Abdul A. Khan

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Education

University of Toronto Toronto, ON

BASc in Computer Engineering + PEY Co-op *Sept. 2023 – May 2027*

Relevant Coursework Computer Fundamentals (C), Digital Systems (Verilog, Digital Logic), Programming Fundamentals (C++, OOP, Complexity Analysis), Computer Organization (Assembly, RISC V, NIOS V Processor), Software Design and Communication, Signals and Systems (MATLAB)

Skills

Programming: C/C++, HTML/CSS, JavaScript, MERN, Python, Swift, Verilog, MATLAB, ROS, NoSQL, SQL
Tools: Postman, PyCharm, Git, Arduino IDE, Quartus, Xcode, MongoDB, Unix, Jasmine, REST APIs, TailWindCSS
Development Process: SDLC, Testing and Debugging, Automated testing, Agile Methodology, Process Optimization
Professional Skills: Problem Solving, Teamwork, Adaptability, Leadership, Continuous learning and Innovation

Experience

Software Engineering Team Lead Jan. 2025 – Present

TTC Travel Geographical Information System *University of Toronto*

- Leading a team to develop a high-performance GIS-based mapping system for Toronto commuters.
- Integrated GTK graphics with the OpenStreetMap (OSM) database API to visualize a complete map of Toronto and the TTC subway system.
- Enhanced OSM data loading efficiency and graphics rendering using C++ STL, reducing processing time.
- Utilized A* algorithm with simulated annealing and 3-opt to implement optimal and responsive path-finding.
- Conducted performance and unit testing in Agile sprints to eliminate bottlenecks and enhance system usability.

Robot Operating System (ROS) Engineer Sept. 2024 – Present

Autonomous Rover Team - University of Toronto Robotics Association (UTRA) *University of Toronto*

- Designing a fully autonomous robot using Linux Ubuntu for the Intelligent Ground Vehicle Competition (IGVC).
- Integrated electrical components with the ROS rover stack using Arduino and Raspberry Pi to enhance system functionality while leveraging Unix commands for debugging and optimization.
- Optimized system performance by analyzing the processor usage of certain nodes using a CPU monitor script to reduce the ROS CPU load during competition.
- Utilized Linux profiling tools (e.g., perf, htop) to ensure efficient real-time performance and minimize latency.

Application Project Manager March 2022 – May 2022

Choose Your Own Adventure Book App *Lakefield, ON*

- Led a team of 4 students to develop a creative interactive iOS app using Swift that goes through a 144+ page CYOA book with several choices per page for the user to choose from that lead to 20 possible endings.
- Implemented object-oriented programming (OOP) principles with an emphasis on efficient data management and organized navigation structure.
- Collaborated using Git and GitHub repositories to streamline code versioning and help with debugging.
- Mentored team members to enhance project workflow, providing constructive feedback and suggestions.

Projects

GlobalChat Aug. 2024 – Sept. 2024

JavaScript, MongoDB, Express, React, Node, TailWindCSS *Toronto, ON*

- Designed and implemented a global chatting platform enabling real-time text communication.
- Utilized the MERN stack to ensure efficient request and error handling for sending and retrieving messages from the database and TailWindCSS to style UI.
- Debugged functionality using Postman and utilized cookies/JWTs to implement email sign up and login.

Reversi/Othello Jan. 2024 – April 2024

C/C++ *Toronto, ON*

- Developed an interactive Reversi/Othello game with a unique AI algorithm that responds in under 0.1 seconds.
- Optimized AI performance through rapid prototyping and iterative development.
- Outperformed the University of Toronto's top AI implementation in a game of Reversi/Othello.