Albert An

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Education

The University of Texas at Austin *GPA: 3.90*

B.S./M.S. Computer Science - Turing Scholars Honors Program, B.S. Mathematics *Aug. 2022 – May 2027*

Projects

Portal Game | *WebGL, GLSL, Typescript* **(https://portaled.pages.dev/)**

- Engineered a recursive portal rendering system, implementing multi-pass rendering with stencil/depth management and instanced drawing for real-time, nested portal views; integrated first-person physics and portal teleportation with preserved velocity, orientation, and stable camera behavior/control for seamless spatial transitions.
- In similar vein, developed a Minecraft-style voxel engine, including infinite chunked terrain with lazy loading & hysteresis-based chunk retention, 2D/3D Perlin noise terrain synthesis, procedural time-varying shader-based texturing, day–night lighting cycle, and FPS collision/physics. Available at **https://minecrafted.pages.dev/**

Model Rig | *WebGL, GLSL, Typescript* **(https://rigs.pages.dev/)**

- Built an interactive skeletal animation and skinning pipeline, implementing ray/cylinder bone picking, quaternion-based hierarchical bone manipulation (drag-guided reorientation/translation & axis-aligned roll), and linear-blend skinning with per-vertex 4-bone influence blending.
- Designed a full keyframe animation system with GPU-backed preview rendering, SLERP/LERP interpolation of bone and camera states, off-screen framebuffer thumbnail generation, scrollable keyframe UI with edit/delete/apply tooling, and JSON-based clipboard serialization for cross-session animation transfer and saving.

World of Goo | *C++, Eigen, Polyscope*

- Built a C++ 2D physics simulation engine (World of Goo–style) with particle–spring systems, rigid connectors, cutting interactions, and full object lifecycle management; implemented gravity, spring and damping forces, collision handling, mass matrix assembly, and interactive UI controls using Eigen and Polyscope.
- Implemented energy-based physics simulation with analytic gradients and Hessians, supporting multiple time integration schemes (explicit, implicit, velocity verlet, midpoint), force differentials, potential energy formulations, and sparse linear system solves with Newton's Method for robust, relatively timestep-agnostic simulation.

Experience

Graduate Researcher – Temporal Reuse for Real-Time VFI Aug. 2025 – Present

UT Austin Computer Graphics Laboratory *Austin, TX*

- Developing a real-time video frame interpolation system that performs temporal reuse of motion vectors and pixel history, reprojecting multiple prior frames into the target timestep to exploit long-horizon temporal coherence.
- Training a lightweight multi-frame confidence-based blending network that fuses more than one backward-warped frame rather than relying solely on adjacent-frame flow, learning per-pixel visibility and reliability weights to resolve occlusions and motion disagreement while maintaining strict real-time latency constraints.

Quantitative Trader Intern Jun. 2025 – Aug. 2025

IMC Trading *Chicago, IL*

- Developed an automated trading system for a mock exchange with options and futures; implemented quoting and hitting strategies with delta hedging, position management, and counterparty-aware execution.
- Contributed to the D1 NOII (Net Order Imbalance Indicator) desk; designed and refined futures strategies leveraging NOII signals across multiple exchanges and symbols.

Software Engineer Intern Jun. 2023 – Aug. 2023 | Jun. 2024 – Aug. 2024

Wells Fargo *Dallas, TX | San Francisco, CA*

- Designed and developed internal productivity dashboard and suite using .NET and C# with features such as recommendations to frequently-used apps, deployed to all company-wide laptops and Azure & WAVE VDIs.
- Built automated testing pipeline with Login Enterprise, enabling app teams to perform and report synthetic UI testing using Microsoft Intune on Ansible Towers, improving app development efficiency.

Technical Skills

Languages: Java, Python, C/C++, TypeScript, SQL, JavaScript, HTML/CSS, R, GLSL, Bash
Frameworks: React, Node.js, Flask, FastAPI, JUnit, OpenGL, WebGL2, GLFW, Gymnasium, MuJoCo
Developer Tools: Git, Docker, CMake, Jenkins, K8s, Conan, vcpkg, GDB, Valgrind, NVIDIA Nsight, RenderDoc
Libraries: PyTorch, HuggingFace Transformers, pandas/polars, NumPy, Matplotlib/Plotly, SciPy

Honors

USAMO (2021) USAJMO (2020) USAPhO HM (2021) USAPhO (2020)