

PAVEL ZOSIM

TECHNICAL ARTIST | REAL-TIME SYSTEMS / SHADERS / GPU WORKFLOWS

Houdini · Unreal · Unity · HLSL · Python · C# · Compute Shaders

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SUMMARY

Technical Artist specializing in procedural systems, real-time XR, and GPU-driven workflows (Houdini, HLSL, Unity, Unreal). Consistent approach across 6+ years: identify production bottleneck, architect a tool or system, eliminate it — often as the sole technical generalist in small cross-disciplinary teams.

Experience includes GPU-driven VFX (HLSL, compute shaders), data-driven tooling (Python/C#), and performance-critical workflows for VR/XR applications. Strong background in Houdini-based procedural systems and real-time integration, with emphasis on scalability, optimization, and pipeline reliability.

CORE SKILLS

» Graphics & GPU

- HLSL, Compute Shaders, Shader Graph, Unreal Materials
- Real-time VFX systems (particles, destruction)
- GPU-driven workflows and shader integration

» Procedural & Systems

- Houdini (Houdini Digital Assets), procedural geometry, data-driven setups
- USD workflows, asset processing, pipeline logic

» Tools & Automation

- Python (Houdini, pipeline), C# (Unity Editor tools)
- Asset validation, exporters, workflow automation
- Cinema 4D (procedural simulation systems, Python)
- Commercial Houdini Digital Assets published on Gumroad (Houdini-After Effects Bridge, Auto-Rig, pipeline tools)

» USD & Pipeline

- USD workflows in Houdini — procedural scene pipelines, asset structure, cross-DCC collaboration (personal RnD)
- Git, Perforce, cross-team workflows
- Asset handoff, CI-aware production flows

» Engine & Performance

- Unity / Unreal integration
- VR/XR optimization (90 FPS constraints)
- Debugging, profiling, performance validation

» AI / Generative

- Generative workflow integration (basic exposure)
- Procedural texture generation
- Prompt-driven asset prototyping

KEY SYSTEMS ARCHITECTED

» NASA / FIRST WOMAN — UNIFIED UI TEXTURE ATLAS PIPELINE (HOUDINI, UNITY)

- Input: screen meshes with varied orientations and aspect ratios across multiple display configurations
- Auto-detected and corrected mesh orientation; proportionally scaled each UI element into a unified UV grid
- Output: single texture atlas covering all screens — **one draw call regardless of screen count**, eliminating per-screen material overhead
- Fully non-destructive and rerunnable — adding a new screen variant required zero manual UV work

» HOUDINI TO AFTER EFFECTS BRIDGE (COMMERCIAL TOOL, GUMROAD)

- Structured export pipeline for simulation and procedural animation data — designed for predictability and maintainability over ad-hoc scripts
- **Quaternion-to-Euler conversion** with gimbal lock handling — stable camera and object transfer from complex 3D paths
- Smart floating-point truncation — high-fidelity data transfer without file size bloat
- Batch multi-subject export: cameras + arbitrary point clouds (VEX-driven and solver-based motion) in a single pass
- Companion AE script reconstructs data cleanly on the compositing side — no manual keyframe work

EXPERIENCE

Technical Artist | VFX Developer • Freelance Contract • April 2024 - Present

Client: Nexus Studios (XR Interactive Platform)

» META × BLUMHOUSE — XR CINEMATIC EXPERIENCE (META QUEST)

- Developed custom HLSL shaders and real-time VFX for XR cinematic experience — Blumhouse horror IP (M3GAN, The Black Phone) reimagined as immersive spatial experiences on Meta Quest 3 / 3S
- Balanced low-resolution headset rendering with streamed **4K video playback** (HISPlayer) and Dolby Atmos spatial audio under varying network conditions on standalone hardware
- Prototyped effect workflows in Houdini before real-time implementation — reduced iteration cycles and ensured GPU budget compliance prior to engine integration
- Reduced shader complexity and overdraw, **improving GPU frame time by ~2-4 ms** on Quest 3S · premiered at Meta Connect · released publicly on Meta Quest Store

Technical Artist | VFX Artist | Motion Designer • Bully! Entertainment • June 2018 – April 2024

» **NASA / FIRST WOMAN — XR EDUCATIONAL PLATFORM**

- Served as Art Director, UI/UX, and Technical Artist — owned visual and technical decisions across app, website, graphic novel, and video formats for NASA's Artemis program narrative platform
- Architected automated Houdini pipeline generating unified texture atlas from multiple screen meshes with varying aspect ratios — shader-driven UV offset control enabling flexible element ranking with zero manual UV work per variant
- Developed UI shaders operating consistently across screen-space and world-space contexts; built procedural facial expression animation system for robot assistant (eye and eyelid movement producing expressive emotional states efficiently)
- Optimized for mobile iOS/iPad hardware constraints — reduced draw calls and shader overdraw across multi-format delivery; acted as primary bridge between art and engineering teams
- **1.5M website page views** • **325K+ app downloads** • **350K+ graphic novel copies distributed worldwide** • content read aboard the ISS by astronaut Frank Rubio • award-winning educational project

» **DELOITTE / VIRTUAL FACTORY — AR DIGITAL TWIN & MULTIPLAYER INSTALLATION**

- Served as Art Director, Technical Artist, and UI/UX — owned full UI delivery pipeline across screen-space and world-space contexts; art directed within strict brand guidelines across 3 major iterations (Virtual Factory 3.0)
- Engineered internal texture export and sprite sheet generation tooling as sole technical generalist — built in parallel with delivery, adopted across the team, **eliminating ~30–40% of manual asset preparation overhead** per cycle; tools reused in subsequent projects
- Built scalable UI pipeline processing **100+ assets** via texture atlases and 9-slice sprite sheets — maintained visual consistency across screen formats, spatial UI, and physical AR floor markers readable from multiple angles
- **500+ captured** leads at live exhibition • American Advertising Awards recognition • associated comic book release • client returned for expanded version

» **FAA / AIRPORT OPERATIONS — REAL-TIME INTERACTIVE VISUALIZATION (UNITY HDRP)**

- Served as **Art Director and Technical Artist** — directed visual language, spatial layout, and technical implementation for airport operations interactive screen
- Engineered procedural city and airfield generation using **Houdini + OpenStreetMap data + Python** — accurate spatial representation at scale without manual modeling
- Built timeline-driven Unity HDRP system synchronizing aircraft animation (taxi, takeoff, flight, landing) with video playback and touch-screen camera control
- Designed for **24/7 continuous operation** — visual pacing, stability, and animation timing tuned to prevent viewer fatigue over extended display cycles
- Delivered as internal R&D proof-of-concept for aviation-focused interactive systems; successfully validated for long-term stability

EARLY CAREER FOUNDATION

TECHNICAL ARTIST | PROCEDURAL SYSTEMS & BROADCAST • Freelance / Contract • 2005 – 2018

- Architected a **fully procedural race simulation engine** in Cinema 4D with Python scripting — complete system covering procedural camera rigs, dog locomotion and animation, crowd simulation (30+ agents), and stadium environment with shader-driven randomized texture generation; entire unique race produced from a single script execution with no manual intervention
- Broadcast UI and timing overlays generated as output artifact of the simulation — system designed as end-to-end pipeline, not a series of manual steps
- **Optimized GPU render pipeline** to near-realtime throughput on dual Pascal GPUs, enabling production of dozens of unique broadcast-ready renders per day on a single workstation — full cycle from simulation to final composite handled solo
- Developed personal automation tooling across Photoshop and After Effects to systematize repetitive production tasks — consistent pattern throughout career: identify repeating workflow, build a tool to eliminate manual overhead
- Background in print, product, and UI/UX design; early exposure to procedural thinking and automation in design pipelines

EDUCATION

ULIM – Universitatea Liberă Internațională din Moldova • 2005 – 2018 • Chisinau, Moldova

Computer Science and CG Design (self-directed) — advanced self-learning in Houdini, Unity/Unreal, Python for procedural workflows and tool development.

LANGUAGES

Russian - Native

English - Professional Working Proficiency