Bob Rost

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Summary

Senior Software Engineer specializing in high performance computing, AR/VR, haptics, and interaction models, with 25+ years of experience spanning the game industry, interactive museum exhibits, immersive technologies, and research-driven innovation. Deep experience in low-latency computing, real-time data processing, and algorithmic optimization, with a strong foundation in C++ and numerical computing. Expertise in software architecture, input and accessibility frameworks, speech/audio processing, and XR development. Reality Labs research engineer at Meta, leading advancements in social haptic interactions, AI-powered accessibility, and scalable input solutions. Passionate about advancing machine learning, human-computer interaction, and next-gen spatial computing.

Experience

SENIOR SOFTWARE ENGINEER | META | SEATTLE, WA / REMOTE | 2020 - 2025

- Led a team of 5 engineers in Unreal Engine, developing a VR real-time physical modeling system for haptic feedback, enabling 3 research studies quantifying virtual vs. physical touch and advancing the core research pillar of improving immersion and interaction fidelity.
- Contributed to a published research paper on real-time social haptic interactions, advancing the field of tactile communication in virtual spaces.
- Prototyped accessibility systems for spatial computing, exploring the constraints and possibilities of using ML to enable sign language in VR. The prototype identified key deficiencies in existing hand-tracking ML models, informing future research and development.
- Developed and maintained device drivers for research haptic devices, supporting over 50+ haptics research studies within Reality Labs Research.
- Led product accessibility and inclusivity reviews for 25+ products across Reality Labs, ensuring equitable user experiences.
- Designed cross-platform haptic interaction frameworks supporting Unreal Engine, Reality Labs SDKs, OpenXR, WebXR, Android, React Native, and embedded systems.
- Tech Stack: C++, JavaScript, TypeScript, Unreal Engine, OpenXR, WebXR, Android, Embedded Systems, React Native.

SENIOR SOFTWARE DEVELOPMENT ENGINEER | AMAZON GAME STUDIOS | SEATTLE, WA | 2011-2020

- Led cross-functional teams of engineers and designers to develop UI, accessibility, and player input systems for AAA multiplayer titles, solving complex interaction challenges and shipping *Crucible*, Amazon's first multiplayer AAA title. Designed and implemented scalable UI-to-gameplay communication systems in C++ and JavaScript for modularity and reliability.
- Designed the client input system for *The Unmaking*, a first-of-its-kind tablet game utilizing hybrid client and cloud rendering. Solved cloud gaming latency challenges by developing a locally processed and rendered input architecture, ensuring real-time responsiveness. This game served as a marketing showcase for AWS's early GPU cloud servers and successfully launched as a commercially available title.
- Co-invented core technology architecture for *Twitch Extensions*, which increased viewer engagement by 10x, leading to its widespread adoption for interactive streaming experiences.
- Led gameplay, backend services, and player metagame teams, delivering 5 released titles and developing multiple prototype projects to support Amazon's services and hardware initiatives.
- Conducted rapid prototyping for interaction innovation across Amazon devices, filing 13 patents related to HCI, procedural content, and wearable computing.

CO-FOUNDER, LEAD ENGINEER | MEAN JELLYBEAN | CHARLOTTE, NC | 2010 – 2011

- Ran a small game studio startup and successfully launched *Super Bride and Groom*.
- Designed and built all core technology, including game engine, gameplay code, level design tools, payment processing, and in-game advertising backend services, and deployed game technologies across Flash, iOS, and Xbox 360.

VICE PRESIDENT OF TECHNOLOGY | ETCETERA EDUTAINMENT | PITTSBURGH, PA | 2005 – 2010

- Led software development for 12 released titles focusing on serious games, interactive training simulations, and interactive museum exhibits, based on a custom game engine.
- Developed computer vision algorithms enabling large-scale crowd interaction games, with deployments for 40,000+ simultaneous players.
- Created 3 museum interactive exhibits using motion detection and AI-driven question response systems.

Patents, Publications, and Research

- 15 issued patents in haptics, AI-driven interaction, wearable computing, procedural content, and distributed computing.
- Published research on real-time social haptic interactions for AR/VR, "*Linking Haptic Parameters to the Emotional Space for Mediated Social Touch*" in journal *Frontiers in Computer Science*.
- Personal research project in digital audio compression and encoding for ATRAC3 audio codec for Sony MiniDisc. (minidisc.bobrost.com)

Education

Carnegie Mellon University | Pittsburgh, PA

- **Master's in Entertainment Technology** (MET)
- **Bachelor of Science in Computer Science**
- Minor in Bagpipe Performance
- Research in VR motion capture, NES game development, and interactive storytelling.

Skills

Programming Languages: C++, Python, TypeScript, JavaScript, C#
Platforms & Frameworks: Unreal Engine, Unity, OpenXR, WebXR, Reality Labs SDKs, Android, Embedded Systems, React Native
Specialties: High-Performance Computing, Haptics, AI-Driven Accessibility, UX and UI Development, XR Input Systems, Audio Signal Processing, Real-Time Rendering, Data Structures & Algorithms, Statistical Simulations, Linear Algebra.

Shipped Titles

Contributed to 20+ shipped titles in gaming, AR/VR, and interactive systems.