

# Loring Scotty Hoag (He/Him)

Los Angeles, California

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Senior Interactive Software Engineer, Researcher, and Thea Award Winner with +25 shipped projects including console and mobile video games, AI and robotics, VR / AR / XR, location-based attractions, and unique immersive entertainment.

## PROFESSIONAL WORK EXPERIENCE

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### **Sphere Entertainment Co, Madison Square Gardens**

- Burbank, CA : September 2023 – April 2025

#### Senior Software Engineer, Interactive Media

- Architected 10,000-player (audience scale) game systems in Unreal 5 for interactive shows at The Las Vegas Sphere.
- Achieved 20x performance increase for AI character systems, 170% performance increase for physics systems, and 250% performance increase for static mesh rendering.

### **Squanch Games**

- Burbank, CA : September 2021 – November 2022

#### Senior Gameplay Programmer

- Wrote core Unreal enemy AI systems with C++, Behavior Trees, and GAS for the award-winning game "High On Life".

### **Embodied Inc.**

- Burbank, CA : November 2020 – August 2021

#### Senior Software Developer, Interactive Design

- Led development of games, tools, and interactive activities for the Moxie robots using Python and NLP Chatscript.

### **Two Bit Circus Micro-Amusement Parks**

- Los Angeles, CA : March 2016 – March 2020

#### Senior Lead Engineer, Attraction Research & Development

- +15 shipped attractions including: Arcade and midway games, escape rooms, PoS systems, and interactive theater.
- Led simultaneous development of 5 opening-day attractions, delivering under fixed timeline constraints.
- Gained 450% increase in QA efficiency by building automated testing systems, including timescale-independent AI bots.
- Built PLC and microcontroller firmware for attractions, and operator manuals for live system maintenance and repair.

### **WayForward Technologies**

- Valencia, CA : June 2012 – March 2016

#### Lead Gameplay Programmer

- Led development in Unity, Unreal, and other engines. 7 shipped titles for mobile, console, and PC.
- Increased engineering team coding speed by 5x by developing coroutine scripting plugin for in-house engine.
- Achieved 600% speed increase in AI vision calculations by writing frame scheduling systems.

## ACADEMICS

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**University of Southern California, Los Angeles:** *Master of Sciences (MS)* in Computer Science, Artificial Intelligence

**University of California, Berkeley:** *Bachelor of Arts (BA)* in Computer Science, *UGCert.* in New Media Studies

### **California State University: Dominguez Hills, CodePath.org**

- Los Angeles, CA : June 2025 – Present

#### Adjunct Professor of Computer Science

- Developed/taught generative AI-focused university courses in Computer Science using POGIL teaching methodology.
- Led a team of undergraduate assistants in hosting experimental teaching sessions.

### **University of California, Berkeley**

- Berkeley, CA

#### Researcher

- Led the development of mobile game apps for health research, with design input from UC Berkeley faculty.
- Developed real-time communication software for interacting with autonomous aerial drones.
- Presented research findings at conferences including the Game Developers Conference and Games for Health.

## Professional Awards

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Themed Entertainment Assoc. – [Thea 2025 Outstanding Achievement Award, Immersive Technology and Production: Sphere](#)

TIME Magazine – [Best Inventions of 2023: The Las Vegas Sphere](#)

TIME Magazine – [Best Inventions of 2020: Moxie the Robot by Embodied](#)

## **Skills & Specialties**

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- **Game Engines, IDEs, Technologies:** Unity, Unreal, Visual Studio, Eclipse, Console, PC, Mobile, Android, iOS, AR, VR, XR
- **Languages:** C, C++, C#, Python, x86/MIPS/Arm Assembly, Java, JavaScript, Lisp/Scheme, Verilog, React, HTML 5
- **Artificial Intelligence:** PyTorch, Agentic AI, Machine Learning, Neural Networks, Computer Vision, Robotics
- **Embedded Systems:** Microcontrollers, PLC Programmable Logic Controllers, FPGAs, 3D Printing, Soldering, Ladder Logic
- **Additional Experience:** Responsive Web Design, Multi-threading/Parallelism, Version Control, Git, SVN, Perforce

## **Academic Research and Projects**

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### ***iFighter II Turbo: Neural Networks as Input Devices*** (USC: Computer Vision, AR)

- Designed PyTorch MLP to map martial arts fighting moves to game actions in real time with consumer-grade webcams.
- Collected and labeled 11,000 unique training samples. Improved sample data collection/labeling by over 800%.

### ***Humans VS Robots: Solving Capture the Flag in Real Time with STARMAC Autonomous Drones*** (UCB: Mobile)

- Developed mobile communication apps in Android for synchronizing human player moves in Humans vs Robots CTF.
- Improved mobile client rendering by 750% for heatmap data visualization by writing multi-threaded native C++ code.

### ***PokerWalk: Gamifying GPS for Personal Health and Public Planning*** (UCB: iOS, Android)

- Led full stack dev of mobile client frontend apps, server backend, MySQL database, and PHP communication layer.
- Increased framerate performance by 200% via multi-threaded game logic.

### ***NATCar: Autonomous Model Racecar*** (UCB: Mechatronics)

- Designed & soldered PCB, coded microcontroller, and built sensor array. Beat all other schools at national competition.
- Decreased lap times by 40% using learning algorithms for car to memorize course layout.
- Built electromagnetic sensors to detect magnetic field of the track, and wheel rotation sensors for speedometer.

## **SAMPLE OF SHIPPED PROJECTS**

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### ***The Sphere, Las Vegas*** (Interactive Theater Experience)

- Wrote Unreal gameplay, engine systems, and tools for audience-scale multiplayer games for +10k Sphere attendees.

### ***High on Life*** (Console Game, Xbox Game Pass, PC)

- Wrote Unreal Engine C++ engine code, C++ game code, and blueprints for AI logic, path-finding, armor systems, boss and enemy attack patterns, player weapon and ballistics logic, mission systems, and cross-platform achievements.

### ***Moxie the Robot*** (Animatronic Robot for Child Development)

- Wrote games, tools, and interactive activities for the Moxie conversational animatronic robots.

### ***Demolition Zone*** (Arcade / Midway Game)

- Increased level-design speed by 70% by writing procedural level creation tools.
- 50% improvement to LIDAR input sensing performance via Open Frameworks C++ and C# OSC for communication.

### ***Adventure Time Puzzle Quest*** (Mobile Game, iOS, Android)

- Wrote Unity C# scripts for match-3 puzzle mechanics, scaling UI systems, tutorials, and buff/debuff powerup systems.
- Increased tap-through metrics by 70% by adding detailed interactive tutorial and help system UI.

### ***Teenage Mutant Ninja Turtles: Danger of the Ooze*** (Console Game, Xbox 360, PlayStation 3, Nintendo 3DS)

- Designed cross-platform coroutine scripting language from scratch in C++ and Assembly. Used for AI, UI, and events.
- Gained 600% improvement in AI vision systems that interact with game environment objects for stealth gameplay.