

Adharsh Shokkalingam

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Education

The University of Alberta

Bachelor of Science in Computer Science, Minor Mathematics

Expected Graduation: May 2027

Technical Skills: Python, Java, C/C++, SPSS, RISC-V Assembly (RV32I), HTML, CSS

Developer Tools: Git, VS Code, FireBase, UML, Android Studio, SDL2, SQL, MongoDB

Relevant Coursework: Algorithms, Software Engineering, Computer Architecture, Operating Systems, Machine Learning, Databases.

Work Experience

- **Sports Facility Attendant | Edmonton Scottish Soccer Dome** June 2023 - Current
 - Assist in the setup and breakdown of equipment and facilities for various sports activities, events, and programs Enforce facility rules and regulation to ensure the safety of patrons
 - Maintain cleanliness and organization of the facility, including locker rooms, Dome , and common areas, to uphold sanitation standards and enhance the overall atmosphere
 - Collaborate closely with coworkers and supervisors to coordinate setups, resolve issues in real time, and ensure events and daily operations run smoothly and on schedule.

Projects

- **3D-Engine CPU Rasterizer - C, SDL2** June 2025 - August 2025
 - Engineered a fully interactive 3D engine in C, leveraging **SDL2** for graphics abstraction and input handling, with backface culling, near plane clipping, dynamic camera transformation, and basic lighting.
 - Designed multiple **real-time rendering modes** (**wireframe**, **vertex-highlighted**, **solid-fill**, **textured**) with keyboard-driven mode switching and 6 degrees of camera freedom.
 - Architected the project into **modular components** (**lighting**, **geometry**, **mesh**, **culling**, **camera**, etc), enabling extensibility and low level control over the render pipeline.
- **Sulfur - Events Lottery Android App - Java, Android Studio, FireBase** Sept 2025- Dec 2025
 - Developed a full stack **android** application with 6 group members using **Java**, **android studio**, **Firebase** for managing and **tracking** event/user data.
 - Implemented **QR Code** generation and scanning features including the storing and extraction of embedded **geolocation** data to display and update event/users location.
 - Collaborated in an Agile environment with **Git**, participated in code reviews, and improved/refined application features.
 - Co-designed the application's **UML** (**class**, **sequence/activity**, and **data model diagrams**) architecture to standardize module boundaries and ensure **maintainable code structure**.
 - Utilized **Firebase Cloud Firestore** for structured cloud data storage, **querying**, and **multi-user** data consistency.
 - Built the capacity based lottery workflow (**sample N entrants** after the registration window, notifications, re-sampling on declines) to ensure fair sign-ups.
- **RISC-V to WASM Converter - RISC-V (RV32I) (CMPUT 229 - Lab)** Sept 2025- Dec 2025
 - Implemented a **Binary** level translator converting **RISC-V** Machine instructions to **WASM** Byte code.
 - Designed and implemented support for **R-type**, **I-type**, and **Branch instructions**, including arithmetic, logic, shifts and **conditional control flow**.
 - Built a **signed LEB128 encoder** front scratch to extract immediate operands and convert to **WASM** byte code.
 - Mapped **RISC-V** registers to **WASM** locals using a **custom register translation table** and handled architectural differences such as the **zero register**.