Xuanyi Lyu

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UNIVERSITY OF TORONTO

EDUCATION

University of Toronto   Toronto, Canada

Bachelor of Science in **Computer Science & Statistics** Double Major, **Economics** Minor   2022/09 - 2026/05 (Expecting)

CGPA: 3.76/4.00 | Honor: **Dean's List Scholar** for the 2022-2025 academic years; **IE+ Award**: $1000; **SREP Award**: $3000

Core Courses: Software Design, Data Structures and Analysis, Computer Organization, Systems Programming, UI/UX, Human-Computer Interaction, Databases, Probability, Statistics and Data Analysis, Web Programming, Artificial Intelligence

ENTREPRENEURSHIP

Commercial Minecraft Role-Playing Game (RPG) Server | *Founder & Operator*   2016/10 - Present

- Launched and scaled an original RPG server, attracting **10,000+ unique players** in total and sustaining **60+ concurrent active users** through engaging PvP systems, boss events, and in-game monetization (subscriptions, merchandise).
- Fostered and managed a loyal player community of 150+ daily active users, increasing **player retention by 35%** via targeted **feedback loops** (Chat groups, in-game mail, polls, and surveys).
- Designed and developed **custom thematic maps**, **3D weapon models**, **lore**, and **8,000+ words** of scripted narrative, enhancing player immersion and **increasing average play time by 40%**.
- Drove server growth by optimizing **digital marketing** across TikTok, WeChat, and Minecraft forums (e.g., MCBBS), resulting in an average of **20+ new player sign-ups per day** and a **15% month-over-month traffic** increase.

RESEARCH EXPERIENCE

Full-Stack Rewards Platform Development for Computer Science Student Union (CSSU) | (GitHub)   2025/06 - Present

- **Won 1st place** (among 60+ teams) in the Winter 2025 **Web Design Contest** by **overwhelming** vote; invited by **Prof. Jack Sun** to further develop the project as UofT CSSU's official loyalty-rewards platform under his supervision.
- **Built with React.js (frontend)** and **Node.js/Express.js/PrismaORM/PostgreSQL (backend)**; integrated JWT-based authentication, implemented a **CI/CD pipeline** via GitHub Actions with Jest testing, and deployed on Vercel and Railway.

Multi-Standard Digital-Art Provenance Framework Based on TrustMark Watermarking | (GitHub)   2025/06 - Present

- Under the supervision of **Prof. Daniel Chun** at Hong Kong University of Science and Technology (HKUST).
- Developed a **unified, cross-standard provenance framework** for digital images by integrating TrustMark imperceptible watermarking**,** enabling seamless embedding and verification of leading standards (C2PA, W3C DID, DCI 3.0, Art ID) to ensure artwork authenticity and traceability.

PROJECT

UX/HCI-Driven Financial Management Application Design | *Team Leader*   2024/09 - 2024/12

- Led formative research through **interviews** (8 participants), **surveys** (70 respondents), and **observation**, synthesizing user insights into **personas, job stories** and **experience maps** that guided strategic design decisions.
- Designed and tested **low-fidelity prototypes** with **think-aloud protocols** and **heuristic evaluation**, increasing **task success rate by 32%** and significantly enhancing user experience.
- Developed and iteratively refined a **high-fidelity Figma prototype**; directed **usability testing** that achieved a **95% satisfaction rate** and reduced **task completion time by 47%**.

Statistics and Data Analysis of NBA Player Performance | *Team Leader*   2024/09 - 2024/12

- Led a basketball analytics project in R, executing comprehensive **data cleaning**, **exploratory data analysis** on 1,100+ NBA player records. Built and refined **multiple linear regression models** using **forward/stepwise/backward selection** and **AIC/BIC**, with rigorous **multicollinearity diagnostics** (correlation matrix, VIF), **outlier/leverage/influential** point analysis, and **Box-Cox transformation** to meet model assumptions.
- Validated model performance via **cross-validation**, **MSE**, and **confidence/prediction intervals**; interpreted coefficients to identify key predictors of player scoring, and communicated insights in a formal report to inform data-driven strategy.

MIPS Assembly Language Tetris Game (GitHub) | *Independent Developer*   2024/01 - 2024/05

- Implemented core Tetris mechanics in MIPS assembly, including block generation, movement, rotation, and collision detection, ensuring accurate and responsive gameplay.
- Designed a dynamic pixel-based UI with Bitmap Display and integrated keyboard controls, enabling seamless real-time updates and intuitive player interaction.

Java-based Todo List App for Task and Deadline Management (GitHub) | *Team Leader*   2023/09 - 2024/01

- Implemented "**Clean Architecture**" and advanced **design patterns** (Builder, Observer, Strategy) to achieve high modularity, scalability, and code reusability. Achieved **100% test coverage** with JUnit 5 and integrated Todoist API, enabling seamless cloud sync and reliable task management.

PERSONAL EXPERIENCE

Director, Information Solutions Dept., **University of Toronto Chinese Club** | (Link)   2024/09 - Present

- Built club website and facilitated collaboration across departments, streamlining event engagement for 100+ members.

Contestant, **Euclid Mathematics Contest**, Excellence Award (Top 25%)   2022/04

Contestant, **USA Computing Olympiad (USACO)**, Gold Division (Ranked 1/3676)   2022/01

Contestant, **Purple Comet Math Meet**, Team First Place (Ranked 1/3353)   2021/04

Volunteer, 100+ hours supporting community services at library, fire station, and blood center.   2021/09 - Present