

Loring Scotty Hoag (He/Him)

Los Angeles, California

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RESEARCH INTERESTS

- Video Games, Interactive Media
- Human-Computer Interaction, Education Technology
- Artificial Intelligence, Multi-Agent Systems
- Robotics and Autonomous Systems

EDUCATION

University of Southern California, Los Angeles: *Master of Sciences* in Computer Science, Artificial Intelligence **2025**
University of California, Berkeley: *Bachelor of Arts* in Computer Science **2010**
University of California, Berkeley: *Undergraduate Certificate* in New Media **2010**

PROFESSIONAL WORK EXPERIENCE

Sphere Entertainment Co, Madison Square Gardens **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

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.

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

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

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.

University of California, Berkeley – Social Apps Lab @ CITRIS (Research Lab)

May 2009 – May 2011

Researcher, Technical Director

- Led the development of mobile game apps for health research, with design input from UC Berkeley faculty.
- Presented research findings at conferences including the Game Developers Conference and Games for Health.

University of California, Berkeley – Hybrid Systems Lab (Research Lab)

May 2009 – May 2011

Researcher

- Developed real-time communication software for interacting with autonomous aerial drones.
- Built client-side application software for research apps in Android with native code support.

TEACHING EXPERIENCE

California State University: Dominguez Hills, CodePath.org

June 2025 – Present

Adjunct Professor of Computer Science

- Taught “CSC-121: Introduction to Computer Science and Programming 1” with Java.
- Developed generative AI-focused university courses in Computer Science using POGIL teaching methodology.
- Mentored and led a team of undergraduate teaching assistants in hosting experimental discussion sessions.

University of California, Berkeley

January 2010 – May 2010

Teaching Assistant, Game Development Classes

- Taught the engineering side of “Anthro-196: Urban Game Design” with Java, Processing, and Android.
- Held programming workshops for multi-disciplinary game development undergraduate courses.
- Created homework assignments, built project sample code, and held engineering-focused student office hours.

HONORS AND AWARDS

Themed Entertainment Assoc. – <i>Outstanding Achievement, Immersive Technology and Production: Sphere</i>	March 2025
Madison Square Gardens – Continuing Education Award Scholarship	January 2025
TIME Magazine – <i>Best Inventions of 2023: The Las Vegas Sphere</i>	November 2023
TIME Magazine – <i>Best Inventions of 2020: Moxie the Robot by Embodied</i>	November 2020
Townsend Center for the Humanities: G.R.O.U.P. Summer Apprenticeship	May 2010
NATCar Autonomous Racecar Competition – Placed 3 rd at UC Berkeley Competition, 6 th place at Nationals	May 2010
UC Berkeley Digital Design Competition – 1 st Place Project	December 2009
Alpha Gamma Sigma Honors Society Scholarship	May 2008

ACADEMIC RESEARCH AND PROJECTS

Transforming Checkmate: Direct Preference Optimization and Self-Play December 2025

Darrell Best, **Loring Scotty Hoag**, Nicklas Holmberg, Jacob Lichtefeld, Robert Pabo, Shravya Shashidhar

- Trained reasoning model with Direct Preference Optimization to improve Chess play performance.

MetaMafia: Building AI Agents for Social Deduction Games (Paper) December 2025

Joseph Ellis, **Loring Scotty Hoag**, Shravya Shashidhar

- Trained agentic systems to play the social deduction game “One Night Werewolf”.

iFighter II Turbo: Real-Time Martial Arts Gesture Classification for Interactive Game Control Systems (Paper) May 2025

Loring Scott Hoag, Niall Parker

- 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%.

Machine Learning Methods for Predicting League of Legends Game Outcome (Study Replication) December 2024

Damita Gomez, **Loring Scotty Hoag**, Robert Pabo

A Nested API Structure to Simplify Cross-Device Communication February 2012

Andy Wu, Sam Mendenhall, Jayraj Jog, **Loring Scotty Hoag**, Ali Mazalek

Humans VS Robots: Solving Capture the Flag in Real Time with STARMAC Autonomous Drones May 2009 – May 2011

Haomiao Huang, **Loring Scotty Hoag**, Andrew Sy, Claire Tomlin

- Developed mobile communication apps in Android for synchronizing human player moves in Humans vs Robots CTF.

PokerWalk: Gamifying GPS for Personal Health and Public Planning May 2009 – May 2011

Loring Scotty Hoag, Anna Vignet, James Holston, Greg Niemeyer

- Led full stack dev of mobile client frontend apps, server backend, MySQL database, and PHP communication layer.

NATCar: Autonomous Model Racecar Challenge May 2010

Simran Basi, Anthony Glenn DeMarco, **Loring Scotty Hoag**

- Beat all other schools at national competition. Designed & soldered PCB, coded microcontroller, and wrote AI systems.

PUBLICATIONS, PRESENTATIONS, POSTERS

- Making Games for Crowds – “Games @ Berkeley”, Berkeley Center for New Media, UC Berkeley*** (Video) **October 2024**
Scotty Hoag
- Industry Panel – “Games @ Berkeley”, Berkeley Center for New Media, UC Berkeley*** (Video) **October 2024**
Jane McGonigal, Greg Niemeyer, Alex Leavitt, **Scotty Hoag**
- Hybrid Systems in Human-Centered Automation*** **March 2015**
Haomiao Huang, **Loring Scotty Hoag**, Andrew Sy, Claire Tomlin
- A Nested API Structure to Simplify Cross-Device Communication – The Tangible, Embedded, and Embodied Interaction Conference (TEI)*** **February 2012**
Andy Wu, Sam Mendenhall, Jayraj Jog, **Loring Scotty Hoag**, Ali Mazalek
- Pathways & Pokerwalk: Fitness & Rehabilitation Through Mobile Play – Games for Health Conference*** **May 2011**
Loring Scotty Hoag, Melissa Yu, James Holston, Greg Niemeyer
- Automation-Assisted Capture-the-Flag: Reachability-based Decision Aids for Human Agents – UC Berkeley Undergraduate Research Poster Session*** **April 2011**
Haomiao Huang, **Loring Scotty Hoag**, Andrew Sy, Claire Tomlin
- Social App Lab @ CITRIS: Positive Impact Games – UC Berkeley Undergraduate Research Poster Session*** **April 2011**
Loring Scotty Hoag, Melissa Yu, James Holston, Greg Niemeyer
- “Pokerwalk”: GPS Gameplay Data as Art – UC Berkeley Art Practice Faculty Show*** **November 2010**
Loring Scotty Hoag, Anna Vignet, James Holston, Greg Niemeyer
- From Processors to Video Games – UC Berkeley “Cal Day” Student Showcase*** **April 2010**
Anthony Glenn DeMarco, **Loring Scotty Hoag**
- Health Games from the Social App Lab @ CITRIS: Pokerwalk and Pathways – Game Developers Conference (GDC), Serious Games Summit Playfest*** **February 2010**
Loring Scotty Hoag, James Holston, Greg Niemeyer
- Spitball – UC Berkeley Art Practice Student Game Development Showcase*** **May 2009**
Jeff Armstead, Paul Haymon, **Scotty Hoag**, Galen Travis
- Robotic Barbershop Trio – UC Berkeley Art Practice Undergraduate Showcase*** **November 2008**
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PROFESSIONAL PUBLISHED PROJECTS

<i>High On Life</i> – Squanch Games: Xbox Gamepass, PC	December 2022
<i>Moxie the Robot</i> – Embodied: Social Robot Educational Toy	February 2021
<i>Sex, Death, & Rock!</i> – Two Bit Circus: Dinner Theater (February 2020)	February 2020
<i>Skee Battle</i> – Two Bit Circus: Midway Game (February 2020, Public Beta - Unreleased)	February 2020
<i>Freefall</i> – Two Bit Circus: Installation for X-Prize 2019 (October 2019)	October 2019
<i>Doctor Botcher's Minute Medical School</i> – Two Bit Circus: Arcade (September 2019)	September 2019
<i>Last Ball Standing</i> – Two Bit Circus: Midway Game (September 2018)	September 2018
<i>Demolition Zone</i> – Two Bit Circus: Midway Game (September 2018)	September 2018
<i>Big Top Balloon Pop</i> – Two Bit Circus: Midway Game (September 2018)	September 2018
<i>Super Thunder Bloxx</i> – Two Bit Circus: Arcade (September 2018)	September 2018
<i>Danger Danger</i> – Two Bit Circus: Arcade (September 2018)	September 2018
<i>Battlezone Arcade</i> – Rebellion, Two Bit Circus: Arcade (September 2018)	September 2018
TUPAC: TwoBitCircus Unity Protocol for App Communication – Two Bit Circus: SDK for Arcade Games	July 2018
<i>Untitled Virtual Reality + Motion Simulator Ride</i> – Two Bit Circus: Arcade (December 2017, Unreleased)	December 2017
<i>World War Toons: Tank Up!</i> – WayForward, Studio Roqovan: Gear VR, Oculus GO (September 2017)	September 2017
<i>The Gadgetron</i> – Two Bit Circus: Art Installation (December 2016)	December 2016
<i>The Spellbinder</i> – Two Bit Circus: Arcade (August 2016)	August 2016
<i>Deja Cube</i> – Two Bit Circus: Smart Toy (May 2016, Unreleased)	May 2016
Marvel Puzzle Quest – WayForward, D3: Xbox360, PS3 (October, 2015)	October 2015
<i>Adventure Time Puzzle Quest</i> – WayForward, D3: iOS, Android (July 2015)	July 2015
<i>Teenage Mutant Ninja Turtles: Danger of the Ooze</i> – WayForward, Activision: Xbox360, PS3, 3DS	October 2014
<i>Adventure Time: Explore the Dungeon Because I DON'T KNOW!</i> – WayForward: WiiU, XB360, PS3, PC, 3DS	November 2013
<i>The Smurfs 2</i> – WayForward, Ubisoft: Wii, WiiU, Xbox360, PS3 (July 2013)	July 2013
<i>Lalaloopsy: Carnival of Friends</i> – WayForward, Activision: DS, 3DS (October 2012)	October 2012
<i>Pokerwalk</i> – Berkeley Social Apps Lab @ CITRIS: Android (February 2011)	February 2011
<i>Conway's Live Wallpaper</i> – The Blitz: Android (September 2011)	September 2011