

Shiyuan Lyu

shiyuan.lyu@mail.utoronto.ca | (+1) 416-709-8878 | linkedin.com/in/shiyuan-lyu-628302381 | github.com/kkkaa43

EDUCATION

University of Toronto, St. George

Honours Bachelor of Science, Computer Science Specialist

Toronto, Canada

Sept. 2025 – Present

- Relevant coursework: Foundations of Computer Science I/II, Great Ideas in Computing, Linear Algebra I, Calculus with Proofs, Software Design, Introduction to the Theory of Computation.

RESEARCH EXPERIENCE

Matter Lab, University of Toronto

Undergraduate Research Assistant, El Agente Gráfico (PI: Prof. Alán Aspuru-Guzik)

Toronto, Canada

May 2026 – Present

- Maintaining and extending the *akg4pyscf* research codebase for the El Agente Gráfico project.
- Integrating Pydantic-based capability schemas to define and validate tool inputs, outputs, and metadata.
- Updating existing Python tool interfaces to support more structured and type-safe agent-tool interactions.

PROJECTS

Academic Literature Knowledge Graph (GitHub | Live Demo) *Python, Streamlit, LLM APIs, NetworkX 2026*

- Built and deployed a Streamlit research tool for arXiv paper search, PDF parsing, LLM-based metadata extraction, and interactive knowledge-graph exploration.
- Implemented a modular pipeline for search, parsing, extraction, graph construction, quality reporting, and exports to JSON, CSV, GraphML, and Neo4j.
- Added mock-provider testing, sample artifacts, deployment configuration, API-key safety documentation, and reproducible setup instructions.

Gomoku AI with Minimax Search *Python, Pygame, Algorithms; CSC111 Course Project*

Spring 2026

- Developed a playable Gomoku game with a Pygame interface, 10x10 board rendering, restart controls, last-move highlighting, and winning-line visualization.
- Implemented minimax search with alpha-beta pruning, candidate-move filtering, move ordering, and a transposition table to reduce repeated state evaluation.
- Designed heuristic scoring for open-ended line patterns, local neighborhoods, center control, and immediate tactical wins.

ADDITIONAL EXPERIENCE

Nyamboyo Technical School

Technical Volunteer & Content Coordinator

Remote

2023 – 2025

- Digitized handwritten lecture notes, managed upload tracking, and organized teacher feedback for a nonprofit educational resource project.

SKILLS

- **Programming:** Python, Java, JavaScript, HTML/CSS
- **Tools & Frameworks:** Git, LaTeX, Streamlit, Pydantic, NetworkX, Pygame
- **Languages:** English, Mandarin

HONORS AND AWARDS

- Distinction, Euclid Mathematics Contest; Canadian Senior Mathematics Contest 2024
- Top 25%, Fermat Mathematics Contest; Hypatia Mathematics Contest 2023 – 2024