

Zachary Schwemler

Industrial Design & Advanced Development

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Summary

I'm an Industrial Designer and design engineer with expertise in research prototyping and experience development of new products. I bring a design mindset and technical knowledge to multidisciplinary teams, helping to develop complex products and deliver amazing hardware user experiences.

Experience

Hardware Prototyper - PICO XR

ByteDance (July 2022 - December 2023)

- Advanced development of haptics, sensing technologies for AR & VR.
- Solved packaging, UX, human factors, and usability challenges.
- Owned Industrial Design for several internal projects, including VR accessories, wearables, and AR prototypes.
- Categorized and tested haptic actuators and other components.
- Designed haptic media/effects, storyboards, interaction roadmaps.

Teaching Professor

University of Colorado Boulder (January 2022 - June 2022)

- Taught industrial design, CAD, and rendering workflows through product, experience, and architectural coursework.

Research Assistant

ATLAS Institute, THING Lab (May 2021 - June 2022)

- Designed tangible experiences and haptic devices that enable remote collaboration and communication.
- Designed robotic creative tools for children, and an emotional haptic wearables for artists and designers.

Design Engineer

Amuneal Manufacturing Corp. (March 2017 - May 2020)

- Owned Industrial Design & design engineering responsibilities.
- Engineered and released 200+ architectural projects to production.
- Improved communication, efficiency, and processes across engineering and production teams.

Lab Associate - Haptics

Disney Research (June 2015 - July 2016)

- Designed haptic wearables, accessories, and experiences for VR & AR.
- Demonstrated devices at HCI conferences and attended first article ride seat reviews.

Industrial Designer

The Moon Arts Group (May 2014 - August 2016)

- Concept visualization, narrative development, and prototyping.
- Created archival structures, artworks, and mechanical assemblies capable of withstanding the lunar surface.

Education

M.S. Creative Technology & Design

University of Colorado Boulder - 2022

B.F.A. Industrial Design

Carnegie Mellon University - 2016

Skills

Concept

Industrial design & experience development
Concept visualization & rendering
CAD modeling (Solidworks, Fusion360, Siemens)
2D & 3D sketching (Procreate, GravitySketch)

Hardware Prototyping

Familiar with AR & VR technologies
Full size, in-house fabrication and mockups
Arduino, microcontrollers, Python, C/C++
Wearable, haptics & sensing technologies
Softgoods prototyping (Pourable foams, fabrics)

Manufacturing

Experienced with global collaboration
Mechanical design, tolerancing, DFM
Specialty processes, finishes, adhesives

Patents

Haptic Effect Generation System

US 10,297,120

Granted May 21, 2019

Dynamic Haptic Effects Generator

US 10,386,928

Granted August 20, 2019

Awards

Finalist

TactorBots

IxDA's 2023 Interaction Awards

Honorable Mention

TactorBots

Fast Company's 2022 IxD Awards

Best Demo Award Runner Up

Tactorbots

CHI 2023

Best Paper Award

(Stereohaptics Toolkit)

HCII 2019 Human Interface and the Management of Information

Selected Exhibitions

- ATLAS Institute Open House 2022 - KinaTrons
- ATLAS Research Showcase 2021 - TactorBots
- Permanent Collection: Smithsonian National Air and Space Museum - MoonArk
- Hors Pistes Festival The Centre Pompidou Paris, France. January 18th, 2019 - MoonArk

Research

- Hunt, C.L., Sun, K., Dhuliawala, Z., Tsukiyama, F., Matkovic, I., Schwemler, Z., Wolf, A., Zhang, Z., Druin, A., Huynh, A., Leithinger, D., & Yip, J. (2023). **Designing together, miles apart: A longitudinal tabletop telepresence adventure in online co-design with children.** In ACM Interaction Design and Children (IDC 2023).
- Ran Zhou, Zachary Schwemler, Akshay Baweja, Harpreet Sareen, Casey Lee Hunt, Daniel Leithinger: **TactorBots: A Haptic Design Toolkit for Out-of-lab Exploration of Emotional Robotic Touch.** CHI 2023: 370:1-370:19
- Ran Zhou, Zachary Schwemler, Akshay Baweja, Harpreet Sareen, Casey Lee Hunt, Daniel Leithinger: **Demonstrating TactorBots: A Haptic Design Toolkit for Exploration of Emotional Robotic Touch.** CHI Extended Abstracts 2023: 438:1-438:5
- Ali Israr, Siyan Zhao, Zachary Schwemler, Adam Fritz: **Stereohaptics Toolkit for Dynamic Tactile Experiences.** HCI (LBP) 2019: 217-232
- Ali Israr, Siyan Zhao, Kyna McIntosh, Zachary Schwemler, Adam Fritz, John Mars, Job Bedford, Christian Frisson, Iván Huerta, Maggie Kosek, Babis Koniaris, Kenny Mitchell: **Stereohaptics: a haptic interaction toolkit for tangible virtual experiences.** SIGGRAPH Studio 2016: 13:1-13:57
- Siyan Zhao, Zachary Schwemler, Adam Fritz, Ali Israr: **Stereo Haptics: Designing Haptic Interactions using Audio Tools.** TEI 2016: 778-781
- Ali Israr, Zachary Schwemler, John Mars, Brian Krainer: **VR360HD: a VR360° player with enhanced haptic feedback.** VRST 2016: 183-186
- Ali Israr, Siyan Zhao, Kyna McIntosh, JaeKyun Kang, Zachary Schwemler, Eric Brockmeyer, Mark Baskinger, Moshe Mahler: **Po2: augmented haptics for interactive gameplay.** SIGGRAPH Emerging Technologies 2015: 21:1

Selected Press

"Moonark will be a philosophical mini-museum, left on the moon for future explorers to discover" CNN (February 20, 2020)

"The nine-ounce MoonArk — a tiny time capsule-esque artifact of humanity — will be attached to a small lunar rover. This is in the hopes that one day it may be picked up by lunar explorers — hundreds or thousands of years in the future."

"How to send messages 10,000 years into the future" Popular Science (October 8, 2019)

"A team from Carnegie Mellon University plans to send a more comprehensive collection to the surface on a private spacecraft. Their MoonArk houses natural and human-made tidbits inside a protective 8-inch-tall aluminum skeleton."

"A Bird Song for the Moon" The New Yorker (July 25, 2016)

"A team from Carnegie Mellon University's Robotics Institute (...) is planning to launch its rover later this year. Engineers have reserved six ounces of payload space for an artifact called the MoonArk, which will be deposited on the moon's surface and has been described as "a deep human gift and gesture for the Moon."