Roy **Lu**

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Education

University of Toronto Mississauga   *Mississauga, ON*
HONOURS BACHELOR OF SCIENCE IN COMPUTER SCIENCE   *Sep 2017 – Jun 2022*
- **Web Developer** for the Digital Enterprise Management Association and the CCIT (Com. Tech) Department.
- **Relevant Courses**: Software Patterns, Web Development, Data Structures, Algorithm Design

Sheridan College   *Oakville, ON*
COLLEGE GRADUATE CERTIFICATE IN ADVANCED GAME PROGRAMMING   *Sep 2023 – Jun 2024*
- **Teaching Assistant** for Computer Math I and tutor for Advanced Game Programming.
- **Relevant Courses**: Game Engine Architecture, Computer Graphics, Game Networking

Work Experience

Software Developer %   *Remote, Canada*
CONTRACT | HIRO   *June 2025 – Current*
- Led front-end development using **Next.js, React, and TypeScript** to create a responsive and dynamic user interface for both **mobile and desktop resolutions**.
- Developed **physiotherapy games** in **Unity** with **AI pose tracking** to create accessible **motion-based UI and interactions**.
- Contributed to **core gameplay systems**, including **particle effects**, **performance optimization**, and **game logic**.
- Maintained **CI/CD pipeline** and assisted with **codebase management** via code reviews.

Web Developer %   *Remote, Canada*
CONTRACT | BRIGHTMIR AI   *April 2025 – June 2025*
- **Led the comprehensive UI/UX redesign** for a multiplayer, **blind-accessible game**, prioritizing **inclusive design principles**.
- Developed and implemented **accessible user interfaces** using **Next.js** and adherence to **web accessibility standards**.
- Formalized **design specifications**, managed **graphic asset integration** with artists, and contributed to product design meetings.

Game Programmer %   *Oakville, ON*
RESEARCH | ARCHIPELAGO OF DESIGN   *Oct 2024 – May 2025*
- Collaborated with a **multidisciplinary team** on **Inner Alliance**, a DEI-focused strategy game for military organizations.
- Built **in-editor tools** (e.g., **hex mesh**, **voxelization**, **shaders**, **custom fog**) to streamline level creation and boost dev speed by **50%**.
- Architected a scalable codebase using **MVP architecture** and **SOLID principles**.
- Documented code workflows and systems to support devs and designers.

Teaching Assistant   *Oakville, ON*
CONTRACT | SHERIDAN COLLEGE   *Dec 2023 – Jun 2024*
- Taught introductory **discrete mathematics** topics, including **combinatorics, relations, graphs and trees**, and **proofs**.
- Instructed students on **fundamental programming principles**, including **software design patterns**, **object-oriented programming (OOP)**, **data structures**, and **linear algebra**.
- Planned and **led weekly supplementary classes** in collaboration with the professor to **reinforce course material**.
- Developed **targeted exercises** and **instructional materials** to support student understanding of complex math concepts.

Backend QA Systems Analyst   *Toronto, ON*
INTERNSHIP | PROOFPOINT   *May 2020 – Aug 2021*
- Designed **automated/manual test solutions** for SaaS **backend microservices**, improving validation efficiency.
- Built **Python tools** integrated with **Jenkins CI/CD** to simulate production and streamline testing.
- Led **end-to-end testing** for AWS migration; conducted **regression and performance tests**, identifying **memory bottlenecks**.
- Boosted testing throughput by **300%** with a **multi-threaded WPF tool** built during a company hackathon.

Skills

Programming Languages	C#, JavaScript, Python, Java, Bash/Shell, C++, Rust
Frameworks & Libraries	.NET, NextJS, Redux, Unity, OpenGL,
Tools & Platforms	Git, Jira, Linux, Docker, CI/CD, Cursor, Copilot, OpenAI, n8n
Areas of Expertise	Full-Stack Applications, Systems Design, UI/UX, Databases, Game Development

Projects

Dungeon Company (Technical Director) ⚲
A ROGUE-LIKE CARD BATTLER WITH THOUSANDS OF DOWNLOADS AND POSITIVE REVIEWS ON STEAM
C#, Unity
December 2024 - Current
- Authored **technical proposals, system diagrams, and architectural plans** focused on event-driven design and reducing coupling through clean, pattern-driven solutions
- **Managed a team of 4 programmers** across gameplay and UI, organizing sprint planning, assigning tasks via a Kanban board, and hosting weekly meetings
- Collaborated with design, art, and production leads to define scope, establish pipelines, and align on project goals
- Attend networking and outreach events including **XP Summmit**

Escape Game Maker (Serious Play 2025)
AN EDUCATIONAL TOOL ENABLING TEACHERS TO CREATE LLM-POWERED, INTERACTIVE MYSTERY GAMES.
C#, Unity
August 2025
- **Led front-end implementation** for "Mini Escape Maker," an educational tool enabling teachers to create **LLM-powered**, interactive mystery games.
- **Accelerated development** by utilizing a **hybrid AI-assisted workflow (Cursor)** and **BulmaCSS** to rapidly prototype and deploy the user interface.
- Contributed to **AI integration** with **OpenAI LLMs** via **prompt engineering** to enable the procedural generation of core game content.

Ubisoft Next 2024 (Individual) ⚲
3D, TURN-BASED, STRATEGY GAME THAT PITS YOU 1V1 AGAINST ANOTHER PLAYER AMIDST A DYING STAR.
C++, OpenGL
December 2024
- Built a **custom 3D rendering engine** using OpenGL and a line-drawing API with projection, culling, and meshes.
- Implemented advanced engine features including a **ECS architecture**, **vertex shading, collision detection, and a particle system**, enhancing visual quality and gameplay interactivity.

Bujots: Web Journaling (Individual) ⚲
CLOUD-BASED, CUSTOMIZABLE ONLINE JOT NOTES
ReactJS, MongoDB, TypeScript
August 2023
- Created a **full-stack** web application for online journaling, featuring user authentication, **CRUD** functionality, and **REST** API.
- Implemented full user registration and data handling using **ExpressJS with token authentication**
- Developed a sleek **front-end** interface with state management through **Redux** to track notes, images, and autosaving.

Aerospace Performance Analysis (University of Toronto)
A QUANTITATIVE ANALYSIS ON AEROSPACE PRODUCTION BOTTLENECKS USING JACKSON-NETWORKS
Python, NumPy
2022
- Programmed a **system-level simulation** implementing a **Classed Jackson-Network model** and leveraging **NumPy** for efficient **matrix-based analysis** of large datasets.
- Applied **M/M/1 Queueing Theory** to model job service and flow, incorporating **complex routing probabilities** and simulating a multi-departmental manufacturing network.
- Identified **system instability** in the Manufacturing rework process, proving it was a **critical bottleneck** with an average response time equivalent to **67.75 days**.

Speaking Engagements

Game Development Workshop (Sheridan College)
THE DEVELOPMENT JOURNEY OF DUNGEON COMPANY
April 2025
Lead a workshop where I presented our game to current game development students and discussed our journey from concept to development. I facilitated a playtest and final Q&A session.

Pedagogies for Peace Symposium (Toronto Metropolitan University) ⚲
INNER ALLIANCE: CONTRIBUTING TO WPS MOMENTUM, ONE GAME AT A TIME
February 2025
Lead a group of women's peace and security leaders in using games as a novel way to share, teach, and challenge gender issues.

Awards

Jun 2025	**Winner - XP Summit Pitch Competition**, **1st place** pitching Dungeon Company to a panel of publishers against other industry professionals.	*Ubisoft*
Mar 2024	**Ubisoft Next Finalist** ⚲ , Independent C++ **Game built within 72 hours**, recognized for custom 3D graphics rendering and innovative gameplay.	*Ubisoft*
Aug 2024	**Gaming Garage 2nd Best Game & 2nd Best UI** ⚲ , For excellence in user interface design and engaging gameplay mechanics.	*CNE*