to enhance overall system reliability.
- Developed automated scripts using Python's pandas and NumPy libraries for data analysis and proactive database monitoring. Achieved a 1.3% performance improvement and enhanced platform insights by 0.8% using Python scripts.
- Collaborated with QuantLib to deliver detailed financial data analytics and model evaluations for the fintech invoicing platform. Engaged with the frontend team to develop secure server-side APIs enabling efficient data flow from MySQL.
- Conducted performance and security tests using Python, simulating high-volume requests, performing SQL injection checks, and implementing system refinements based on test results.
- Designed a Python system to autonomously generate comprehensive test reports, highlighting issues and actionable solutions, which were used to address critical problems and streamline the development process.

ACADEMIC EXPERIENCE

Model-Based Systems Engineering **Ithaca, NY**
Group project, System Engineering application and design *Aug 2024- Dec 2024*
- Worked with team members to use Lego EV3 to build robots.
- Completed tasks such as routing along the tape, knocking down blocks, walking out of a maze, and shooting hoops.

Project Management and Leadership for Complex Systems **Ithaca, NY**
Group Project, System Engineering Planning and Execution *Aug 2024- Dec 2024*
- Worked with team members to propose an Ithaca shared electric scooter project.
- Improved the project plan step by step according to the professor's guidance, such as timeline, budget and duration of each milestone, corresponding staff, etc.

Systems Engr Design Project **Ithaca, NY**
Group Project, System Engineering application and design *Aug 2024- Dec 2024*
- Designed UI pages using Figma according to project requirements, and continuously updated and iterated on designs. Developed a software application called 'Cost of Living,' similar to Zillow, which allows users to explore the local housing environment.
- Created web UI designs in Figma for a mobile extension of a geospatial data analysis platform, providing real-time traffic data, analysis, and visualization for urban planners, transportation agencies, and users.

Zijin Mountain Artificial Intelligence Research Institute
Qlib Research **Remote, China**
Group Project, System Engineering application and design *Jan 2024- May 2024*
- Learned the complete workflow in Qlib, from data processing to building and testing quantitative algorithms, while focusing on the structure and functions of Transformer models through Li Mu's "Hands-On Deep Learning" for practical PyTorch implementations.
- Extended Qlib by incorporating the iTransformer model and adapting features like lag-lambda to enhance financial predictions.

Quantitative Analysis and Data Structures: Solving Combinatorial Puzzles in C++ **Irvine, CA**
Individual Project, Research and Analysis *Sep 2023 - Dec 2023*
- Developed and optimized the verifySolution function in verifySol.cpp. Successfully decoded puzzles like POT + PAN = BIB using advanced mathematical logic.
- Engineered a custom linked-list based stack in LLStack.hpp, demonstrating expertise in creating efficient data structures without relying on standard library containers.
- Designed a postfix calculator in postfixCalc.cpp to evaluate mathematical expressions, handling inputs such as "5", "3", "2", "-", "*", displaying a deep understanding of post-fix evaluation algorithms.
- Utilized the ICS 46 Openlab environment and GradeScope platform for project development and submission, ensuring 100% compliance with project requirements.
- Collaborated with a team to solve summation puzzles using recursion, translating complex data sets into actionable insights, and contributing to data-driven decision-making processes.

Embedded Systems Development **Irvine, CA**
Individual Project, Embedded Systems Engineering *Mar 2023 - Jun 2023*

- Developed a calculator system using a keypad and LCD display, emphasizing logical transitions and data handling for multiplication operations between two integers.
- Implemented a tone player/recorder system, focusing on data storage and retrieval using external EEPROM, ensuring efficient data retention and playback capabilities.
- Integrated a UART system, keypad, and LED to display real-time feedback on a laptop, enhancing user experience.
- Designed a brightness control system with a potentiometer, adjusting LED brightness via PWM signal within a set duty cycle.
- Created an LED control system with a user-driven interface via UART, allowing dynamic switching between POSITIVE and NEGATIVE states based on user decisions.

Interchange.com - A Peer-to-Peer E-Commerce Platform **Irvine, CA**
Individual Project, Database Development *Sep 2022 - Dec 2022*

- Collaborated with a startup team to build a peer-to-peer e-commerce platform and worked closely with cross-functional teams to turn data insights into strategic actions aligned with the startup's vision.
- Led the platform's database integration using PostgreSQL, ensuring data integrity and future scalability, and crafted optimized complex queries that provided actionable insights for business strategies. Analyzed user behavior and preferences, extracting valuable patterns to inform marketing and user acquisition strategies.
- Conducted advertisement analysis by utilizing advanced SQL techniques like ROLLUP to derive insights on ad performance across various categories.
- Collaborated with data analysts to optimize query performance, implementing materialized views and indexing strategies, ensuring efficient data retrieval for large-scale analyses.
- Proposed and implemented database schema modifications to enhance data integrity and support advanced analytical needs, directly contributing to the platform's readiness for its July 4th launch.

Computer Organization and Assembly Programming **Irvine, CA**
Individual Project, Assembly Language Development *Jun 2022 - Aug 2022*

- Mastered low-level MIPS assembly instructions to implement intricate logical and conditional statements, showing a deep understanding of data representation and manipulation.
- Developed a function to count bit patterns in a 32-bit integer, indicating proficiency in bitwise operations and data analysis.
- Designed and implemented an efficient bit-swapping algorithm for 32-bit integers without relying on loops or conditional statements, emphasizing algorithmic optimization.
- Created a function to compute the range of three numbers, highlighting algorithmic skills and data-driven decision-making.
- Engaged in image processing tasks using MIPS assembly, processing grayscale images stored as 2D arrays. Demonstrated capability in handling complex data structures and transforming raw data into meaningful outputs.

SKILLS

Programming Skills: Python, C/C++, SQL (MySQL, PostgreSQL), JavaScript, TypeScript, HTML/ CSS, R, Go, Golang, and PHP
Software Techniques: MySQL, Visual Studio, Intellij, Ellipse, Mac OS, Microsoft Office
Hardware Techniques: NIC's, Network Hubs/Switches Modems, Embedded System, and MIPS
Design Techniques: Figma