RUQIA FATIMA

ruqia.fatima@mail.utoronto.ca ❖ (647) 854-0717 ❖ linkedin.com/in/ruqia ❖ https://github.com/rr-fatima

EDUCATION

University of Toronto, ***BASc Computer Engineering*** **Toronto, ON: Sep 2023 - Apr 2028**
2nd Year Computer Engineering + PEY

- **Academics:** GPA 3.85/4.00, Minor in Artificial Intelligence Engineering and Certificate in Engineering Business

SKILLS & INTERESTS

- **Programming Languages/HDLs:** C, C++, Java, MATLAB, Verilog, Nios V Assembly Language
- **Technologies/Tools:** Arduino, Git/Github, VS Code, Valgrind, GDB, Makefile, Figma, Quartus, ModelSim, LTSpice
- **Languages:** English, Urdu, Hindi
- **Interests:** Software Development, Digital Logic Design, Machine Learning and AI, STEM Outreach, Graphic Design, Speedcubing

TECHNICAL PROJECTS

Mapping Application, ***C++*** **Jan 2025 - Apr 2025**

- Leading a team of three in developing a mapping application on **Linux OS** using **agile software development** techniques.
- Building a **Geographic Information System** to visualize and solve travel and optimization problems for a map of any city.
- Implementing data structures for large datasets and designing a user-friendly interface with interactive graphics for route visualization.
- Leveraging the **C++ STL library** to implement appropriate data structures for enhanced performance.
- Utilizing **Git** for version control, **Valgrind** for **debugging**, and conducting **unit tests** to ensure software reliability.

Obstacle-Avoidance Game, ***Verilog*** **Sep 2024 - Dec 2024**

- Developed an obstacle-avoidance game using **Verilog** on the **DE1-SoC board** with **VGA display**, allowing players to navigate three paths using arrow keys on a **PS/2 keyboard**.
- Designed game logic using **FSMs**, **registers,** and f**lip-flops** to manage player movement, obstacle generation, and collision detection, ensuring smooth gameplay through **timing analysis**.
- Streamlined hardware implementation with **block diagrams** and **debugged** using **ModelSim** simulations.

Rubik's Cube Solver, ***C*** **June 2024 - Aug 2024**

- Developed a **C** application to automate solving a 3x3 Rubik's Cube, reducing average solving time by 80%.
- Implemented optimized, reusable cube manipulation **algorithms**, ensuring 100% accuracy in rotations and color recognition, while improving **code maintainability** by 30% and reducing **debugging** time by 25%.
- Utilized **Git** for version control and **debugged** the application through **edge case testing** and **breakpoints**.
- Authored **technical documentation** and created a supplementary website with educational resources on solving techniques.

Reversi AI Game, ***C*** **Feb 2024 - Mar 2024**

- Developed an **AI** for Reversi (Othello) using the **Minimax algorithm**, accommodating board sizes from 4x4 to 26x26.
- Implemented gameplay mechanics, including turn alternation, valid move enforcement, and strategic tile flipping, with extensive **debugging** to handle edge cases and ensure smooth gameplay.
- **Enhanced** AI competitiveness by simulating potential moves and evaluating them based on mobility, strategic positioning, and board control, refining the algorithm to **optimize** decision-making.

PROFESSIONAL EXPERIENCE

U of T Eng. Strategies and Practices Project II , ***Design Engineer*** **Toronto, ON: Jan 2024 - Apr 2024**

- **Led** a team of four under the supervision of a **Professional Engineer** to develop a user-friendly **website** for transmitting audiovisual stimuli and capturing ratings, supporting brain function research at Sunnybrook Research Institute.
- **Designed** and tested three **Figma** website layouts to ensure user-friendliness and maintainability.
- Created **technical documentation** and presented the final design to stakeholders, incorporating feedback for optimization.

Explorer Hop, ***Content Creator & Copywriter*** **Toronto, ON: Sep 2021 - Sep 2023**

- Designed 50+ interactive **quizzes** and **worksheets** for grades 6 – 12 math courses, boosting student engagement by 20%.
- Curated and managed content on **Thinkific** and **Canvas LMS**, enhancing user experience and improving student retention by 25%.
- **Resolved** over 100 **technical challenges** for enrolled students, enhancing course navigation and multimedia integration, which contributed to a 15% increase in course completion rates and a 10% growth in new enrollments.

LEADERSHIP EXPERIENCE

University Exploration Initiative, ***Co-Leader*** **Toronto, ON: Sep 2023 - Present**

- **Organized** university tours for grade 12 students, sharing insights on programs, campus life, and post-secondary opportunities.
- Motivated and **mentored** female students to pursue engineering, leading to the enrollment of five in STEM programs.

Robotics Club, ***Coach & Event Coordinator*** **Toronto, ON: Sep 2021 - June 2023**

- **Coached** 60 middle school students in building and coding the **Mbot** robot, fostering hands-on learning and skill development.
- Organized 12 Mbot **outreach events i**n elementary and middle schools and led FIRST Lego and Tech competitions, successfully raising $5,000 in funds and increasing community engagement by 40%.

Student Council, ***Senior Secretary*** **Toronto, ON: Sep 2021 - June 2023**

- Managed attendance, recorded meeting minutes, and prepared agendas while keeping members informed of upcoming meetings.
- Played a key role in organizing council events, including the Halloween photo booth and the White Ribbon Day hand-print booth.

Muslim Student Association, ***Vice-President*** **Toronto, ON: Sep 2021 - June 2023**

- Led second lunch meetings, facilitating communication between members and MSA leadership to ensure equal participation.
- Supported second lunch members in contributing to fundraising initiatives and community-focused events.

HONOURS

- **University of Toronto:** Dean's Honour List (Fall 2023, Winter 2024, Fall 2024), Merit Award, Edward S. Rogers Sr. Scholarship, Applied Science & Engineering Award
- **High School**: Governor General's Bronze Academic Medal, AB.Patterson Memorial Award, Top Average (98.5%)

RELEVANT COURSES

- Software Design and Communication
- Computer Fundamentals (A+)
- Calculus II (A)
- Computer Organization
- Programming Fundamentals (A+)
- Linear Algebra (A)