# Jas Brooks

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Jas Brooks (they/them) is a Computer Science Ph.D. candidate at the University of Chicago, advised by Professor Pedro Lopes. **They envision a future where people can adjust their senses as easily as they tweak their phone settings**, empowering them to modify their smell, taste, temperature, or touch for health, comfort, or safety. For example, users might reduce sweetness perception to avoid unhealthy drinks or use a nose clip to detect noxious gases that are otherwise imperceivable. However, today's interfaces struggle to incorporate these senses due to challenges like power inefficiency and miniaturization. **Their research overcomes these barriers through perceptual engineering**: the design of interfaces that precisely modulate human sensory perception, such as temperature, touch, taste, and smell. **These interfaces are power-efficient, compact, versatile, and selective, enabling new interactive applications** from health interventions to immersive experiences. Jas's work has received two Best Paper Awards at ACM CHI and UIST, and distinctions including the 2023 Rising Star in EECS, 2024 Siebel Scholar, and an NSF Graduate Research Fellowship. Their research has been featured in *WIRED*, *Fast Company*, and *IEEE Spectrum*.

For their Arts & Culture Outreach CV, please go to https://jasbrooks.net/culture-cv

## Education & Experience

Exp. 2025 **Ph.D.**, Computer Science, University of Chicago, Chicago, US
*Advisor:* Pedro Lopes (UChicago)
*Committee:* Pattie Maes (MIT), Tanzeem Choudhury (Cornell Tech), Ben Zhao (UChicago)

2023 **M.Sc.**, Computer Science, University of Chicago, Chicago, US

2016 **B.Sc.**, Computer Science, University of Chicago, Chicago, US

## Publications

ACM CHI and UIST are the premier venues for technical Human-Computer Interaction (HCI) publications, which are fully peer-reviewed and have an acceptance rate of 20-25%. These are considered top-tier in the field, even when considering HCI journals, and Computer Science is a conference-focused discipline.

### Key Publications (Fully Refereed) from PhD Thesis: **Perceptual Engineering** & Chemical Interfaces

**Brooks, J.**, Amin, N., Lopes, P. "Taste Retargeting via Chemical Taste Modulators." *In Proc. UIST 2023.* doi:10.1145/3586183.3606818. **Jury's Honorable Mention for Best Demonstration**.

**Brooks, J.**, Nagels, S., Lopes, P. "Trigeminal-Based Temperature Illusions." *In Proc. CHI 2020.* doi:10.1145/3313831.3376806. **Best Paper Award** (top 1%).

**Brooks, J.**, Mazursky, A., Hixon, J., Lopes, P. "Augmented Breathing via Temperature Feedback in the Nose." *In. Proc. UIST 2024.* doi:10.1145/3654777.3676438

**Brooks, J.**, Teng, S., Wen, J., Nith, R., Nishida, J., Lopes, P. "Stereo-Smell via Electrical Trigeminal Stimulation." *In Proc. CHI 2021.* doi:10.1145/3411764.3445300.

Lu, J., Liu, Z., **Brooks, J.**, Lopes, P. "Chemical Haptics: Rendering Haptic Sensations via Topical Stimulants." *In Proc. UIST 2021.* doi:10.1145/3472749.3474747.

**Brooks, J.**, Lopes, P. "Smell & Paste: Low-Fidelity Prototyping for Olfactory Experiences." *In Proc. CHI 2023.* doi:10.1145/3544548.3580680.

### Additional Publications in HCI (Fully Refereed)

🏆 Takahashi, A., **Brooks, J.**, Kajimoto, H., Lopes, P. "Increasing Electrical Muscle Stimulation's Dexterity by means of Back of the Hand Actuation." *In Proc. CHI 2021.* doi:10.1145/3411764.3445761. **Best Paper Award** (top 1%).

Li, J., Wang, Y., Cui, Z., **Brooks, J.**, Yan, Y., Lou, Z., Li, Y. "Mid-Air Gestures for Proactive Olfactory Interactions in Virtual Reality." *In Proc. CHI 2025.*

Choudhary, S., Nith, R., **Brooks, J.**, Ho, Y., Guruvugari, M., Lopes, P. "Adaptive Electrical Muscle Stimulation Improves Muscle Memory." *In Proc. CHI 2025.*

Mazursky, A., **Brooks, J.**, Desta, B., Lopes, P. "ThermalGrasp: Enabling Thermal Feedback even while Grasping and Walking." *In Proc. IEEE VR 2024.* doi:10.1109/VR58804.2024.00056

Je, S., Lim, H., Moon, K., Teng, S., **Brooks, J.**, Lopes, P., Bianchi, A. "Elevate: A Walkable Pin-Array for Large Shape-Changing Terrains." *In Proc. CHI 2021.* doi:10.1145/3411764.3445454.

### Other Publications

Spence, C., Kucirkova, N., Campbell, J., Gao, Y., **Brooks, J.** "Narrative historical review of scratch-and-sniff books and their key storytelling features." *i-Perception*, 2024. doi:10.1177/20416695241257566. (Peer-reviewed Journal Article)

Lu, J., Liu, Z., **Brooks, J.**, Lopes, P. "Learning to work with chemicals as a haptic technology." *ACM Interactions*, Vol. 29, Iss. 4. (Magazine Article)

**Brooks, J.** "Promises of the virtual museum." *ACM Crossroads Magazine for Students*, January 2019. doi:10.1145/3301483. (Magazine Article)

**Brooks, J.** "Chemical Interfaces: New Methods for Interfacing with the Human Senses." *UIST 2023*, November 2023. (Part of the UIST Doctoral Symposium)

**Brooks, J**, Lopes, P. "HC$^2$I: Human-Computer Chemosensory Interfaces." *Association for Chemoreception Sciences 2021 Virtual Meeting*, April 2021. (Poster)

### Demos

Augmented Breathing, ACM UIST 2024.

Taste Retargeting, ACM UIST 2023.

Stereo-smell & Trigeminal-based Temperature Illusions, ACM CHI 2021.

## Awards, Grants, & Fellowships

2023–24 **Siebel Scholar**, Thomas and Stacey Siebel Foundation.

2023 **Rising Star in EECS**, Georgia Institute of Technology.

2018–23 **NSF Graduate Research Fellow**, National Science Foundation.

2023 **Jury's Honorable Mention for Best Demonstration**, ACM UIST 2023 for "Taste Retargeting via Chemical Taste Modulators."

2022 **Snap Creative Challenge**, Snap Inc. for "Re-Experiencing Moments via Smell."

2021 **Innovation by Design Award Honorable Mention in Experimental Design**, Fast Company for "Stereo-Smell."

2021 **Best Paper Award**, ACM CHI 2021 for "Increasing Electrical Muscle Stimulation's Dexterity

by means of Back of the Hand Actuation."

2020 **Best Paper Award**, ACM CHI 2020 for "Trigeminal-based Temperature Illusions."

2018 **NSF Travel Award** to MoBI 2018.

# Selected Talks

## Panels

2024 [Pa.3] Panelist, "Re-conceptualizing the experience of architecture as tangible object," AIS Week 2024.

2023 [Pa.1] Panelist and lead co-organizer, "Third Wave or Winter? The Past and Future of Smell in HCI," **ACM CHI 2023**, with Dr. Jofish Kaye (Elevance Health), Prof. Marianna Obrist (UCL), Dr. Judith Amores (Microsoft Research), and Prof. Pedro Lopes (UChicago).

## Invited Talks

2025 [T.35] University of California San Diego (US), hosted by Prof. Ryan Kastner

2025 [T.34] MIT CSAIL (US), hosted by Prof. David Karger

2025 [T.33] Northwestern University (US), hosted by Profs. Michael Horn & Karan Ahuja

2025 [T.32] Columbia University (US), hosted by Prof. Brian Smith

2025 [T.31] University of New Mexico (US), hosted by Prof. Lydia Tapia

2025 [T.30] University of Texas Dallas (US), hosted by Prof. Jin Ryong Kim

2025 [T.29] Smell & AR Symposium (keynote) at GLUON (BE)

2024 [T.28] University of Pittsburgh (US), hosted by the Rehab Neural Engineering Labs

2024 [T.27] Malmö University (SE), hosted by Prof. David Kadish

2024 [T.26] Cornell Tech (US), hosted by Prof. Tanzeem Choudhury

2024 [T.24] Harvard GSD (US), hosted by Prof. Allen Sayegh

2023 [T.21] MIT Media Lab (US), hosted by Prof. Pattie Maes

2022 [T.18] Smart Haptics 2022 (US) – industry conference

2021 [T.12] MIT Media Lab (US), hosted by Prof. Pattie Maes

2021 [T.10] Northwestern University (US), hosted by Profs. Nabil Alshurafa & Josiah Hester

2020 [T.06] Dagstuhl Seminar (DE) on "Physiological Interfaces" (Canceled due to COVID-19)

2018 [T.03] University of Sussex (UK), hosted by Prof. Marianna Obrist

# Service & Outreach

## Program Committee

**ACM UIST** Papers (2024, 2022).

**ACM CHI** Papers (2024), Late-Breaking Work (2023, 2022, 2021, 2020).

**ACM DIS** Papers (2025, 2024, 2023).

**ACM TEI** Pictorials (2024), Papers (2023), Work-In-Progress (2022, 2021).

**MUM** Papers (2023).

### Organizing Committee

2026 ACM CHI Technical Program Chairs Assistant

2026 ACM TEI Student Design Challenge Chair

2021 SIGCHI Operations Committee

2021 Augmented Humans Social Media Chair

2019 ACM UIST Video Chair

### Session Chair

2022–24 **ACM CHI** "Flavor and Food Interactions" (2024), "VR/AR/XR Play Experiences" (2023), "Mouth-based Interaction" (2022).

2021–24 **ACM UIST** "Body as the Interface" (2024), "Mind & Body" (2022), "Illustration & Information Management" (2021).

2021 European Chemoreception Research Organization (**ECRO**): "Chemosenses beyond science."

### Peer Reviewing

Since 2018, I regularly review for leading conferences and journals related to my field (over 170 reviews), including: ACM CHI, ACM UIST, SIGGRAPH Asia, IEEE VR, ACM CSCW, ACM TEI, ACM VRST, ACM DIS, IEEE WHC, ACM IMWUT, ACM IUI, ACM IMX, Frontiers in VR, IEEE Access, IHJCS, Vernon Press, and AHs. I received four special recognitions for outstanding reviews from ACM CHI, four from ACM UIST, one from IEEE WHC, and four from ACM DIS.

### Academic Workshops & Symposia Organized

2023 Lead Co-organizer, ACM CHI Smell, Taste, & Temperature Interfaces Workshop

2021 Co-organizer, ACM UIST Haptics Social Meetup

2021 Lead Co-organizer, ACM CHI Smell, Taste, & Temperature Interfaces Workshop

2020 Lead Co-organizer, Smell, Taste, & Temperature Symposium (Independent)

### Selected Outreach

2020–Present Arts & Cultural research and collaborations (see Arts & Culture CV: jasbrooks.net/culture-cv).

2022 Committee member, Humanities UX Program, University of Chicago.

2021 Invited speaker, Rewriting the Code, University of Illinois at Chicago.

2020 Co-organizer, Ada Lovelace Week, University of Chicago (4-day symposium celebrating minority-gender technologists in art, industry, and academia).

2020–21 Membership Engagement Committee (2021) and Non-Affiliated Members Committee (2020) member, Institute of Food Technologists Student Association.

## Experience (cont.)

### Research

2018–Present **Graduate Research Assistant**, Human-Computer Integration Lab
Department of Computer Science, University of Chicago
*Advisor:* Prof. Pedro Lopes

2023 **Research Intern**, Microsoft Research
*Mentor:* Dr. Judith Amores

THE UNIVERSITY OF CHICAGO

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## Teaching

2020–Present **Teaching Assistant**, Introduction to Human-Computer Interaction (CMSC 20300)
Department of Computer Science, University of Chicago
*Instructor of Record:* Pedro Lopes
*Responsibilities:* Designed major project assignment and Unity template for HCI design. Adapted to work both on laptops and port to the Oculus Quest 2. Had 100+ students develop user interfaces for a VR diving simulation. Designed an optional assignment and Unity template for interactive haptic design with Oculus Quest 2.

Spring 2019 **Teaching Assistant**, Engineering & Understanding Interactive Devices (CMSC 23220)
Department of Computer Science, University of Chicago
*Instructor of Record:* Pedro Lopes
*Responsibilities:* Assisted with assignment grading and office hours. Designed lecture and problem set introducing students to Unity for VR. Had 35 students successfully create a VR experience including visuals, haptics, and wireless communication to a microcontroller in under one week.

Fall 2018 **Lecturer**, Virtual Reality (ATS 4135)
Department of Arts & Technology Studies, School of the Art Institute of Chicago
*Teaching Assistant:* Zhong Ren
*Responsibilities:* Designed and taught Master's art course on VR (14 students; 6 hours per week) integrating both theory and practice. Additionally offered optional, weekly introduction to programming concepts.

## Mentoring

### Undergraduate Students

2024 Janice Hixon (CS), University of Chicago (co-author on "Augmented Breathing," ACM UIST 2024, and major contributor to ongoing project).

2023–24 Katherine Waterman (MADD), University of Chicago (contributed to ongoing project).

2021–23 Noor Amin (MADD & Neuroscience), University of Chicago (co-author on "Taste Retargeting," ACM UIST 2023). Now at Riot Games.

2022 Beza Desta (Computer Science), University of Chicago (co-author on "ThermalGrasp," IEEE VR 2024). Now graduate student at Princeton.

2022 Eva McCord (Neuroscience), University of Chicago (contributed to pilot project).

2021 Oishee Chakrabarti (Computer Science), University of Chicago (contributed to pilot project). Now at Deloitte.

2019 Daniel Steinberg (Computer Science), University of Chicago (collaborated on demonstration scenes for paper, "Trigeminal-based Temperatured Illusions," ACM CHI 2020 Best Paper). Now at Accenture.

### Master's Students

2024 Gordon Yu (Engineering), Tsinghua University (major contributor to ongoing project).

2024 Woosang Kim (Informatics), University of Electro-Communications (major contributor to ongoing project).

2019–20 Jinxuan Wen (Computer Science), University of Chicago (co-author on "Stereo-Smell," ACM CHI 2021).

2019 Nitesh Nath (Computer Science), University of Chicago (contributed to pilot project).

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### Professional

2016–18 **Associate Software Developer**, Argonne Leadership Computing Facility, Argonne National Laboratory, Lemont, IL, USA.
*Advisors:* Joseph Insley, Silvio Rizzi
*Responsibilities:* Co-advised undergraduate interns. Explored immersive visualizations and simulations primarily using Kasthuri Lab's electron microscopy imaging of a mouse's brain. Represented Argonne at a military conference amongst national labs.

## Selected Press

2024 [Pr.21] "Could scented books encourage more kids to read?", *Science Norway*.

2023 [Pr. 20] "Finally, the Scratch-and-Sniff Cassette Tapes You Crave Are Here", *Hackster.IO*.

2022 [Pr. 19] "VR Still Stinks Because It Doesn't Smell", *WIRED*.

2022 [Pr. 17] "The Metaverse, in Glorious Smell-O-Vision!", *Built In*.

2021 [Pr. 14] "Smell-O-Vision: nose-zapping wearable simulates smell." *Digital Trends*.

2021 [Pr. 13] "Self-Contained Device Lets Users Smell in Stereo." *Hackster.IO*.

2021 [Pr. 12] "Digital Nose Stimulation Enables Smelling in Stereo." *IEEE Spectrum*.

2020 [Pr. 8] "VR wearable can simulate temperature changes using chemicals." *Digital Trends*.

2020 [Pr. 7] "VR System Hacks Your Nose to Turn Smells Into Temperatures." *IEEE Spectrum*.

**Last Update:** April 1st, 2025