# YOGESH RATHOD

## Senior XR / Unity Technical Lead

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## SUMMARY

Technical lead with 11+ years building production XR systems — from architecting a VR architectural visualization platform deployed across 500+ buildings on Meta Quest, to building a cross-platform digital learning app used in thousands of US preschool classrooms, to sole-engineering a native C++ OpenCV AR SDK shipped to enterprise clients. Hands-on architect who writes production code, designs multiplayer networking, builds procedural generation pipelines, and optimizes standalone VR to hold 72 FPS at 2M+ polygons.

## CORE COMPETENCIES

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| **XR & Real-Time** | Unity (Advanced), Unreal Engine 5, VR/AR/MR Architecture, Real-Time Rendering, Gaussian Splatting, Baked & Runtime Lightmapping, GPU Shader Programming |
| **Languages** | C#, C++, JavaScript/TypeScript, GLSL/HLSL |
| **Systems & Architecture** | Photon Fusion Multiplayer, Procedural Generation, CAD-to-3D Pipelines, Addressables + S3 Asset Delivery, System Design |
| **Native & Low-Level** | OpenCV Integration, Native C++ Plugin Development (P/Invoke), DirectX11, Vulkan (learning) |
| **Platforms** | Meta Quest 2/3, Android, iOS, WebGL, Windows, HoloLens |
| **Leadership** | Technical Strategy, Team Building (up to 15 engineers), Hiring, Sprint Planning, Code Review, Cross-Functional Collaboration |

## EXPERIENCE

### MHXP

Apr 2024 – Present

*Senior Technical Lead (Sole Engineer)* | Bangalore, India

Lead architect and sole engineer for a VR-based architectural visualization platform serving real estate developers. Responsible for end-to-end platform design, multiplayer systems, procedural generation, and performance optimization across VR and web deployments.

**MHXP (My Home Experience) — VR Architectural Visualization Platform**

- Architected a reusable Unity framework that standardized project initialization across all client engagements, reducing production setup from multiple days to under 30 minutes through templated project structure, preconfigured systems, and integrated procedural tooling.
- Designed and shipped a cross-device multiplayer system using Photon Fusion (Shared Mode), synchronizing VR headset experiences with Android/iOS spectator apps at sub-20ms latency — deployed across 500–600 concurrent users spanning multiple client projects.
- Engineered a VR-primary / mobile-secondary control architecture for guided walkthroughs during live sales demos. Zero experience-related complaints reported across all client deployments.
- Delivered production VR deployments maintaining stable 72 FPS on standalone Meta Quest devices at 2M+ polygon scenes with up to 6 GB source texture data, using aggressive culling, LOD, and Addressables-based asset streaming via S3.
- Built the largest deployment: a 12-tower, 1,500+ apartment township visualization on Quest 3 (5 unique floor plans per tower with procedurally placed exteriors), combining baked geometry with Gaussian Splat-based exterior rendering for distant environment fidelity.
- Implemented a GUID-based runtime lightmap switching/blending system using Texture2DArray and custom GPU shaders, solving Bakery's non-deterministic atlas packing across 3,000+ renderers.
- Integrated Gaussian Splatting pipeline (Blender → UnityGaussianSplatting) for exterior environments while staying within Quest-native performance budgets.
- Built spatial measurement tools, zone/gallery/panorama systems; integrated Meta Interaction SDK for hand tracking and gesture locomotion.

**Space Viz — Procedural Building Generation Tool**

- Built a CAD parsing pipeline that interprets architectural drawing data into parametric 3D geometry using Archimatix Pro, generating UV-unwrapped, light-ready models optimized for real-time rendering. Over 500 buildings generated in production.
- Automated end-to-end output: WebGL builds for browser-based client previews and FBX export for seamless integration into VR projects.

## Infogen Labs

Mar 2021 – Mar 2024

*Technical Lead* | Pune, India

Architected and led development of cross-platform interactive systems across education, sports automation, and body measurement domains. Grew and managed engineering teams of up to 15 across multiple concurrent projects, responsible for hiring, sprint planning, code reviews, and system design.

**Ignite by Hatch — Cross-Platform Digital Learning Platform**

Ignite is a research-based adaptive learning platform for pre-K children, deployed across thousands of US preschool classrooms. It delivers 200+ curricular experiences across 7 learning domains (literacy, math, social-emotional, physical, language, science, creative arts) on Android, iOS, WebGL, and Windows. An educator dashboard (Insights) provides real-time progress data. The product is still actively maintained and shipping updates as of 2026.

- Sole initial architect and engineer for the Unity client application. Designed the core architecture from scratch: adaptive game sequencing driven by a Node.js backend (API-driven decisions on which learning experiences to serve each child based on performance data), cross-platform rendering pipeline, and asset management system.
- Grew the team from 1 to 15 engineers over the product lifecycle, structured into production artists, tool programmers, junior/senior developers, and leads. Transitioned into a leadership role focused on sprint planning, code review, system design, and hiring as the team scaled.
- Collaborated with backend team on API design for the adaptive learning engine, which personalizes content sequencing per child based on formative assessment data.

**FitMatch — LiDAR-Based 3D Body Measurement (iOS)**

- Built the proof-of-concept from scratch as sole engineer, demonstrating LiDAR-based body measurement on iOS with accuracy within ¼ inch of a physical tape measure.
- After successful POC, architected the production system and grew the team to 10 engineers (junior, senior, and lead tiers), all reporting directly to me.

**Axe Throw Automation System**

- Designed and delivered a computer vision and hardware-integrated scoring system for competitive axe throwing. Players use real axes on physical targets while the system automates scoring, replacing manual judging. Built with a team of 2 engineers and 1 artist.

## Quest Global (formerly Mobiliya)

Dec 2018 – Feb 2021

*Senior Software Engineer* | Pune, India

Architected native C++ systems and mixed reality applications for enterprise clients, bridging low-level computer vision processing with Unity-based XR experiences.

**AR360 — Native C++ OpenCV AR SDK**

- Sole engineer on a cross-platform native C++ AR SDK integrated into Unity via P/Invoke, featuring markerless AR, object detection, and SLAM — processing at 30 FPS on capable devices (24 FPS on lower-end hardware).
- SDK powered the AR360 industrial maintenance platform: an authoring tool where repair manuals with step-by-step animations could be created on the web, then superimposed on physical machinery via AR on Android, iOS, HoloLens, and AR glasses. Shipped to ITC for production use on packaging equipment.
- Architecture featured a triple-buffer threading model, processor chain ownership pattern, and cross-platform build pipeline (Windows/Android).

**Holoportation — Mixed Reality Remote Presence (Charter Communications)**

- Contributed to a real-time 3D telepresence system for HoloLens using C++/CUDA: four Intel RealSense cameras captured a person, fused into a live mesh, and streamed as a hologram. Responsible for multi-camera calibration and data preparation pipeline.

**Synthetic Data Simulator (Chamberlain)**

- Built a Unity-based synthetic data generation simulator for Chamberlain's IoT garage camera ML pipeline. Configurable garage scenes with constrained randomization of object positions and rotations generated

10M+ annotated images with JSON metadata, consumed by the ML team for car/space detection model training.

**Other Projects**

- Ericsson Data Center MR Experience (hands-free enterprise MR), Waste Water Treatment Plant VR (HTC Vive industrial training).

## EARLIER CAREER

**Level2 Games** — Senior Software Engineer, Hyderabad — Jul 2018 – Dec 2018
**TwopowerN** — Gameplay Programmer, Hyderabad — Feb 2015 – Jul 2018

Developed gameplay systems, UI frameworks, and cross-platform mobile applications across multiple shipped titles on Android, iOS, and Windows.

- Level2 Games: Built a procedural building generation system — users selected plots on real maps, and the tool generated buildings compliant with local government regulations (FSI, max height/floors), with environmental overlays for sunlight direction, heat mapping, and wind flow analysis.

## OPEN SOURCE & PORTFOLIO

**Runtime Lightmap Blending System** — github.com/Rathod1806/LightmapSwitching
Unity system for runtime lightmap switching and blending using Texture2DArray and custom shaders. Solves GUID-based renderer identification across non-deterministic bake outputs.

**OpenCV Unity Plugin** — github.com/Rathod1806/opencv-unity-plugin
Cross-platform native C++ plugin bridging OpenCV into Unity via P/Invoke. Triple-buffer threading architecture, processor chain ownership model, Windows/Android support.

## EDUCATION

**PG Diploma in Game Development** — ICAT, Hyderabad — 2014
**B.E. in Computer Science** — University of Nagpur — 2012