HOUMAN MESHKIN

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SUMMARY

Emmy Award-winning Engineering Leader with 30 years in real-time rendering, AR/VR, and high-performance systems. At Meta and Google, initiated and led cross-platform initiatives (IGL, One Camera, Filter Pipeline) powering billions of users and 1B+ avatars. Scaled organizations from 4 to 40+ engineers while remaining hands-on—delivered critical fixes for $100M+ infrastructure projects. 19 years in AAA game development with 14+ shipped titles across Spider-Man, Star Wars, Lord of the Rings, and Dungeons & Dragons franchises.

EXPERIENCE

META (Reality Labs & Instagram)
Menlo Park, CA | Nov 2016 – Present

Senior Staff Software Engineer, XR Tech *Sep 2024 – Present*
- Leading R&D on Gaussian Splatting + mesh rendering composition—a key unsolved industry challenge
- Developed novel real-time relighting algorithms for photorealistic avatar compositing in virtual environments
- Championed code quality and tooling improvements that increased engineering efficiency across teams

Senior Staff Software Engineer, Avatars *Apr 2023 – Sep 2024*
- Led On-Device Rendering (ODR) project—infrastructure optimization projected to save $100M+/year
- Resolved complex multi-threaded bugs and architectural crashes blocking high-fidelity avatar launches
- Drove rendering performance improvements for seamless avatar experiences across mobile apps

Senior Engineering Manager, Avatars *Apr 2022 – Apr 2023*
- Built organization from 4 to 40+ engineers and technical artists within one year; hired 2 IC7 Tech Leads and 2 L6 Engineering Managers
- Established multi-team structure with dedicated managers for client and backend foundations
- Defined technical and organizational roadmaps for Meta Avatars rendering—infrastructure now powering 1B+ avatars

Senior Engineering Manager, Spark AR *Sep 2021 – Apr 2022*
- Pivoted team from service-oriented to platform-centric model, aligning with Reality Labs strategy
- Created dedicated CV sub-team and mentored high-performing ICs into Engineering Manager roles

Senior Engineering Manager, IG Camera Infrastructure & Graphics *Dec 2018 – Sep 2021*
- Founded Instagram's first CV/ML team, establishing a new core discipline for advanced camera effects
- Led organizations owning camera systems, graphics, and CV foundations—mission-critical stacks serving billions
- Promoted one Tech Lead to IC8 (Principal) and another to IC7 (Senior Staff)

Senior Staff Software Engineer, IG Camera Infrastructure & Graphics *Nov 2016 – Dec 2018*
- Created IGL (Intermediate Graphics Library), One Camera (unified camera library), and a unified filter pipeline—cross-platform foundations powering Instagram, Facebook, WhatsApp, and Messenger; IGL now open-sourced (3.2k GitHub stars, 53 contributors)
- Architected rendering and shader pipelines enabling Instagram's first mobile AR effects, including high-profile branded filters (Kylie Jenner Lip Kit—one of Instagram's first branded AR effects, reaching 112M+ followers)
- Achieved 6x iOS video player performance via Neon SIMD micro-optimizations
- Promoted IC6 → IC7 (Senior Staff) in under one year

GOOGLE (Daydream VR & ATAP)   Mountain View, CA | Oct 2014 – Nov 2016

Staff Software Engineer, Daydream VR   *Jul 2016 – Nov 2016*

• Derived [novel patented algorithm](#) for efficient omni-directional stereoscopic (ODS) equirectangular rendering

Staff Software Engineer, ATAP   *Oct 2014 – Jun 2016*

• [Emmy Award](#) recipient for "Pearl" (Outstanding Innovation in Interactive Programming)—pioneering interactive 3D cinema; also Oscar-nominated for Best Animated Short

• Optimized rendering, animation, and scene updates for 3D interactive storytelling on mobile and VR

• Derived CubeRect—a novel 360° video format improving quality while reducing bandwidth; presented at internal Google engineering summit

RUMBLE ENTERTAINMENT   San Mateo, CA | Aug 2011 – Oct 2014

Lead Graphics Engineer

• Kings Road: Architected and built the entire 3D rendering engine using Flash Stage3D—deferred shading pipeline for hardware-accelerated browser/mobile graphics

TURBINE (WARNER BROS)   Boston, MA | Feb 2010 – Aug 2011

Principal Graphics Engineer

• Modernized rendering pipeline for Lord of the Rings Online and Dungeons & Dragons Online (PC/PS3/Xbox 360) with HDR and deferred shading

VISIDECK   Manchester, UK | Dec 2009 – Feb 2010

CTO & Co-Founder

• Co-founded architectural visualization startup; built real-time demos for investor pitches

SHABA GAMES (ACTIVISION)   San Francisco, CA | Oct 2007 – Dec 2009

Principal Graphics Engineer

• Spider-Man: Web of Shadows—modernized graphics engine with HDR, deferred shading, custom post-processing; unlocked PS3 version nearly single-handedly through extensive engine optimization

• DJ Hero—rendering optimizations and post-processing effects for Xbox 360 and PS3

PERPETUAL ENTERTAINMENT   San Francisco, CA | Aug 2005 – Sep 2007

Senior Graphics Engineer

• Led rendering pipeline and shader architecture for MMO Gods & Heroes

RAINBOW STUDIOS (THQ)   Phoenix, AZ | Jul 2000 – Aug 2005

Senior Graphics Technology Engineer

• Core graphics team for 8 titles: Star Wars: Racer Revenge, MX vs. ATV franchise, Splashdown series, ATV Offroad Fury 2, Mat Hoffman's Pro BMX 2

3DFX INTERACTIVE   San Jose, CA | Feb 1998 – Jul 2000

Software Engineer

• Built advanced rendering demos showcasing Voodoo GPU capabilities; optimized MiniGL drivers benefiting Quake, Quake 2, Half-Life, and other OpenGL titles

CYCLONE STUDIOS (3DO)   San Mateo, CA | Jan 1996 – Jan 1998

Software Engineer

• Developed 3D rendering pipelines and terrain editors for Uprising—specialized terrain rendering engine

UC BERKELEY IML   Berkeley, CA | Feb 1995 – Dec 1995

Software Engineer
• Developed milling machine graphical simulators and path generators

TECHNICAL SKILLS

Rendering: Metal, Vulkan, OpenGL/ES, DirectX, Gaussian Splatting, HDR, Deferred Shading

Performance: SIMD (Neon, SSE), CPU/GPU parallelism, PS2/PS3/Xbox 360 console architectures

Computer Vision: Image processing, face tracking, segmentation

Leadership: Org building (4→40+), mentoring principal engineers, cross-org technical strategy

HONORS & PATENTS

• [Emmy Award](): Outstanding Innovation in Interactive Programming (2017) for "Pearl"
• 7 Patents including:
    ◦ [Generating Realistic Makeup in a Digital Video Stream]() (US11069094B1)
    ◦ [Synthetic Stereoscopic Content Capture]() (US11765335B2)
    ◦ [Integrated Machine Learning Algorithms for Image Filters]() (US12159383B2)
    ◦ [Systems and Methods for Occluding AR Effects]() (US11182613B2)
    ◦ [Multi-Camera Recording Using a Visual Media Recording Device]() (US11871139B1)
    ◦ [Regionally Enhancing Faces in a Digital Video Stream]() (WO2023097054A1)

PUBLICATIONS & EDUCATION

• [SIGGRAPH Asia 2018](): "Realistic AR Makeup over Diverse Skin Tones on Mobile"
• [GDC 2007](): "Sort-Independent Alpha Blending"—novel OIT techniques for commodity hardware
• [ACM I3D 1997](): "Interactive Generation of Scherk-Collins Sculptures"
• B.S. EECS, University of California at Berkeley