Zain Dana Harper

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Real-Time Rendering, Visual Systems & Creative Technology Director

30-Second Work-Sample Proof Strip

- **1,004,693 DLs:** Elder ENB Nexus Mods adoption
- **522/522 & 96/96:** RAW DX12 Wave 72 runtime & live
- **14/14 SM 6.10:** Clean DXC HLSL shader compile
- **Low Water + Audio:** Multi-API world, optics & CLAP DSP

Executive Profile

Visual systems director and real-time rendering architect uniting optical physics, atmospheric look-development, audio DSP, and native GPU engineering across 13 years of continuous creative technology work. Creator of Elder ENB (1,004,693 downloads and 2,418 endorsements on Nexus Mods), RAW DX12 Wave 72 (native DirectX 12 stack across Skyrim SE, Fallout 4, and Starfield with 14/14 DXC Shader Model 6.10 shaders), and Superframe + Low Water (DX12/Vulkan/WebGPU engine with BT.2020/2100 spectral optics, tree biomechanics, and physical-model instruments).

Core Capabilities & Skills

Visual Direction & Color Science: Atmospheric Look-Dev, BT.2020 / BT.2100 Spectral Optics, Oklab/CAM16/ICC/3D LUTs (build-color 1.0.2, calibrate-pro 2.0.1), Negative-Space Composition, Dark-Mist Shadow Preservation

Real-Time Rendering & Audio: DirectX 12, HLSL (SM 6.10, DXC -WX), Vulkan 1.3, WebGPU, Radiance Cascades GI, Hardware Ray Queries, TSR Upscaling, CLAP/VST3 Physical-Model Instruments (Modal Bars, Stiff-String Piano, Organ)

Simulation, Tooling & Shipping: C++23, Rust, BuildLang 1.15.0 (2,132.3x procgen codegen), 6-DOF/EKF Dynamics, Williams/Almeras Tree Biomechanics, Automated Visual & Frame Verification Oracles

Rendering Architecture, Look-Development & Interactive Worlds

Founder, Visual Systems Architect & Creative Technologist | Harper Research & Open-Source Ecosystem
Seattle, WA | 2025 - Present (Independent Graphics & Visual R&D since 2013) | harperz9.github.io | github.com/HarperZ9/superframe

- **Elder ENB Million-User Visual Direction:** Authored, calibrated, and shipped 38 HLSL atmosphere and lighting presets on Nexus Mods reaching 1,004,693 total downloads, 179,218 unique downloads, and 2,418 endorsements.
- **RAW DX12 Multi-Title Rendering Stack (Wave 72):** Architected a clean-room native DirectX 12 rendering pipeline across Skyrim SE, Fallout 4, and Starfield (19 GPU compute solvers at 1.57 ms combined, 0 D3D12 debug errors, 522/522 runtime tests, 96/96 live moving-camera checks, 14/14 DXC SM 6.10 shaders).
- **Superframe Engine, Low Water & Physical-Model Audio:** Built a DX12/Vulkan 1.3/WebGPU simulation engine (600 Vulkan frames matching D3D12 WARP hash for hash) combining BT.2020/2100 spectral optics, Williams/Almeras tree biomechanics, CLAP/VST3 physical instruments, and the Low Water narrative world slice (250 passing tests).
- **Procedural Speed, Cross-GPU Shaders & Visual Archival:** Accelerated procedural synthesis 2,132.3x via the 12-target BuildLang 1.15.0 compiler (HLSL/GLSL/MSL/WGSL GPU targets; 91/91 verified float64 optics/color kernels), shipped build-color 1.0.2 & calibrate-pro 2.0.1 with 1-command installers, ported 1990s BRender to 64-bit, and built a 6,558-video 3x3 contact-sheet archive.

Physical Craft, Collaboration & Open Science

Tree Care Crew Lead (Legendary Tree, 2015 - 2026) | Upstream Open Source & Research

- **Natural-World Observation to Simulation:** 11 years reading Pacific Northwest light, weather, and canopy structure in commercial arboriculture; directly shaped Elder ENB's natural-light calibration and Superframe's tree biomechanics.
- **External Collaboration & Studies:** 41 merged pull requests across 34 external open-source repositories; 30 public empirical studies (13 Zenodo DOIs) plus 148/148 accessible chart specifications on harperz9.github.io; High School Diploma (2013).