Michael Reynolds
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XR Software Engineer | Real-Time Simulation | Unity (C#) | Performance, Reliability, Rapid Delivery

XR Software Engineer who designs, builds, and ships cross-platform applications end-to-end, from prototyping through deployment and iteration. Specializes in real-time interactive systems and 3D simulation with deep ownership across rendering, input, UI, serialization, networking, and session state. Integrates cloud services, AI, and auth patterns into production-quality applications. Delivers performance optimization under device constraints, scalable and modular system design, and turns ambiguous requirements into scoped, stable deliverables. Eligible for a U.S. security clearance.

PROFESSIONAL EXPERIENCE

Lead XR Developer | Shenandoah Center for Immersive Learning (SCiL) | Winchester, VA | Aug 2023 - Dec 2025

- Owned end-to-end development of Unity applications from requirements through release, deployment support, and iterative improvement based on stakeholder feedback.
- Delivered stable increments on tight timelines by scoping ambiguous goals, presenting tradeoffs, and aligning engineers, designers, and SMEs around measurable outcomes.
- Shipped and supported cross-platform builds across Quest 2 and 3, PC, iOS, and visionOS, resolving platform regressions and hardening runtime reliability through lifecycle design and async loading.
- Designed and integrated an AI conversation system using Vertex AI Gemini with retrieval-augmented generation and citations, streaming voice IO, and cloud-managed configuration, shipping across XR and standard app targets.
- Implemented real-time multi-user networking using Netcode with Lobby and Relay plus Vivox voice, building resilient session lifecycle handling, reconnection paths, and recovery behavior for live assessment runs.
- Owned engine-adjacent subsystems across rendering, input, UI, serialization, and networking, plus session state, reducing cross-system failure modes in a large codebase.
- Drove performance optimization through profiling, rendering pipeline tuning, batching and instancing tradeoffs, and memory analysis to reduce hitches and sustain target performance on constrained devices.
- Built reusable platform foundations, including configuration-driven behavior, modular scenario composition, and graph-authored runtime pipelines to accelerate delivery and improve consistency across projects.

Junior XR Developer | Shenandoah Center for Immersive Learning (SCiL) | Winchester, VA | Aug 2022 - Aug 2023

- Implemented interactions, scenario flow, and UI patterns in Unity, optimizing for performance constraints and reliable, repeatable runs across varied hardware and session conditions.
- Supported rapid build, test, and release cycles with hands-on demo readiness, quick issue triage, and tight feedback loops with faculty and stakeholders to stabilize deliverables for live evaluations.

Lab Technician | Shenandoah Center for Immersive Learning (SCiL) | Winchester, VA | Aug 2021 - Aug 2022

- Maintained XR lab readiness through headset and device setup, troubleshooting, software updates, and build verification across lab hardware, to ensure reliable demo sessions and rapid issue recovery.

EDUCATION

Shenandoah University - Winchester, VA | May 2025

- Bachelor of Science in Virtual Reality Design
- Minor in Game Design and Development

SELECTED PROJECTS

PersonAI - Configurable XR AI Conversation Platform

- Built a domain-agnostic Unity platform for unscripted AI persona experiences with text and voice interaction across XR and standard apps, enabling reusable persona configuration and rapid content iteration.
- Implemented cloud-controlled personas and scenes using Firestore and Cloud Storage, streaming voice IO using Google STT and ElevenLabs, and secure sign-in using OAuth 2.0 with PKCE with reliable token handling.

Project-XVR - Multiplayer XR Leadership Assessment Platform

- Built a reusable multiplayer foundation, including hosting and joining, mission lifecycle control, instructional UI, and XR hooks to enable parallel mission development without rewriting core systems.
- Implemented networking using Netcode with Lobby and Relay plus Vivox voice, building resilient session lifecycle handling, reconnection paths, and recovery behavior to keep live runs stable under real-world network conditions.

DroneVR - VR Procedural Training and Assessment

- Delivered VR training and assessment modes with telemetry tracking and randomized fault injection for repeatable, measurable troubleshooting workflows.
- Stabilized Quest performance using LOD strategy, batching and instancing, and async loading, reducing CPU and GPU spikes and preventing frame hitches during dense interaction sequences and repeated demo loops.

InspectAR - AR Model Placement and Inspection

- Built surface scanning and placement plus manipulation flows at real-world scale for live demos.
- Improved demo reliability by addressing tracking variability and adopting predictable startup and content patterns across varied physical spaces.

IVR Technical Training Framework - Modular XR Training Platform

- Built a graph-to-runtime pipeline that converts authored graphs into deterministic runtime behavior supporting branching outcomes, state-driven transitions, and timeline-based sequencing for repeatable training flow.
- Designed Quest-focused performance patterns using async background work and VR-native UI Toolkit in world space.

Gesture Interface - Kinect v2 Gesture-Driven Interaction Kiosk

- Built a Unity kiosk gesture interface using Kinect v2 body tracking that selects one active participant at a time and drives a multi-display carousel through spatial trigger zones.
- Implemented a custom body rig pipeline that converts Kinect frames into tracked skeleton rigs and deterministic app commands with offline-first content caching plus optional WebDAV sync.

SELECTED PRESENTATIONS & EXHIBITIONS

XR Development Workshop - Cape Peninsula University of Technology (CPUT), Cape Town, South Africa | Apr 2025

- Led a hands-on Unity VR workshop and delivered an instructional prototype as a proof-of-concept for stakeholders.

I/ITSEC - Orlando, FL | Dec 2024

- Presented XR training capabilities to 1,500+ attendees and supported partnership and research discussions through live demos, technical Q&A, and hands-on walkthroughs.

Shenandoah University Executive & Leadership Demos | 2023 – 2025

- Delivered operator-ready demonstrations and communicated technical tradeoffs to decision-makers (e.g., Board of Trustees, Office of Advancement, faculty onboarding showcases).

VOLUNTEER EXPERIENCE

Lead IT Systems Engineer | FIRST Team 1086 Blue Cheese Robotics, Glen Allen, VA | Jun 2022 - Present

Overall tenure: Aug 2019 - Present. Promoted through prior roles.

- Built and deployed a competition scouting application in Unity to standardize match data collection, optimized for fast training and low-friction use under event constraints.
- Migrated the organization into Google Workspace for Nonprofits and own ongoing administration, including least-privilege access standards, onboarding and offboarding automation, and lifecycle conventions to reduce permission drift across seasonal turnover.

SKILLS

- **Languages:** C#, Python, Java, JavaScript, SQL
- **Real-Time and Engine:** Unity, OpenXR, XR Interaction Toolkit, Input System, Addressables, Timeline, ScriptableObjects
- **Extended Reality:** AR Foundation, ARKit XR Plugin, visionOS, PolySpatial, HoloLens, MRTK
- **Rendering and Performance:** URP, HDRP, Shader Graph, Unity Profiler, Memory Profiler, Frame Debugger
- **Networking and Session Systems:** Netcode for GameObjects, UGS Lobby and Relay, Vivox
- **AI and Voice Integration:** Vertex AI Gemini, RAG, Google Speech-to-Text, ElevenLabs TTS
- **Cloud and Integration:** Google Cloud Firestore, Cloud Storage, REST, JSON, OAuth 2.0, PKCE
- **Dev Tools:** Git, GitHub, GitLab, Notion, ClickUp
- **Operating Systems:** Windows, macOS, Linux