

Kaylo Littlejohn

Department of Electrical Engineering and Computer Sciences
University of California, Berkeley

kaylo_littlejohn@berkeley.edu
+1 207 230 9391
kaylolittlejohn.com

EDUCATION

- Ph.D. Electrical Engineering and Computer Sciences, University of California, Berkeley, expected May 2025
PI: Edward F. Chang and Gopala K. Anumanchipalli
- B.S. Electrical Engineering, Columbia University in the City of New York, 2020
PI: Paul Sajda

RESEARCH EXPERIENCE

- 2021– Univeristy of California, San Francisco
Chang Lab at UCSF
Graduate Research Assistant
- 2020– Univeristy of California, Berkeley
Berkeley AI Research Lab
Graduate Research Assistant
- 2018–20 Columbia University in the City of New York
Laboratory for Intelligent Imaging and Neural Computing
Research Assistant
- 2017–18 Northeastern University
NEU Computer Architecture Research Laboratory
Research Assistant

RESEARCH AREAS

Speech brain-computer interfaces (BCIs), assistive technologies, natural spoken language processing
Translational neuroprosthetics, communication-BCIs, speech synthesis and recognition, signal processing

PUBLICATIONS

Peer Reviewed Papers

- 2023 Sean L Metzger*, **Kaylo T Littlejohn***, Alexander B Silva*, David A Moses*, Margaret P Seaton*, Ran Wang, Maximilian E Dougherty, Jessie R Liu, Peter Wu, Michael A Berger, Inga Zhuravleva, Adelyn Tu-Chan, Karunesh Ganguly, Gopala K Anumanchipalli, Edward F Chang, "A high-performance neuroprosthesis for speech decoding and avatar control", **Nature**
- 2022 Sean L Metzger*, Jessie R Liu*, David A Moses*, Maximilian E Dougherty, Margaret P Seaton, **Kaylo T Littlejohn**, Josh Chartier, Gopala K Anumanchipalli, Adelyn Tu-Chan, Karunesh Ganguly, Edward F Chang, "Generalizable spelling using a speech neuroprosthesis in an individual with severe limb and vocal paralysis", **Nature Communications**

Book Chapters

- 2024 Sean L Metzger*, Jessie R Liu*, David A Moses*, Maximilian E Dougherty, Margaret P Seaton, **Kaylo T Littlejohn**, Josh Chartier, Gopala K Anumanchipalli, Adelyn Tu-Chan, Karunesh Ganguly, Edward F Chang, "Highly generalizable spelling using a silent-speech BCI in a person with severe anarthria", **Brain-Computer Interface Research: A State-of-the-Art Summary II, 21-28, Springer Nature**

Poster Presentations

- 2023 **Kaylo T Littlejohn***, Sean L Metzger*, Alexander B Silva*, David A Moses*, Margaret P Seaton*, Ran Wang, Maximilian E Dougherty, Jessie R Liu, Peter Wu, Michael A Berger, Inga Zhuravleva, Adelyn Tu-Chan, Karunesh Ganguly, Gopala K Anumanchipalli, Edward F Chang, "A high-performance neuroprosthesis for speech decoding and avatar control", **Society for Neuroscience (SfN)**
- 2023 **Kaylo T Littlejohn***, David A Moses*, Edward F. Chang, "Translating brain activity into text and voice", **American Possibilities: A White House Demo Day**

INVITED TALKS

- 2024 "Translating brain waves into speech." 12th Annual Event in the Neuroscience Virtual Event Series, Labroots, NIH Brain Initiative. Mar 6
- 2023 "A high-performance neuroprosthesis for speech decoding and avatar control." Berkeley AI Research Symposium on Large Language Models. Berkeley, California. Oct 20
- 2023 "A high-performance neuroprosthesis for speech decoding and avatar control." **The Annual BCI Award talk**. Honolulu, Hawaii. Oct 3
- 2023 "An embodied approach to restoring natural communication." Blackrock Neurotech Webinar. Oct 11
- 2023 "Translating brain waves into speech and text using ECoG", Berkeley Wireless Research Center. Berkeley, California. Sep 29
- 2023 "AI helps Stroke Patient Speak Again.", Hearts to Humanity Eternal Foundation. Berkeley, California. Sep 6
- 2023 "Advances in speech BCIs using electrocorticography." Symposium on "Understanding and Utilizing The Neural Basis of Speech: From Basic Science to Neuroprostheses". 10th International BCI Meeting, BCI Society. Brussels, Belgium. Jun 9
- 2019 "Who we become in the act of trying." **TEDx Talk**. Talk given for general life story and for running 240-250 miles without stopping. Cape Elizabeth, Maine. Jan 9

Panel Discussions

- 2023 Natural Language Processing Panel CS288 discussion panelist, Berkeley, California. Nov 11

GRANTS AND AWARDS

Awards and Honors

- 2024 **Lotfi A. Zadeh Prize** recognizing a Berkeley graduating PhD student who has made outstanding contributions to soft computing and its applications
- 2023 **The Annual BCI Award (2nd place)** for "A high-performance neuroprosthesis for speech decoding and avatar control."
- 2023 White House Demo Day invitee for showcasing one of 40 of the most promising innovations in the nation. **Presented research to President of the United States**

- 2022 **The Annual BCI Award (3rd place)** for "Generalizable spelling using a speech neuroprosthesis in an individual with severe limb and vocal paralysis"
- 2020 Path to the Professoriate Program Awardee
- 2019 ECE Masters' Student Expo 3rd Place Award, Columbia University in the City of New York
- 2019 Class of 1950 Scholarship, Columbia University in the City of New York

Competitive Grants and Fellowships

- 2022–27 National Science Foundation Graduate Research Fellowship
- 2022 Hearts to Humanity Eternal Graduate Research Grant
- 2020–25 Associate GEM Fellowship
- 2020–22 Chancellor's Fellowship, University of California, Berkeley
- 2020 EECS Excellence Award, University of California, Berkeley

Select press

- 2024 Demo video for "A high-performance neuroprosthesis for speech decoding and avatar control" **featured in Jensen Huang's NVIDIA GTC 2024 Keynote Talk** as an NVIDIA AI milestone.
- 2023 **Top 1% of Nature papers by reach** (Altmetric) for "A high-performance neuroprosthesis for speech decoding and avatar control." Research featured in over 300 news outlets.
- 2023 UC Berkeley university research highlight "Novel brain implant helps paralyzed woman speak using a digital avatar", University of California, Berkeley
- 2023 **Main Featured Story on Front Cover of the NYT** for "A Stroke Silenced Her. A.I. Is Helping Her Talk." by Pulitzer Prize winner Pam Belluck. NYT "AI milestones." Thursday, August 23rd.
- 2023 UCSF university research highlight "How Artificial Intelligence Gave a Paralyzed Woman Her Voice Back", University of California, San Francisco
- 2022 Top 25 most downloaded Nature Communications articles

TEACHING

University of California, Berkeley

Spring 2024 Digital Signal Processing. Graduate student instructor.

Columbia University in the City of New York

Spring 2020 Introduction to Communication Systems. Undergraduate student instructor.

SERVICE

Academic Journal Peer Review

Nature Human Behavior

Journal of Neural Engineering (scored as one of the journal's top reviewers)

Diversity, Equity, and Inclusion

- 2024 Featured AI researcher in “Diversity in Action” Magazine. Mar/Apr edition.
- 2021–23 Berkeley AI Research Undergraduate Mentoring Program AI PhD student mentor. Outcome → Several underrepresented students found AI research positions in top AI research labs.
- 2022– Diversifying LEAdership in the Professoriate (LEAP) Alliance Fellow
- 2020– Black in AI member
- 2020– Black Graduate Engineering and Science Students member

Service to the Department

- 2024 Robotics Symposium, BAIR, student volunteer. Apr 5.
- 2024 Berkeley DeepDrive Symposium, BAIR, student volunteer. Mar 28.
- 2023 Visual AI Symposium, BAIR, student volunteer. Dec 1
- 2023 Large Language Models Symposium, BAIR, student volunteer. Oct 20
- 2023 Robotics Symposium, BAIR, student volunteer. Apr 28
- 2022 ML for Robotics with Large Datasets Symposium, BAIR, student volunteer. Oct 21
- 2022 Trust, Equity, and Grounded Language Symposium, BAIR, student volunteer. Sep 9
- 2022 Robotics Symposium, BAIR, student volunteer. Apr 22
- 2022 Visual Computing Symposium, BAIR, student volunteer. Mar 25
- 2022 Commons Symposium, BAIR, student volunteer. Mar 25
- 2021 EECS Ph.D. admissions student reviewer

Research Mentorship

- 2023– Bohan Yu → Co-author submitted journal paper
- 2023– Anshul Kashyap → Co-author submitted journal paper
- 2023–2024 Adit Shah → Co-author submitted journal paper
- 2022–2023 Inga Zhuravleva → Co-author Metzger et al. Nature '23
- 2019–2020 Mara Dimofte → Software engineer at Rillavoice

Other

- 2024 The BCI Award 2024 juror

MEMBERSHIPS

Brain-Computer Interface Society (BCI Society)
Society for Neuroscience (SfN)
IEEE

PROFESSIONAL DEVELOPMENT

- 2023 Blackrock Neurotech Workshop

- 2019 GPU Architecture Specialist Certification, Northeastern University
- 2018 Internship with Communications and Power Industries, Beverley, Massachusetts
- 2017–2019 Advertising funds manager (\$240,000 in assets spent) and camp counselor (additional role) for children and adults living with severe disabilities, Camp Krem, Boulder creek, California

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