

Lam Nguyen Quang Tran

Vietnam

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NVIDIA Omniverse and OpenUSD developer on a 3+ year real-time-3D / XR foundation – spanning HoloLens 2 industrial AR with on-device AI through custom Omniverse Kit extensions and industrial digital-twin simulation on OpenUSD for manufacturing, logistics, and robotics. I own features end to end from a clean-architecture, Isaac-free backend through isolated UI, and validate physics with headless, deterministic regression harnesses.

Core Competencies

- **Omniverse Kit & OpenUSD:** Custom Kit extensions (omni.ui / omni.ui.scene, viewport, actions, scripting); stage/layer management, USD Python API, custom schema attributes, asset referencing, flattened USD/USDZ assemblies; viewport-performance tuning. NVIDIA OpenUSD certification track.
- **Physics, robotics & simulation:** NVIDIA PhysX (rigid, deformable/FEM, articulations, solver tuning), NVIDIA Warp, OmniGraph, RMPflow, Isaac ROS2 bridge; factory pick-&-place, AGV/forklift navigation (Pure-Pursuit), crane/rope heavy-lift; virtual commissioning; discrete-event / process-sim concepts.
- **3D reconstruction & data pipelines:** 3D Gaussian Splatting (COLMAP / FVDB / Kaolin) to Isaac-ready USD; simulation-to-USD data flow (MQTT to Isaac carb message bus, OmniGraph material movement); Docker multi-service orchestration; deterministic regression harnesses.
- **Programming & architecture:** Python (async, threading, GPU/Warp) primary; C# (Unity); GPU compute via NVIDIA Warp and RAPIDS/CuPy; clean-architecture ISOLATION layering and dependency injection.

Professional Experience

- **An enterprise digital-services company** **Vietnam**
Omniverse / Isaac Sim Engineer *Sep 2024–Present*
 - Shipped 3 Omniverse Kit extensions on a clean layered (ISOLATION) architecture – 3D Gaussian Splatting reconstruction (GA, v1.0.0→v1.5.2 over six months), Motion Path Kit, and Physics Kit – each with isolated omni.ui and an Isaac-free, unit-testable backend.
 - **Physics Kit** (real-time contact analysis): two per-vertex heatmap engines – Euclidean-distance and a topological mesh-adjacency (CSR-graph heat-diffusion) engine – on NVIDIA Warp GPU kernels, with scale-aware re-baking (radius/color from the scene bounding box) and watershed floating force-labels via round-robin per-object allocation.
 - **Motion Path Kit** (motion-path authoring / virtual commissioning): third-person manual drive to record sparse, editable 3D waypoint tracks, then a progress-parameterized follow controller (a blocked body waits rather than skips) and a Pure-Pursuit steering class for articulated forklifts (rear-wheel-steer kinematics); on omni.ui.scene + USD curves.
 - Implemented factory pick-&-place on Isaac Sim's manipulator (RMPflow) example framework – customized the arm rig, SuckTask, 10-phase state machine and SurfaceGripper, with an OmniGraph-driven conveyor; built the GPU synthetic-telemetry generator (RAPIDS/CuPy) and MQTT-to-Isaac message-bus bridge feeding a digital twin on NVIDIA's predictive-maintenance reference workflow, packaged as custom Kit extensions.
 - Delivered a client-facing networked crane/rope heavy-lift simulation platform (PhysX rigid + deformable/FEM rope, Socket.IO remote control, 15-stage sequence); root-caused a rigid-chain instability and moved it to a unified FEM rope, with findings shared with NVIDIA.
 - (*Sep 2024–early 2025, prior to the Omniverse work*) Shipped a client-facing **HoloLens 2** MR work-instruction app for a global F&B manufacturer's packaging-line changeover: a JSON-driven 35-step engine with AR 3D overlays and **on-device YOLO computer vision** (Unity Sentis, GPU) that verifies each operator action and auto-advances – Unity / MRTK 3, QR spatial anchoring.

- **Upwork – Top Rated** **Remote**
Freelance XR & Simulation Engineer *2024–Present*
 - Top Rated with 100% Job Success and \$20K+ earned across 6 client contracts; building a low-latency stereoscopic XR video pipeline (stereo / Jetson camera to Meta Quest 3 over WebRTC) as the largest ongoing engagement.
 - Delivered Unity/C# VR simulations and training apps for Meta Quest 2/3 (including a surgical-training sim), highly rated (multiple 5.0-star reviews) for reliability and communication.
- **A global engineering & technology group** **Vietnam**
XR Engineer (Intern) *2023–2024*
 - Built VR/AR/MR industrial apps on Meta Quest 2/3 and HoloLens 2 – a VR factory-layout & training tool and a HoloLens 2 disassembly app wired to backend systems – using MRTK, Meta XR SDK, Vuforia, and Azure Object Anchor.

Education

- **Ho Chi Minh City University of Technology and Education** **Vietnam**
B.Eng. in Embedded Systems & IoT *2020–2024*

Certifications

- NVIDIA OpenUSD certification track (6 courses): Stages & Prims, Traversing the Stage, Using Attributes, Working with Prims & Default Schemas, Understanding Model Kinds, Setting Up Basic Animation.
- IELTS 7.0.

Engineering Practices & Tooling

- **Architecture & code quality:** Authored the team's clean-architecture standard ("ISOLATION") – engine-agnostic, Isaac-free backends behind a thin facade, dependency-injected and isolated omni.ui, codified as per-extension rules contracts with bilingual handoff docs – keeping backends unit-testable and onboarding fast.
- **Release & source governance:** Semantic-versioned releases with per-release changelogs (Gaussian Splatting v1.0.0→v1.5.2 over six months); own branch-hygiene and selective-merge governance across a multi-team monorepo, with per-extension integration branches and parallel feature worktrees.
- **Agentic AI workflows – authoring reusable agent skills:** Build **agent skills on Claude Code** that distil domain expertise into workflows the rest of the team can run – a clean-architecture standard generator that emits per-extension rules contracts, and a headless cinematic-capture pipeline for Isaac Sim (camera work, frame-capture hardening, encode and audit) – plus maintain a token-efficiency subagent suite built on an open-source base.
- **Spec-first delivery with deterministic quality gates:** Drive a specification-first, red-teamed loop – feasibility spec to adversarial review to implementation to a headless, bit-for-bit-reproducible regression gate (12 scenarios, auto HTML reports) – on reproducible Docker multi-service backends with GPU/VRAM hardware validation.

Languages

- Vietnamese (native), English (professional, IELTS 7.0).