Darshan Shah

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Education

McMaster University Hamilton, On
Bachelor of Software Engineering – Schulich Leader *Sep. 2024 – Apr 2028*

Experience

Graphics Programmer Apr 2025 – Sep 2025
Perch.gg, Venture for Canada *Hamilton, ON*
- Built a ray tracing pipeline in Rust and Vulkan, implementing low-level rendering features such as shaders, GPU memory management, and synchronization.
- Optimized 3D graphics techniques including BVH acceleration structures, lighting, and shadow models to improve frame rates and realism.
- Debugged GPU bottlenecks and performed driver-like troubleshooting across the Tegra-style graphics stack, ensuring stable performance in a Bevy-based engine.

ML Research Intern May 2025 – Aug 2025
McSCert, McMaster University *Hamilton, ON*
- Designed and implemented an AI benchmarking framework to evaluate model performance, efficiency, and reliability across diverse datasets.
- Developed justification diagrams to formally capture software assurance arguments, improving traceability and safety analysis.
- Built a syntax highlighter with custom regular expressions, contributing to better tooling for the JPipe language.

Android Developer Apr 2024 – Aug 2024
Howell Data Systems *Sarnia, ON*
- Developed 100% of a comprehensive dashboard application from scratch, tailored for client use and distribution on the Play Store.
- Ensured the app's functionality by conducting extensive testing and troubleshooting, addressing issues like API integration and UI state management with Jetpack Compose.
- Worked closely with business requirements to deliver a solution using Kotlin and Android Studio that enhances client operations and data accessibility.

Co-Founder Aug. 2025 – present
Orbit *Hamilton, ON*
- Co-founded Orbit, a hardware startup developing precision input devices for CAD professionals.
- Directed launch, led development of first prototype, and created the website orbit-cad.com.

Projects

HoopsIQ | *Python, FastAPI, Scikit-learn, Pandas, NumPy* May 2025
- Developed a machine learning pipeline to predict NBA game outcomes using 7 seasons of historical game data and 30+ engineered features.
- Implemented a Ridge Classifier trained via sequential time-series splits to simulate real-world forecasting.
- Integrated a JPipe software assurance case to formalize the release criteria for model deployment (accuracy, transparency, ethics).

AirCad | *Python, JavaScript, HTML/CSS, MediaPipe, OpenCV, Flask, Three.js* April 2025
- Created a web app that lets users draw 2D shapes in the air with their finger and extrude them into 3D models using hand gestures alone.
- Applied computer vision and gesture recognition with MediaPipe and OpenCV to capture and process motion data in real time.
- Optimized rendering pipelines in Three.js, reducing latency and improving interactivity for complex shapes.

Technical Skills

Languages: Java, Python, C/C++, SQL, JavaScript, HTML/CSS, Rust, Swift
Frameworks: React, Node.js, Flask, FastAPI, Bevy, TFLite, Huggingface
Developer Tools: Git, Docker, Google Cloud Platform, Visual Studio, PyCharm, IntelliJ, Android Studio, Xcode
Libraries: Pandas, NumPy, Matplotlib, Pytorch, Three.js, WGPU, Vulkan, OpenGL