Yudai Tanaka

Ph.D. Candidate | Google Ph.D. Fellow | Siebel Scholar
University of Chicago Computer Science

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Yudai Tanaka is a Computer Science Ph.D. candidate at University of Chicago advised by Prof. Pedro Lopes. His work is supported by **Google PhD Fellowship** and **Siebel Scholars Program**.

His research explores computer interfaces that generate sensory feedback by **interfacing directly with users' brains and nervous systems**. Yudai has developed novel devices that transmit signals straight to nerves—enabling hardware-free touch interactions—and has pioneered a new class of interactive experiences that deliver sensory feedback directly to the brain. He sees these interfaces as the foundation for the next generation of interactive systems, able to **augment physical abilities and accelerate skill acquisition**.

Yudai has published his work in top Human-Computer Interaction (HCI) venues, including ACM CHI and UIST, earning a **Best Paper Award** (CHI 2023), two **Best Paper Honorable Mentions** (CHI 2024, UIST 2024), and a **Best Demo Award** (CHI 2022). His research has also received coverage from *IEEE Spectrum*, *New Scientist*, and *CBS*.

Education

University of Chicago — 09/2020 – Expected 06/2026
Ph.D. Candidate in Computer Science — *Chicago (IL), United States*

University of Chicago — 09/2020 – 06/2023
M.S. in Computer Science — *Chicago (IL), United States*

University of Tokyo — 04/2015 – 03/2020
B.E. in Systems Innovation — *Tokyo, Japan*

National University of Singapore — 08/2017 – 05/2018
University-Wide Student Exchange Program — *Singapore*

Professional Experience

Meta Reality Labs — 10/2023 – 01/2024
Research Intern — *Redmond (WA), United States*

Honors and Awards

[10] **Google PhD Fellowship**, Google — 2025

[9] **Siebel Scholar** (Class of 2026), Thomas and Stacy Siebel Foundation — 2025

[8] **Best Paper Honorable Mention Award**, ACM UIST — 2024

[7] **Best Demo Honorable Mention Award**, ACM UIST — 2024

[6] **Best Paper Honorable Mention Award**, ACM CHI — 2024

[5] **Best Paper Award**, ACM CHI — 2023

[4] **Best Demo Award**, ACM CHI — 2022

[3] **Daniels Fellowship**, University of Chicago — 2020

[2] **Nakajima Overseas Scholarship**, Nakajima Foundation — 2020

[1] **Best Poster Honorable Mention Award**, ACM MobileHCI — 2019

Full Paper Publications at Top-tier HCI Venues (Fully Refereed)

ACM CHI and UIST are the premier venues for technical Human-Computer Interaction (HCI), featuring fully peer-reviewed publications with acceptance rates of 20–25%. These are regarded as top-tier in the field, even in comparison to leading HCI journals, and Computer Science is a conference-oriented discipline.

[14–*in submission*] Myo Action: Accelerating Voluntary Actions via Electromyography & Muscle Stimulation.
Yudai Tanaka, Che-Wei Hsu, Bruno Felalaga, Pedro Lopes. *Under review.*

[13–*in submission*] Increasing Input Accuracy of Embodied-devices via Electrical Muscle Stimulation.
Lonnie Chien, **Yudai Tanaka**, Noor Amin, Jas Brooks, Pedro Lopes. *Under review.*

[12–*in submission*] Next Generation Haptic Devices Should Balance Virtual & Real-world Fidelity.
Shan-Yuan Teng, **Yudai Tanaka**, Alex Mazursky, Pedro Lopes. *Under review.*

[11] Primed Action: Preserving Agency while Accelerating Reaction Time via Subthreshold Brain Stimulation.
Yudai Tanaka, Hunter Mathews, Pedro Lopes. *In Proc.* ***UIST 2025***. Acceptance Rate: 22.2%.

[10] Vestibular Stimulation Enhances Hand Redirection.
Kensuke Katori, **Yudai Tanaka**, Yoichi Ochiai, Pedro Lopes. *In Proc.* ***UIST 2025***. Acceptance Rate: 22.2%.

[9] Haptic Source-Effector: Full-Body Haptics via Non-Invasive Brain Stimulation.
Yudai Tanaka, Jacob Serfaty, Pedro Lopes. *In Proc.* ***CHI 2024***. Acceptance Rate: 26.3%.
Best Paper Honorable Mention (top 5%)

[8] Can a Smartwatch Move Your Fingers? Compact and Practical Electrical Muscle Stimulation in a Smartwatch.
Akifumi Takahashi, **Yudai Tanaka**, Archit Tamhane, Alan Shen, Shan-yuan Teng, Pedro Lopes.
In Proc. ***UIST 2024***. Acceptance Rate: 24.0%.
Best Paper Honorable Mention (top 2%)

[7] ReaWristic: Remote Touch Sensation to Fingers from a Wristband via Visually Augmented Electro-Tactile Feedback.
Yudai Tanaka, Neil Weiss, Robert Cole Bolger-Cruz, Jess Hartcher-O'Brien, Brendan Flynn, Roger Boldu, Nicholas Colonnese. *In Proc.* ***ISMAR 2024***. Acceptance Rate: 30.4%.

[6] Interactive Benefits from Switching Electrical to Magnetic Muscle Stimulation.
Yudai Tanaka, Akifumi Takahashi, Pedro Lopes. *In Proc.* ***UIST 2023***. Acceptance Rate: 25.1%.

[5] Full-Hand Electro-Tactile without Obstructing Palmar Side of Hand.
Yudai Tanaka, Alan Shen, Andy Kong, Pedro Lopes. *In Proc.* ***CHI 2023***. Acceptance Rate: 27.6%.
Best Paper (top 1%)

[4] LipIO: Enabling Lips as both Input and Output Surface
Arata Jingu, **Yudai Tanaka**, Pedro Lopes. *In Proc.* ***CHI 2023***. Acceptance Rate: 27.6%.

[3] DigituSync: A Dual-User Passive Exoskeleton Glove That Adaptively Shares Hand Gestures.
Jun Nishida, **Yudai Tanaka**, Romain Nith, Pedro Lopes. *In Proc.* ***UIST 2022***. Acceptance Rate: 25.9%.

[2] Electrical Head Actuation: Enabling Interactive Systems to Directly Manipulate Head Orientation.
Yudai Tanaka, Jun Nishida, Pedro Lopes. *In Proc.* ***CHI 2022***. Acceptance Rate: 24.7%.

[1] DualVib: Simulating Haptic Sensation of Dynamic Mass by Combining Pseudo-Force & Texture Feedback.
Yudai Tanaka, Arata Horie, Xiang 'Anthony' Chen. *In Proc.* ***VRST 2020***. Acceptance Rate: 26.5%.

Other Publications (Posters, Demos, Courses, and Panels)

[10] How to Design, Build and Use Interactive Electrical Stimulation.
Yudai Tanaka, Pedro Lopes. *In Proc.* ***CHI 2025 Course***.

[9] Nervous System Interception: A New Paradigm for Haptics.
Yudai Tanaka. *In Proc.* ***UIST 2024 Doctoral Symposium***.

[8] Demonstrating Haptic Source-Effector: Full-Body Haptics via Non-Invasive Brain Stimulation.
Yudai Tanaka, Hunter Mathews, Jacob Serfaty, Pedro Lopes. *In Proc.* ***UIST 2024 Demo***.
Jury's Choice Best Demo Honorable Mention

[7] NeuroCHI: Are We Prepared for the Integration of the Brain with Computing?
Yudai Tanaka, Angela Vujic, Pattie Maes, Robert J.K Jacob, Olaf Blanke, Sho Nakagome, Pedro Lopes.
In Proc. ***CHI 2024 Panels***.

[6] Demonstrating Full-Hand Electro-Tactile without Obstructing Palmar Side of Hand.
Yudai Tanaka, Alan Shen, Andy Kong, Pedro Lopes. *In Proc.* ***CHI 2023 Interactivity***.

[5] Demonstration of Electrical Head Actuation: Enabling Interactive Systems
to Directly Manipulate Head Orientation.
Yudai Tanaka, Jun Nishida, Pedro Lopes. *In Proc.* ***SIGGRAPH 2022 Emerging Technologies***.

[4] Demonstrating Electrical Head Actuation: Enabling Interactive Systems
to Directly Manipulate Head Orientation.
Yudai Tanaka, Jun Nishida, Pedro Lopes. *In Proc.* ***CHI 2022 Interactivity***.
People's Choice Best Demo

[3] Understanding Crowdsourcing Requesters' Wage Setting Behaviors.
Kotaro Hara, **Yudai Tanaka**. *In Proc.* ***CHI 2022 Late Breaking Work***.

[2] BulkScreen: Saliency-Based Automatic Shape Representation of Digital Images
with a Vertical Pin-Array Screen.
Yudai Tanaka, Arakawa Riku, Hiromu Kawarasaki, Kiyosu, Maeda. *In Proc.****TEI 2020 Poster***.

[1] A Formative Study for Record-time Manual Annotation of First-person Videos.
Yudai Tanaka, Sohei Wakisaka, Masahiko Inami. *In Proc.* ***MobileHCI 2019 Poster***.
Best Poster Honorable Mention

Patents (Filed/Pending)

[3] Electrical stimulation from a wristband with augmented reality visual effects for remote haptic sensations in the hand, and systems and methods of use thereof.
Yudai Tanaka, Neil Weiss, Brendan Patrick Flynn, Roger Boldu Busquets.
US Patent App: US20250306686A1. 2025

[2] Lip-based user interface system.
Pedro Lopes. Arata Jingu. **Yudai Tanaka**.
US Patent App: US20250275862A1. 2025

[1] System and method for non-obstructive electro-tactile stimulation of the palmar hand.
Pedro Lopes, **Yudai Tanaka**.
US Patent App: US20250271937A1. 2025

Fellowhsips and Funding (>$300K)

[4] **Google PhD Fellowship**, Google — $170K over 2 years 2025-2026

[3] **Siebel Scholar**, Thomas and Stacy Siebel Foundation — $35K 2025

[2] **Nakajima Overseas Scholarship**, Nakajima Foundation — ≈$100K over 5 years (¥15.4M JPY) 2020-2025

[1] **Daniels Fellowship**, University of Chicago — $15K 2020

Selected Invited Talks

[12] **Cornell Tech** (hosted by Prof. Thijs Roumen). 2025

[11] **Columbia University** (hosted by Prof. Brian A. Smith). 2025

[10] **Rice University** (hosted by Prof. Momona Yamagami). 2025

[9] **National University of Singapore** (hosted by Prof. Clement Zheng). 2025

[8] **CU Boulder ATLAS** (hosted by Prof. Ryo Suzuki). 2024

[7] **CMU HCII** (hosted by Prof. Alexandra Ion). 2024

[6] **Presence Workshop at TUBerlin** (organized by Prof. Klaus Gramann and Dr. Lukas Gehrke). 2024

[5] **CHI 2024 Panel** (with Angela Vujic, Pattie Maes, Robert Jacob, Olaf Blanke, and Sho Nakagome). 2024

[4] **UCLA** (hosted by Dr. Jiahao "Nick" Li). 2023

[3] **UCL** (hosted by Prof. Diego Martinez Plasencia). 2023

[2] **Saarland University** (hosted by Arata Jingu and Prof. Jürgen Steimle). 2023

[1] **University of British Columbia** (hosted by Prof. Sydney Fels and Prof. Karon MacLean). 2022

Teaching

Lecturer

[7] CUSP-GX 6004 at NYU (hosted by Prof. Qi Sun): "Virtual and Augmented Reality" guest lecture 2025

[6] MAS 834 at MIT (hosted by Prof. Hiroshi Ishii): "Emerging Interface Technologies" guest lecture 2025

[5] CMSC 20300 at UChicago: "C# Programming with Unity3D" lecture 2025

[4] CHI 2025 Course: "How to Design, Build and Use Interactive Electrical Stimulation" 2025

[3] CMSC 23220 at UChicago: "Input and Output" lecture 2025

[2] CMSC 20300 at UChicago: "C# Programming with Unity3D" lecture 2024

[1] CMSC 23220 at UChicago: "Input and Output (Capacitive Touch Sensing)" lecture 2024

Teaching Assistant

[4] CMSC 33230 at UChicago: Engineering Interactive Electronics onto Printed Circuit Boards 2024-2025

[3] CMSC 23220 at UChicago: Inventing, Engineering & Understanding Interactive Devices 2024-2025

[2] CMSC 20300 at UChicago: Introduction to Human Computer Interaction 2020-2024

[1] CMSC 33240 at UChicago: Emergent Interface Technologies 2021

Service

Organizing Committee

[7] Web Chair for ACM **CHI** 2026

[6] Demo Chair for ACM **TEI** 2026

[5] Data Chair for ACM **UIST** 2025

[4] Data Chair for ACM **UIST** 2024

[3] Paper Chair Assistant for ACM **UIST** 2024

[2] Student Volunteer Chair for ACM **CHI** 2024

[1] Poster Chair for **Augmented Humans** 2023

Program Committee

[5] ACM **CHI** (Paper track) 2025
[4] ACM **Ubicomp/ISWC** (Paper track) 2025
[3] ACM **UbiComp/ISWC** (Paper track) 2024
[2] ACM **SUI** (Paper track) 2023
[1] ACM **CHI** (Late Breaking Work track) 2023

Session Chair

[3] "VR Experiences" paper session at ACM **CHI** 2025
[2] "Hand and Gaze" paper session at ACM **CHI** 2024
[1] "Typing and Pointing" paper session at ACM **UIST** 2021

Reviewing (over 100 reviews)

ACM CHI (Papers) with **2 special recognitions for outstanding reviews** 2020-2026
ACM UIST (Papers) with **6 special recognitions for outstanding reviews** 2022-2025

Further reviewing at ACM DIS (**2 special recognitions**), ACM TOCHI, IEEE TOH, ACM VRST, ACM MobileHCI, ACM TEI, ACM EICS, IEEE World Haptics, IEEE VR, IEEE ISMAR, Augmented Humans.

Community Service

Volunteer, **South Side Science Festival**
a community science communication event organized by UChicago 2024

Judge, **compileHer Hackathon**
a student organization that promotes computer science education for middle-school students 2024

Other Research Experience

UCLA HCI Research, University of California, Los Angeles 06/2019 – 09/2019
Research Intern advised by **Xiang 'Anthony' Chen** *Los Angeles (CA), United States*

SMU HCI Research, Singapore Management University 01/2019 – 04/2019
Research Intern advised by **Kotaro Hara** *Singapore*

Information Somatics Lab, University of Tokyo 06/2018 – 12/2018
Research Intern advised by **Masahiko Inami** *Tokyo, Japan*

Mentoring

[13] **Lonnie Chien** (UChicago CS master student) | now: **applying to PhD programs** 2024/09-
[12] **Bruno Felalaga** (UChicago CS master student) | now: **applying to PhD programs** 2024/12-
[11] **Che-Wei Hsu** (undergrad intern from NTU) | now: **applying to PhD programs** 2025/07-2025/09
[10] **Brady Meng** (Adlai E Stevenson high school student) | now: **applying to colleges** 2025/07-2025/08
[9] **Archit Tamhane** (James B. Conant high school student) | now: **Harvard University** 2024/06-2025/05
[8] **Hunter Mathews** (IMSA high school student) | now: **University of Alabama** 2024/07-2025/05
[7] **Gus Waldspurger** (UChicago CS undergraduate student) | now: **Apple** 2024/12-2025/03
[6] **Kensuke Katori** (master intern from UTsukuba) | now: **applying to PhD programs** 2024/07-2024/09
[5] **Jacob Serfaty** (UChicago CS undergraduate student) | now: **applying to PhD programs** 2023/06-2023/09
[4] **Alan Shen** (UChicago CS master student) | now: **Actor, Stefanie Talent & Entertainment** 2021/10-2023/09
[3] **Noor Amin** (UChicago CS & NeuroSci undergraduate student) | now: **Riot Games** 2023/01-2023/06
[2] **Arata Jingu** (master intern from UTokyo) | now: **PhD at Saarland University** 2021/06-2022/04
[1] **Andy Kong** (undergrad intern from CMU) | now: **Master at ETH -> Stealth Startup** 2021/06-2021/09

Selected Press Coverage

[21] **UChicago CS News**. "Yudai Tanaka Named 2025 Google North America PhD Fellow." 2025/10
[20] **UChicago CS News**. "Redirecting Hands in Virtual Reality With Galvanic Vestibular Stimulation." 2025/10
[19] **PBS**. "Chicago Lab Connects Computers With the Human Body." 2025/01
[18] **HacksterIO**. "A Mind-Bending VR Experience." 2024/05
[17] **New Scientist**. "Smart glove enhances your sense of touch in virtual reality." 2023/05
[16] **All Things Haptics**. "Surprising Poll, Buzzworthy Integrations and the Rumor Mill." 2023/05
[15] **HACKADAY**. "TACTILE FEEDBACK IN VR, NO CUMBERSOME GLOVES OR MOTORS REQUIRED." 2023/04
[14] **HacksterIO**. "Of All the Backhanded Things. . . " 2023/04
[13] **IEEE Spectrum**. "Haptic System Creates Finger-Touch Sensations Hardware-Free." 2023/04
[12] **Business Today**. "LipIO: Control devices, tune guitar, DJ with your lips and tongue" 2023/04
[11] **Microsoft MSN**. "LipIO: Control devices, tune guitar, DJ with your lips and tongue." 2023/04
[10] **Engadget**. "Lip-licking controller steers devices using tongue taps." 2023/04
[9] **HacksterIO**. "Kiss Your Keyboard Goodbye." 2023/04
[8] **Yahoo Finance**. "Lip-licking controller steers devices using tongue taps." 2023/04
[7] **CBS NEWS**. "Chicago neuroscientist helps woman with no sense of touch." 2023/02
[6] **UChicago CS News**. "UChicago CS Grad Student Designs Device That Directs User's Head." 2022/07
[5] **Adafruit Blog**. "Electrical Head Actuation (CHI22 talk) #WearableWednesday." 2022/05
[4] **New Scientist**. "VR could use a muscle-stimulating device that forces your head to turn." 2022/05
[3] **GIZMODO**. "These Electrical Probes Forcibly Steer Your Head Toward Lost Items." 2022/05
[2] **SYFY**. "THIS VR SYSTEM TURNS YOU INTO AN NPC BY MOVING YOUR MUSCLES FOR YOU." 2022/05
[1] **VRScout**. "Researchers Use VR/AR Tech To Control The Human Body." 2022/04