

Darshan Shah

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EDUCATION

McMaster University

B.Eng. Software Engineering | Schulich Leader Scholarship Recipient

Hamilton, ON

Expected Apr 2028

EXPERIENCE

Software Engineering Intern

May 2026 – Aug 2026

Chatforce

Toronto, ON

- Designed and shipped a GLSL post-processing framework with 10 real-time effects (tone mapping, color quantization, CRT, vertex snapping) and mobile-aware quality tiers that held a stable 30 fps on mid-range phones.
- Built a 3D asset pipeline that processed 3,000+ AI-generated models through automated quality grading, mesh optimization, and character auto-rigging, fully eliminating manual asset prep.
- Built a system that turns a screenshot of a UI component into an interactive component in the same visual style.
- Helped rework the platform's entire user interface end to end, raising user conversion to about 22%.
- Improved how the product ranks in search engines and AI answer engines (SEO and AEO) by 23%.
- Added semantic search over the asset library, letting 10,000+ users find reusable models by description.

Graphics Programming Intern

Apr 2025 – Sep 2025

Perch.gg, Venture for Canada

Hamilton, ON

- Built a real-time ray tracing pipeline in Rust and Vulkan for a Bevy-based game engine, writing its shaders.
- Implemented BVH acceleration structures and reworked lighting and shadow models, raising frame rate by 25%.
- Owned GPU memory allocation and queue synchronization, using RenderDoc frame captures to track down GPU bottlenecks and synchronization bugs and keep frame times stable under heavy scenes.

ML Research Intern

May 2025 – Aug 2025

McMaster Centre for Software Certification (McSCert), McMaster University

Hamilton, ON

- Built a Python ML benchmarking engine where TFLite and Hugging Face models plug in via one shared adapter.
- Scored emotion classifiers on GoEmotions (27 labels) and SemEval-2018 (11 labels, 3,259 tweets), reporting macro F1, precision, recall, average inference latency, and throughput in exportable JSON reports.
- Wrote justification diagrams (graphs linking a claim to its evidence) to test JPipe, an assurance-case language.

Android Developer

Apr 2024 – Aug 2024

Howell Data Systems

Sarnia, ON

- Built and shipped a Kotlin/Jetpack Compose dashboard app on Google Play as sole developer, used by hundreds.
- Tested and debugged API integration and UI state management on real devices before each Play Store release.

PROJECTS

Ocean Simulation Library | C++20, SIMD Intrinsics, Vulkan, GLSL, CMake

Aug 2026

- Built an engine-agnostic C++20 FFT ocean library with a thin C API, so host engines link it without ABI issues.
- Wrote scalar, SSE2, AVX2, and NEON FFT kernels picked at runtime by CPUID, all tested to be bit-identical.
- Batched 8 FFT columns per pass after profiling showed strided reads wasted cache lines: 1.69× faster FFT.
- Cut update time 2.5× to 16.6× across 64² to 512² grids with threading and SIMD (23.6 ms to 1.43 ms at 512²).
- Inverted displacement with fixed-point iteration for height queries, cutting worst-case error from 725 mm to 1 mm.

HoopsIQ | Python, scikit-learn, FastAPI, React

Nov 2025

- Built a full-stack NBA game predictor that pulls each day's games and shows win probabilities for every matchup.
- Trained a Ridge classifier on 30+ engineered team features with time-series cross-validation, at 63% accuracy.

AirCad | Python, JavaScript, MediaPipe, OpenCV, Flask, Three.js

Apr 2025

- Built a web app to draw 2D shapes in the air with a finger and extrude them into 3D models with hand gestures.
- Tracked hand landmarks in real time with MediaPipe and OpenCV to turn finger motion into shape outlines.
- Optimized Three.js rendering by reusing BufferGeometry, instancing repeated meshes, and freeing unused buffers.

TECHNICAL SKILLS

Languages: C++, C, Rust, Python, Java, Kotlin, JavaScript, SQL, Swift, HTML/CSS

Graphics & Systems: Vulkan, OpenGL, GLSL, wgpu, Three.js, RenderDoc, SIMD intrinsics (SSE2, AVX2, NEON)

Frameworks: Bevy, React, Node.js, FastAPI, Flask, Jetpack Compose, scikit-learn, TensorFlow/TFLite, Hugging Face

Tools: Linux, Git, CMake, Docker, GCP, QEMU, OpenCV, Android Studio