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** from 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**.