Conway’s Arcade.

Transforming Cellular Automata Into Playable Experience for Google

[Videos]

- https://f.io/0CFzgMAT

[HQ images]

- https://f.io/sMoIsR6L

Unveiled at NeurIPS 2025, Conway's Arcade is an AI-driven reinterpretation of vintage arcade gaming that engaged the world's leading artificial intelligence researchers through computational theory made tangible.

Commissioned by Google to attract top-tier AI talent, Conway's Arcade reimagines classic gameplay through cellular automata, the same mathematical principles that fascinate PhD-level researchers. Built using Gemini 3.0, the installation allows players to prompt and play infinite game variations spanning titles like Space Invaders, Breakout, Flappy Bird, and Chrome Dino, each generated through AI-defined rules and logic.

From R&D to NeurIPS

The project originated as Vibe Arcade, an internal research initiative at SpecialGuestX exploring generative game design. What began in the agency's lab evolved into the

centerpiece activation at Google's NeurIPS booth, demonstrating how AI applications can speak directly to technical audiences through shared cultural touchstones: Conway's Game of Life, computational theory, and arcade nostalgia.

“There is something magical about Conway’s cellular automation theory. A system built on such simple rules, yet capable of simulating any other system, even itself. It captures the beauty of computation: with minimal structures, you can compute anything. We wanted to pay homage to that idea, and there is no better way than by creating a system that can compute infinite systems.” Says Miguel Espada, CEO of SpecialGuestx.

Designed to Travel the World

The entire structure is produced in aluminum, conceived and built through an iterative prototyping process that bridges workshop-scale fabrication and laboratory experimentation. Material decisions, tolerances, and assembly logic were treated as integral components of the interaction design, reinforcing a tight feedback loop between hardware, software, and user input.

Fabricated in Barcelona, with the mission to travel around the world, Conway’s Arcade is light, sturdy, and designed with an assembly process that makes it easy to set up in less than an hour by one person.

Technical Innovation in Experiential Design

Vintage meets high tech in details such as the typeface developed specifically for Conway’s Arcade, the classical joystick and buttons, and the red latched switches. These vintage arcade and space references become modern through the arcade’s structure, UX/UI design, and visual identity.

Complex becomes playful as Conway’s cellular automation theory is translated into graphics of each game; the cells in colorful 8-bit designs are the main characters of every session.

Each game operates on adaptive, non-static logic generated by Gemini 3.0, allowing players to prompt entirely new game experiences. Unlike traditional arcade emulation, Conway's Arcade generates rule sets in real-time, making every session computationally unique while maintaining the intuitive feel of vintage gameplay.

The installation demonstrates a strategic shift in how technology brands engage specialized audiences: not through product demonstrations, but through experiences that embody the principles those audiences value most.

[Credits]

- **Agency:** SpecialGuest + SpecialguestX
- **Client:** Google Employer Brand
- **Executive Creative Directors:** Aaron Duffy + Miguel Espada
- **Creative Directors:** Marc Reisbig + Carlos Font
- **Executive Creative Technologist:** Federico Guardabrazo
- **User Experience:** Laura Fajardo Chaves
- **Lead Producer:** Francesca Palau del Mas
- **Lead Creative Coder:** Bruno Barrán
- **Executive Visual Identity Direction:** 1stAveDesign
- **Visual Identity:** Polar, Ltda
- **Lead Product Designer:** Seis Punyales
- **Product Producer:** Alicia Simón
- **Product Designer:** Mike Fernández
- **Product Designer:** Alicia Simón
- **Product Designer:** Paco Fuster Ferrer
- **Lead Electronics Engineer:** Alvaro Gordo Ruiz
- **Technical Consulting:** Pedro Zambrana
- **Graphic Design:** Eder Larrondo
- **Photographer:** Paula Vasquez Guisande
- Fabricated in Barcelona by Seis Punyales

[Project Details]

- Technology: Gemini 3.0
- Event: NeurIPS 2025, San Diego, CA
- Dates: December 2-7, 2025
- Project URL: https://specialguestx.com/project/conway/