

Sergey D. Stavisky, PhD

Neuroscientist and neuroengineer

Employment/awards eligibility: U.S. Citizen

Davis, CA

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website with up-to-date publications, awards, etc.: stavisky.info

CV updated October 9, 2024

Education

Stanford University, Stanford, CA (2016 to 2021)

Postdoctoral Fellow, Department of Neurosurgery, Advisor: Jaimie Henderson

Stanford University, Stanford, CA (2010 to 2016)

PhD Neurosciences (2010- 2016), Advisor: Krishna Shenoy

Dissertation: "Advancing Motor Neural Prosthesis Robustness and Neuroscience"

Brown University, Providence, RI (2004 to 2008)

ScB Neuroscience, Magna Cum Laude, with Honors

Positions

Assistant Professor (tenure-track), Department of Neurological Surgery, University of California, Davis (October 2021 –)

Co-director of the UC Davis Neuroprosthetics Lab

Postdoctoral Fellow, Neural Prosthetics Translational Laboratory, Stanford University (2016 – 2021)

Advisors: Profs. Jaimie Henderson and Krishna Shenoy

Developing high degrees of freedom brain-machine interfaces to restore speech and complex arm movements.

Additional research areas: new electrophysiology and analytical tools for very high channel count neural recordings.

Ph.D. Candidate in the Neural Prosthetic Systems Laboratory, Stanford University (2010 – 2016)

Advisor: Prof. Krishna Shenoy

Dissertation: "Advancing Motor Neural Prosthesis Robustness and Neuroscience"

Additional research areas: internal models in the motor cortex; segregation of sensory-driven error processing and motor output in motor cortex.

Research Engineer at BrainGate, Brown University / Massachusetts General Hospital / Dept. Veterans Affairs, (2008 to 2010)

Advisors: Prof. Leigh Hochberg and Prof. John Donoghue

Lead engineer of development and clinical trial testing of the BrainGate2 Neural Prosthetic System for restoring communication and prosthetic arm control in individuals with tetraplegia.

Undergraduate Researcher, Sheinberg Lab, Brown University (2007 to 2008)
Advisor: Prof. David Sheinberg
Thesis: “*Visually-evoked local field potentials in primate inferior temporal cortex*”

Honors and Awards

UC Davis School of Medicine Research Award: Early Career (2024)

Google Research Scholar Award (2024)

International BCI Society Early Career Award (2024)

MIND Prize (2023)

The International Annual BCI Award, 1st Place (2023 and 2019)

Searle Scholar (2023)

NIH Director’s New Innovator Award (2022)

UC Davis Award for Innovation and Creative Vision (2022)

Regeneron Prize for Creative Innovation by a Postdoctoral Fellow (2021)

Burroughs Wellcome Fund Career Award at the Scientific Interface (2019 - present)

IOP Publishing Outstanding Reviewer Award for Journal of Neural Engineering (2018)

A. P. Giannini Foundation Fellow (2018 - 2021)

Stanford Neurosciences Institute Interdisciplinary Postdoctoral Scholar Fellowship (2018 to 2020)

ALS Association Milton Safenowitz Postdoctoral Fellowship (2016 - 2018)

1st place, BRAIN Best Student Paper Competition, 36th Annual Meeting of the IEEE Engineering in Medicine and Biology Society (2014)

National Science Foundation Graduate Research Fellowship (2013 - 2015)

Outstanding Teaching Assistant Award, Stanford University School of Medicine (2013)

National Science Foundation IGERT Fellowship (2011 - 2012, 2015 - 2016)

John P. Donoghue Prize for Undergraduate Distinction in Neurosciences, Brown University (2008)

Phi Beta Kappa honors society, Brown University Class of 2008

Karen T. Romer Undergraduate Teaching and Research Award Fellowship, Brown University (2008)

Pre-prints (not yet peer reviewed)

1. Wairagkar M, Card NS, Singer-Clark Y, Hou X, Iacobacci C, Hochberg LR, Brandman* DM, **Stavisky* SD**.

An instantaneous voice synthesis neuroprosthesis. *bioRxiv* (2024)

* denotes equal co-authors

2. Deo DR, Okorokova EV, Pritchard AN, Hahn NV, Card NS, Nason-Tomaszewski SR, Jude J, Hosman T, Choi EY, Qiu Deqiang, Meng Y, Wairagkar M, Nicolas C, Kamdar FB, Iacobacci C, Acosta A, Hochberg LR, Cash SS, Williams ZM, Rubin DB, Brandman DM, **Stavisky SD**, AuYong N, Pandarinath C, Downey JE, Bensmaia SJ, Henderson* JM, Willett* FR.

A mosaic of whole-body representations in human motor cortex. *bioRxiv* (2024)

3. Kunz* EM, Meschede-Krasa* B, Kamdar F, Avansino D, Nason-Tomaszewski SR, Card NS, Jacques B, Bechefskey P, Hahn N, Iacobacci C, Hochberg LR, Brandman DM, **Stavisky SD**, Au Young N, Pandarinath C, Druckmann** S, Henderson ** JM, Willett** FR.

Representation of verbal thought in motor cortex and implications for speech neuroprostheses. *bioRxiv* (2024)

Peer-Reviewed Original Research Articles

1. Card NS, Wairagkar M, Iacobacci C, Hou X, Singer-Clark T, Willett FR, Kunz EM, Fan C, Nia MV, Deo DR, Srinivasan A, Choi EY, Glasser MF, Hochberg LR, Henderson JM, Shahlaie K, **Stavisky* SD**, Brandman*.

An accurate and rapidly calibrating speech neuroprosthesis. *New England Journal of Medicine* (2024)

* denotes equal co-authors

2. Ali YH, Bodkin K, Rigotti-Thompson M, Patel K, Card NS, Bhaduri B, Nason-Tomaszewski SR, Mifsud DM, Hou X, Nicolas C, Allcroft S, Hochberg LR, Au Yong N, **Stavisky SD**, Miller LE, Brandman* DM, Pandarinath* C.

BRAND: A platform for closed-loop experiments with deep network models. *Journal of Neural Engineering* (2024)

3. Coughlin* B, Muñoz* W, Kfir* Y, Young MJ, Meszéna D, Jamali M, Caprara I, Hardstone R, Khanna A, Mustroph ML, Trautmann EM, Windolf C, Varol E, Soper DJ, **Stavisky SD**, Welkenhuysen M, Dutta B, Shenoy KV, Hochberg LR, Richardson RM, Williams** ZM, Cash** SS, Paulk** AC.

Modified Neuropixels probes for recording human neurophysiology in the operating room. *Nature Protocols* (2023)

4. Paulk AC, Kfir Y, Khanna A, Mustroph M, Trautmann EM, Soper DJ, **Stavisky SD**, Welkenhuysen M, Dutta B, Shenoy KV, Hochberg LR, Richardson MR, Williams* ZM, Cash* SS.

Large-scale neural recordings with single neuron resolution using Neuropixels probes in human cortex. *Nature Neuroscience* (2022)

5. Rastogi A, Willett FR, Abreu J, Crowder DC, Murphy B, Memberg WD, Vargas-Irwin CE, Miller JP, Sweet J, Walter NL, Rezaii PG, **Stavisky SD**, Hochberg LR, Shenoy KV, Henderson JM, Kirsch RF, Ajiboye AB.

The neural representation of force across grasp types in motor cortex of humans with tetraplegia. *eNeuro* (2021)

6. Wilson* GH, **Stavisky* SD**, Willett FR, Avansino DT, Kelemen JN, Hochberg LR, Henderson** JM, Druckman** S, Shenoy** KV.

Decoding spoken English from intracortical electrode arrays in dorsal precentral gyrus. *Journal of Neural Engineering* (2020)

7. Even-Chen* N, Muratore* D, **Stavisky SD**, Hochberg L, Henderson J, Murmann* B, Shenoy* KV.

Power-saving design opportunities for wireless intracortical brain–computer interfaces. *Nature Biomedical Engineering* (2020)

8. **Stavisky SD**, Willett FR, Avansino D, Hochberg LR, Shenoy* KV, Henderson* JM.

Speech-related dorsal motor cortex activity does not interfere with iBCI cursor control. *Journal of Neural Engineering* (2020)

9. Rastogi A, Vargas-Irwin C, Willett F, Abreu J, Crowder DC, Murphy B, Memberg W, Miller J, Sweet J, Walter B, Cash S, Rezaii P, Franco B, Saab J, **Stavisky SD**, Shenoy KV, Henderson J, Hochberg LR, Kirsch R, Ajiboye AB.

Neural Representation of Observed, Imagined, and Attempted Grasping Force in Motor Cortex of Individuals with Chronic Tetraplegia. *Scientific Reports* (2020)

10. **Stavisky SD**, Willett FR, Wilson GH, Murphy BA, Rezaii P, Memberg WD, Miller JP, Kirsch RF, Hochberg LR, Ajiboye AB, Druckmann S, Shenoy KV*, Henderson JM*.

Neural ensemble dynamics in dorsal motor cortex during speech in people with paralysis. *eLife* (2019)

11. Trautmann E, **Stavisky SD**, Lahiri S, Ames KC, Kaufman M, O’Shea DJ, Vyas S, Sun X, Ryu S, Ganguli S, Shenoy KV.

Accurate estimation of neural population dynamics without spike sorting. *Neuron* (2019)

12. Willett FR, Young D, Murphy B, Memberg W, Blabe C, Pandarinath C, **Stavisky SD**, Rezaii P, Saab J, Walter B, Sweet J, Miller J, Henderson JM, Shenoy KV, Simeral JD, Jarosiewicz B, Hochberg LR, Kirsch R, Ajiboye AB.

Principled BCI Decoder Design and Parameter Selection Using a Feedback Control Model. *Scientific Reports* (2019)

13. **Stavisky SD**, Kao JC, Nuyujukian P, Pandarinath C, Blabe C, Ryu SI, Hochberg LR, Henderson JM, Shenoy KV.

Brain-machine interface cursor position only weakly affects monkey and human motor cortical activity in the absence of arm movements. *Scientific Reports* (2018)
14. Pandarinath C, O'Shea DJ, Collins J, Jozefowicz R, **Stavisky SD**, Kao JC, Trautmann EM, Kaufman MT, Ryu SI, Hochberg LR, Henderson JM, Shenoy KV, Abbott LF, Sussillo D.

Inferring single-trial neural population dynamics using sequential auto-encoders. *Nature Methods* (2018)
15. Vyas S, Even-Chen N, **Stavisky SD**, Ryu SI, Nuyujukian P, Shenoy KV.

Neural Population Dynamics Underlying Motor Learning Transfer. *Neuron* (2018)
16. Brandman D, Hosman T, Saab J, Burkhart MC, Shanahan BE, Ciancibello JG, Sarma AA, Milstein DJ, Vargas-Irwin CE, Franco B, Kelemen J, Blabe C, Murphy BA, Young DR, Willett FR, Pandarinath C, **Stavisky SD**, Kirsch RF, Walter BL, Ajiboye AB, Cash SS, Eskandar EN, Miller JP, Sweet JA, Shenoy KV, Henderson JM, Jarosiewicz B, Harrison MT, Simeral JD, Hochberg LR.

Rapid calibration of an intracortical brain computer interface for people with tetraplegia. *Journal of Neural Engineering* (2018)
17. Even-Chen N, **Stavisky SD**, Pandarinath C, Nuyujukian P, Blabe CH, Hochberg LR, Henderson JM, Shenoy KV.

Feasibility of automatic error detect-and-undo system in human intracortical brain-computer interfaces. *IEEE Transactions on Biomedical Engineering* (2018)
18. Even-Chen N, **Stavisky SD**, Kao JC, Ryu SI, Shenoy KV.

Augmenting intracortical brain-machine interface with neurally driven error detectors. *Journal of Neural Engineering* (2017)
19. **Stavisky SD**, Kao JC, Ryu SI, Shenoy KV.

Motor cortical visuomotor feedback activity is initially isolated from downstream targets in output-null neural state space dimensions. *Neuron* (2017)
20. **Stavisky SD**, Kao, JC, Ryu SI, Shenoy KV.

Trial-by-trial motor cortical correlates of a rapidly adapting visuomotor internal model. *Journal of Neuroscience* (2017)
21. Sussillo* D, **Stavisky* SD**, Kao* JC, Ryu SI, Shenoy KV.

Making brain-machine interfaces robust to future neural variability. *Nature Communications* (2016)
22. **Stavisky SD**, Kao JC, Nuyujukian P, Ryu SI, Shenoy KV.

A high performing brain-machine interface driven by low-frequency local field potentials alone and together with spikes. *Journal of Neural Engineering* (2015)

23. Bacher D, Jarosiewicz B, Masse NY, **Stavisky SD**, Simeral JD, Cash SS, Friehs G, Hochberg, LR.

Neural point-and-click communication by a person with incomplete locked-in syndrome. *Neurorehabilitation & Neural Repair* (2015)

24. Nuyujukian P, Kao JC, **Stavisky SD**, Fan JM, Ryu SI, Shenoy KV.

Performance sustaining intracortical neural prostheses. *Journal of Neural Engineering* (2014)

25. Masse NY, Jarosiewicz B, Bacher D, **Stavisky SD**, Simeral JD, Hochberg LR, Donoghue JP.

Non-causal spike filtering improves the information content of threshold crossings of intracortical neural signals. *Journal of Neuroscience Methods* (2014)

26. Sussillo D, Nuyujukian P, Fan JM, Kao JC, **Stavisky SD**, Ryu SI, Shenoy KV.

A recurrent neural network for closed-loop intracortical brain-machine interface decoders. *Journal of Neural Engineering* (2012)

Peer-Reviewed Review Articles, Comments, and Perspectives

1. **Stavisky SD**.

Restoring speech using brain-computer interfaces. *Annual Reviews of Biomedical Engineering* (in press)

2. **Stavisky SD**, Wairagkar M.

(*News & Views*) Listening in to perceived speech with contrastive learning. *Nature Machine Intelligence* (2023)

3. Huggins JE, Krusienski D, Vansteensel MJ, Valeriani D, Thelen A, **Stavisky S**, Norton JJS, Nijholt A, Müller-Putz G, Kosmyna N, Korczowski L, Kapeller C, Herff C, Halder S, Guger C, Grosse-Wentrup M, Robert Gaunt, Dusang NA, Clisson P, Chavarriaga R, Anderson CW, Allison B, Aksenova T, Aarnoutse E.

Workshops of the eighth international brain-computer interface meeting: BCIs: the next frontier. *Brain-Computer Interfaces* (2022)

4. O'Shea D, Trautmann EM, Chandrasekaran C, **Stavisky SD**, Kao JC, Sahani M, Ryu SI, Deisseroth K, Shenoy KV.

The need for calcium imaging in nonhuman primates: new motor neuroscience and brain-machine interfaces. *Experimental Neurology* (2016)

5. Kao JC, **Stavisky SD**, Sussillo D, Nuyujukian P, Shenoy KV.

Information systems opportunities in brain-machine interface decoders. *Proceedings of the IEEE* (2014)

Peer-Reviewed Conference Papers

1. Wairagkar M, Hochberg LR, Brandman* DM, **Stavisky* SD**.

Synthesizing speech by decoding intracortical neural activity from dorsal motor cortex. *Proceedings of the 11th International IEEE EMBS Conference on Neural Engineering*, Baltimore, MD, USA (2023)

2. Varshney S, Farias D, Brandman* DM, **Stavisky* SD**, Miller* LM.

Using automatic speech recognition to measure the intelligibility of speech synthesized from brain signals. *Proceedings of the 11th International IEEE EMBS Conference on Neural Engineering*, Baltimore, MD, USA (2023).

3. Dutta B, Andrei A, Harris TD, Lopez CM, O'Callahan J, Putzeys J, Raducanu BC, Severi S, **Stavisky SD**, Trautmann EM, Welkenhuysen M, Shenoy KV.

The Neuropixels probe: A CMOS based integrated microsystems platform for neuroscience and brain-computer interfaces. *International Electron Devices Meeting (IEDM)*, San Francisco, CA, USA (2019)

4. **Stavisky SD**, Rezaii P, Willett FR, Hochberg LR, Shenoy* KV, Henderson* JM.

Decoding Speech from Intracortical Multielectrode Arrays in Dorsal “Arm/Hand Areas” of Human Motor Cortex. *Proceedings of the 40th Annual International Conference of the IEEE EMBS*, Honolulu, HI, USA (2018)

5. Even-Chen* N, **Stavisky* SD**, Kao JC, Ryu SI, Shenoy KV.

An auto-deleting brain machine interface: Error detection using spiking neuronal activity in the motor cortex. *37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Milan, Italy (2015)

6. **Stavisky SD***, Kao* JC, Sorokin JM, Ryu SI, Shenoy KV.

System Identification of Brain-Machine Interface Control Using a Cursor Jump Perturbation. *Proceedings of the 7th International IEEE EMBS Conference on Neural Engineering*, Montpellier, France (2015)

7. **Stavisky SD**, Kao JC, Nuyujukian P, Ryu SI, Shenoy KV.

Hybrid Decoding of Both Spikes and Low-Frequency Local Field Potentials for Brain-Machine Interfaces. *Proceedings of the 36th Annual International Conference of the IEEE EMBS*, Chicago, IL, USA (2014)

8. Kao JC, Nuyujukian P, **Stavisky SD**, Ryu S, Ganguli S, Shenoy KV.

Investigating the role of firing-rate normalization and dimensionality reduction in brain-machine interface robustness. *Proceedings of the 35th Annual International Conference of the IEEE EMBS*, Osaka, Japan (2013)

9. Vogel J, Haddadin S, Simeral DJ, **Stavisky SD**, Bacher D, Hochberg LR, Donoghue JP, van der Smagt, P.

Continuous Control of the DLR Light-weight Robot III by a Human with Tetraplegia Using the BrainGate2 Neural Interface System. *Proceedings of the International Symposium on Experimental Robotics*, New Delhi, India (2010)

Presentations

1. **Stavisky SD.**

An intracortical speech neuroprosthesis used for long-term daily communication by a person with ALS. Minisymposium talk at the annual meeting of the Society for Neuroscience, Chicago (2024).

2. Srinivasan A, Wairagkar M, Iacobacci C, Card NS, Hou X, Singer-Clark T, Hochberg LR, Brandman* DM, **Stavisky* SD.**

Decoding attempted speech amplitude from intracortical arrays in precentral gyrus. Poster presentation at the annual meeting of the Society for Neuroscience, Chicago (2024).

3. Hou X, Iacobacci C, Card NS, Wairagkar M, Singer-Clark T, Willett F, Kunz E, Fan C, Kamdar F, Hahn N, Hochberg LR, Henderson JM, Brandman* D, **Stavisky* S.**

Characterizing language-related error signals with intracortical arrays in inferior frontal gyrus and ventral precentral gyrus. Poster presentation at the annual meeting of the Society for Neuroscience, Chicago (2024).

4. Wairagkar M, Card N, Iacobacci C, Singer-Clark T, Hou X, Hochberg LR, Brandman* D, **Stavisky* S.**

Brain-to-Voice: real-time voice synthesis from intracortical neural activity of a person with ALS. Poster presentation at the annual meeting of the Society for Neuroscience, Chicago (2024).

5. Card N, Iacobacci C, Peracha H, Wairagkar M, Hou X, Singer-Clark T, Hochberg LR, Brandman* D, **Stavisky* S.**

Conversational speech decoding from the intracortical neural activity of a man with ALS. Poster presentation at the annual meeting of the Society for Neuroscience, Chicago (2024).

6. Fan C, Meschede-Krasa B, Kunz E, Kamdar F, Card N, Wairagkar M, Iacobacci C, Hochberg L, Brandman D, **Stavisky S**, Druckman* S, Henderson* J, Willett* F.

An RNN encoding model for understanding continuous speech production in motor cortex. Poster presentation at the annual meeting of the Society for Neuroscience, Chicago (2024).

7. Haro S, Jude J, Acosta A, Levi-Aharoni H, Allcroft S, Card N, Wairagkar M, Brandman D, Stavisky S, Simeral J, Hochberg L, Rubin D.

Tailoring the use of a chronically-implanted intracortical speech neuroprosthesis for a person with long-standing anarthria. Poster presentation at the annual meeting of the Society for Neuroscience,

Chicago (2024).

8. Jude J, Haro S, Levi-Aharoni H, Acosta A, Allcroft S, Card N, Wairagkar M, Brandman D, Stavisky S, Simeral J, Hochberg L, Rubin D.

A large vocabulary intracortical speech neuroprosthesis for a locked-in person with anarthria. Poster presentation at the annual meeting of the Society for Neuroscience, Chicago (2024).

9. Meschede-Krasa B, Kunz E, Kamdar F, Card N, Wairagkar M, Iacobacci C, Nason-Tomaszewski S, Bechefskey P, Hochberg L, Brandman D, **Stavisky S**, Pandarinath C, Henderson* J, Druckman* S.

Neural geometry of speech preparation in ventral premotor cortex. Poster presentation at the annual meeting of the Society for Neuroscience, Chicago (2024).

10. Kunz* E, Meschede-Krasa* B, Kamdar F, Nason-Tomaszewski S, Card N, Jacques B, Bechefskey P, Hahn N, Iacobacci C, Hochberg L, Brandman D, **Stavisky S**, Au Young N, Pandarinath C, Henderson* J, Willett* F.

Representation of verbal thought in motor cortex and implications for speech neuroprostheses. Poster presentation at the annual meeting of the Society for Neuroscience, Chicago (2024).

11. **Stavisky SD.**

Building an implanted neuroprosthesis to restore speech. Invited talk at Jane Street Capital's seminar series (2024).

12. **Stavisky SD.**

Restoring lost speech using a brain-computer interface. Invited talk at the UC Davis School of Medicine Alumni Weekend (2024).

13. **Stavisky SD.**

An intracortical brain-computer interfaces for day-to-day communication. Invited talk at the BCI Society Industry-Academia Seminar Series, virtual (2024).

14. Card N, Wairagkar M, Iacobacci C, Hou X, Singer-Clark T, Willett F, Kunz E, Fan C, Nia MV, Deo D, Choi EY, Glasser M, Hochberg LR, Henderson JM, Shahlaie K, **Stavisky* S**, Brandman* DM.

An intracortical brain computer interface to restore communication in a person with ALS. Talk at the 2024 American Society for Stereotactic and Functional Neurosurgery Biennial Meeting, in Nashville, TN, USA (2024).

15. Au Yong N, Nason-Tomaszewski SR, Jacques BG, Ali YH, Rigotti-Thompson M, Pritchard AL, Bechefskey PH, Choi EY, Deo DR, Willett FR, Card NS, Henderson JM, Brandman DM, **Stavisky SD**, Hochberg LR, Pandarinath* C.

A multifunctional intracortical brain-computer interface in the human precentral gyrus. Poster presentation at the 2024 American Society for Stereotactic and Functional Neurosurgery Biennial Meeting, in Nashville, TN, USA (2024).

16. **Stavisky* SD.** Motor Cortical Activity During Human Speech and Its Use in a Speech Neuroprosthesis. Invited talk at the Gordon Research Conference on Neural Mechanisms of Acoustic Communication, in Sunday River, ME, USA (2024).

17. Card NS, Wairagkar M, Iacobacci C, Hou X, Singer-Clark T, Willett FR, Kunz EM, Fan C, Nia MV, Deo DR, Choi EY, Glasser MF, Hochberg LR, Henderson JM, Shahlaie K, Brandman* DM, **Stavisky* SD.**

An accurate and rapidly calibrating speech neuroprosthesis. Oral presentation at the Society for the Neural Control of Movement's 33rd Annual Meeting in Dubrovnik, Croatia (2024).

18. Singer-Clark T, Iacobacci C, Wairagkar M, Card N, Hou X, Brandman* D, **Stavisky* S.** Ventral motor cortex activity supports neural cursor control by a person with paralysis.

Poster presentation at the Society for the Neural Control of Movement's 33rd Annual Meeting in Dubrovnik, Croatia (2024).

19. Wairagkar M, Willet F, Kunz E, Fan C, Kamdar F, Hochberg LR, Henderson JM, Brandman* DM, **Stavisky* SD.**

Speech synthesis by decoding intracortical neural activity of a person with anarthria due to ALS. Poster presentation at the annual meeting of the Society for Neuroscience, Washington, DC (2023).

20. Hou X, Willet F, Kunz E, Fan C, Kamdar F, Hochberg LR, Henderson JM, Brandman* DM, **Stavisky* SD.**

Evidence of task outcome neural error signals during use of a speech brain-computer interface. Poster presentation at the annual meeting of the Society for Neuroscience, Washington, DC (2023).

21. **Stavisky SD.** A brain-computer interface to restore lost speech. Invited talk at the MIT Neurotech Symposium (2023).

22. **Stavisky SD.** An intracortical speech neuroprosthesis: from early proof-of-principle to working prototype. Invited talk at the Stanford Wu Tsai Neurosciences Institute's 10th Annual Symposium (2023).

23. **Stavisky SD.** Restoring lost speech via a brain-computer interface. Invited talk at the UC Davis School of Medicine Research Celebration (2023).

24. **Stavisky SD & Garetto LP.**

Leading with integrity: fostering a culture of accountability and creating environments devoid of research misconduct. Invited talk at the A. P. Giannini Foundation Fellow and Alumni Meeting (2023).

25. **Stavisky SD.** Deep learning models for restoring lost speech via brain-computer interfaces. Invited talk at the minisymposium on "Dynamical modeling for neurotechnology application" at the 45th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Sydney, Australia (July 2023).

26. Wairagkar M, Hochberg L, Brandman* D, **Stavisky* SD.**

Continuous speech synthesis and articulatory kinematics decoding from intracortical neural activity.

Poster presentation and workshop talk at the 10th International BCI Meeting, Brussels, Belgium (June 2023).

27. Ali Y, Bodkin K, Rigotti-Thompson, Patel K, Bhaduri B, Nason-Tomaszewski S, Mifsud D, Hou X, Nicolas C, Allcroft S, Hochberg L, Au Yong N, **Stavisky S**, Miller L, Brandman* D, Pandarinath* C.

BRAND: A platform for real-time deep network inference in closed-loop BCIs. Poster presentation and talk at the 10th International BCI Meeting, Brussels, Belgium (June 2023).

28. **Stavisky SD**. Neural ensemble dynamics in human inferior frontal & ventral precentral gyrus during speech. Invited talk at the Annual Meeting of the Simons Collaboration on the Global Brain (May 2023).

29. Brandman DM and **Stavisky SD**.

The BrainGate2 clinical trial at UC Davis: Speech restoration in patients with anarthria. Invited Grand Rounds at the UC Davis Department of Neurology (March, 2023)

30. Wairagkar M, Hochberg LR, Brandman DM, **Stavisky SD**.

Decoding intracortical neural activity from motor cortex to synthesize speech. Poster presentation at the annual meeting of the Society for Neuroscience, San Diego, CA (2022)

31. **Stavisky SD**. Intracortical brain-computer interfaces for basic discovery and restoring speech. Invited external speaker at the Stanford Neurosciences Interdepartmental PhD Program Student Retreat (2022)

32. **Stavisky SD**. Twitter for “professional” scientists. Invited talk at the A. P. Giannini Foundation Annual Fellow and Alumni Meeting (2022)

33. **Stavisky SD**. Intracortical brain-computer interfaces: from fundamental science to restoring speech. Invited talk at UC Davis Center for Mind and Brain Seminar Series (2022)

34. **Stavisky SD**. Intracortical brain-computer interfaces for restoring reach & grasp, speech, and basic discovery. Invited Frontiers in Neuropsychiatry Seminar at Weill Cornell Medicine (2022)

35. Brandman DM and **Stavisky SD**.

The BrainGate2 Clinical Trial at UC Davis: Intracortical Brain Computer Interfaces for Communication. Invited Grand Rounds at the UC Davis Department of Physical Medicine and Rehabilitation (2022)

36. **Stavisky SD**. Towards a speech neuroprosthesis using Utah multielectrode arrays in motor cortex. Invited talk at the Virtual Braincom Workshop (2022)

37. **Stavisky SD**. Intracortical brain-computer interfaces: from fundamental science and engineering to restoring speech and reach & grasp. Selected seminar at the Brown University BrainExPo (competitive external postdoc speaker series) (2021)

38. **Stavisky SD**. Intracortical brain-computer interfaces: from fundamental science and engineering to restoring speech and reach & grasp. Selected seminar at the NYU Seminar by Postdocs in Neuroscience: Extramural Series (SPiNES) (2020)

39. **Stavisky SD**, Wilson GH, Willett FR, Avansino DA, Rezaii P, Hochberg LR, Druckmann S**, Shenoy** KV, Henderson** JM.
- Decoding speech production using intracortical electrode arrays in dorsal precentral gyrus. Oral presentation at the 1st Brain-Computer Interface Unconference. Online (2020)
40. **Stavisky SD**, Willett FR, Deo DR, Avansino DT, Hochberg LR, Henderson* JM, Shenoy* KV.
- The condition-invariant signal in human dorsal motor cortex varies across movements of different effectors. Poster presentation at the Society for the Neural Control of Movement. Dunrovnik, Croatia (2020; cancelled due to Covid-19)
41. Wilson* GH, **Stavisky* SD***, Avansino D, Hochberg L, Henderson J, Shenoy** K, Druckmann** S.
- Neural state space geometry in human motor cortex underlying speaking different phonemes. Poster presentation at Computational and Systems Neuroscience (Cosyne), Denver, CO (2020)
42. **Stavisky SD**. Dynamics and decoding of speech-related intracortical activity in human dorsal motor cortex. Oral presentation at the Simons Collaboration on the Global Brain West Coast Postdoc Meeting Series, San Francisco, CA (2020)
43. **Stavisky SD**, Wilson G, Willett, F, Rezaii P, Avansino D, Hochberg L, Druckmann S, Shenoy* K, Henderson* J.
- Neural population dynamics in dorsal motor cortex during human speech. Poster presentation at the Center for Neural Engineering & Prostheses, University of California - Berkeley / San Francisco Annual Retreat, Berkeley, CA (2019)
44. **Stavisky SD**. Willett FR, Rezaii P, Avansino DT, Hochberg LR, Shenoy* KV, Henderson* JM.
- Similar low dimensional neural population dynamics in dorsal motor cortex during human speech and hand movements. Poster presentation at the annual meeting of the Society for Neuroscience, Chicago, IL (2019)
45. **Stavisky SD**. High bandwidth brain-computer interfaces for people with paralysis: decoding intended arm movements and speech. Invited Neurosciences Grand Rounds at Sutter California Pacific Medical Center, San Francisco, CA (2019)
46. **Stavisky SD**. Unlocking voices – restoring speech via a brain-computer interface. Presentation at the Annual A.P. Giannini Foundation Colloquium, Stanford, CA (2019)
47. **Stavisky SD**. Willett FR, Murphy BA, Rezaii P, Memberg WD, Miller JP, Hochberg LR, Ajiboye AB, Shenoy* KV, Henderson* JM.
- Decoding speech from intracortical multielectrode arrays in human motor cortex. Poster presentation at the Cell-NERF Symposium: Neurotechnologies, Leuven, Belgium (2018).
48. **Stavisky SD**, Willett FR, Rezaii P, Hochberg LR, Shenoy* KV, Henderson* JM.
- Motor cortical dynamics during speech. Oral presentation at Advances in Motor Learning & Motor Control, San Diego, CA (2018)

49. **Stavisky SD**, Willett FR, Murphy BA, Rezaii P, Memberg WD, Walter B, Sweet JA, Miller JP, Kirsch RF, Hochberg LR, Ajiboye AB, Shenoy* KV, Henderson* JM.
- Single neuron population dynamics in dorsal motor cortex during human speech. Oral presentation at the annual meeting of the Society for Neuroscience, San Diego, CA (2018)
50. Flesher SN, Chandrasekaran C, Willett, FR, **Stavisky SD**, Wang M, Rezaii PG, Hochberg LR, Henderson* JM, Shenoy* KV.
- Decision related signals at single-neuron resolution in human motor cortex. Poster presentation at the annual meeting of the Society for Neuroscience, San Diego, CA (2018)
51. Henderson JM, **Stavisky SD**, Nuyujukian P, Pandarinath C, Even-Chen N, Jarosiewicz B, Even-Chen N, Rezaii P, Willet F, Flesher S, Peterson H, Hochberg LR, Shenoy KV.
- High degree-of-freedom movement by a person with paralysis using an Implanted Brain-computer Interface. Oral presentation at the American Society for Stereotactic and Functional Neurosurgery Biennial Meeting, Denver, CO (2018)
52. **Stavisky SD**, Nuyujukian P, Pandarinath C, Even-Chen N, Jarosiewicz B, Rezaii P, Willet F, Flesher S, Peterson H, Hochberg LR, Henderson* JM, Shenoy* KV.
- Simultaneous real-time control of a high degree-of-freedom virtual object by a person with paralysis using an intracortical BCI. Poster presentation at the 7th International BCI Meeting, May 21-25 in California, Asilomar, CA (2018)
53. Even-Chen N, **Stavisky SD**, Kao JC, Ryu SI, Pandarinath C, Nuyujukian P, Blabe CI, Hochberg LR, Henderson JM, Shenoy KV.
- Augmenting intracortical brain-computer interfaces in monkeys and humans with neurally driven error detectors. Oral presentation at the 7th International BCI Meeting, California, Asilomar, CA (May 2018)
54. **Stavisky SD**, Nuyujukian P, Pandarinath C, Even-Chen N, Jarosiewicz B, Rezaii P, Hochberg LR, Henderson* JM, Shenoy* KV.
- Accurate and simultaneous 5.1 degree-of-freedom control of a virtual cursor by a person with paralysis using an intracortical BCI. Oral presentation at the annual meeting of the Society for Neuroscience, Washington, DC (2017)
55. Trautmann E, **Stavisky SD**, Ames KC, Kaufman MT, Ryu S, Lahiri S, Ganguli S, Shenoy KV.
- Accurate recovery of neural population dynamics without spike sorting. Poster presentation at the annual meeting of the Society for Neuroscience, Washington, DC (2017)
56. O'Shea DJ, Pandarinath C, Collins J, Jozefowicz R, Trautmann E, **Stavisky SD**, Kao JC, Churchland MM, Kaufman MT, Henderson JM, Shenoy KV, Abbott L, Sussillo D.
- Dynamic neural stitching: learning consistent neural population dynamics from separately recorded neural populations across months using LFADS. Poster presentation at the annual meeting of the Society for Neuroscience, Washington, DC (2017)

57. Pandarinath C, O'Shea DJ, Collins J, Jozefowicz R, **Stavisky SD**, Kao JC, Trautmann E, Churchland MM, Kaufman MT, Ryu S, Henderson JM, Shenoy KV, Abbott L, Sussillo D.
- LFADS: a deep learning technique to precisely estimate neural population dynamics on single trials. Poster presentation at the annual meeting of the Society for Neuroscience, Washington, DC (2017)
58. **Stavisky SD**, Nuyujukian P, Pandarinath C, Even-Chen N, Jarosiewicz B, Blabe CB, Hochberg LR, Henderson JM, Shenoy KV.
- Accurate and simultaneous control of a 3 degree-of-freedom cursor plus a state by a person with paralysis using an intracortical BCI. Poster presentation at the 7th International IEEE EMBS Conference on Neural Engineering, Shanghai, China (2017)
59. Even-Chen N, **Stavisky SD**, Pandarinath C, Nuyujukian P, Jarosiewicz B, Blabe CB, Hochberg LR, Henderson JM, Shenoy KV.
- Task Outcome Error Signals in Human Primary Motor Cortex and Their Use in Brain Machine Interfaces. Poster presentation at the 7th International IEEE EMBS Conference on Neural Engineering, Shanghai, China (2017)
60. Pandarinath C, Collins J, Jozefowicz R, **Stavisky S**, Kao J, Churchland MM, Kaufman MT, Ryu SI, Henderson JM, Shenoy KV, Abbott LF, Sussillo D.
- Precise estimates of single-trial neural population state in motor cortex via deep learning methods. Poster presentation at Frontiers in Neuroscience: Computational and Systems Neuroscience (COSYNE), Salt Lake City, UT (2017)
61. Trautmann E, **Stavisky S**, Kao J, Ryu SI, Shenoy KV.
- Decoding arm force from neural population dynamics in PMd and M1 during reaching. Poster presentation at Frontiers in Neuroscience: Computational and Systems Neuroscience (COSYNE), Salt Lake City, UT (2017)
62. **Stavisky SD**, Kao JC, Nuyujukian P, Ryu SI, Shenoy KV.
- Error-related motor cortical activity transforms from output-null to output-potent dimensions. Poster presentation at the annual meeting of the Society for Neuroscience, San Diego, CA (2016)
63. Trautmann E, **Stavisky S**, Kao J, Ryu SI, Shenoy KV.
- Decoding kinetic information from PMd and M1 during reaching. Poster presentation at the annual meeting of the Society for Neuroscience, San Diego, CA (2016)
64. Trautmann E, **Stavisky S**, Kaufman MT, Ames KC, Ryu SI, Shenoy KV.
- Sortfree: Using threshold crossings to elevate scientific hypotheses in population analyses. Poster presentation at Frontiers in Neuroscience: Computational and Systems Neuroscience (COSYNE), Salt Lake City, UT (2016)

65. Even-Chen* N, Kao* JC, **Stavisky SD**, Ryu SI, Shenoy KV.
Increasing brain machine interface performance by online auto-delete based on motor cortical activity. Poster presentation at the annual meeting of the Society for Neuroscience, Chicago, IL (2015)
66. **Stavisky SD**, Kao JC, Ryu SI, Shenoy KV.
Brain-machine interface performance is mediated by an internal model of decoder velocity gain. Poster presentation at the annual meeting of the Society for Neuroscience, Washington, DC (2014)
67. Kao* JC, **Stavisky* SD**, Sussillo* D, Ryu SI, Shenoy KV.
A robust and high-performance brain-machine interface using a nonlinear recurrent neural network trained with years of neural data. Poster presentation at the annual meeting of the Society for Neuroscience, Washington, DC (2014)
68. Nuyujukian P, Gilja V, Kao JC, Fan JM, **Stavisky SD**, Ryu SI, Shenoy KV.
The development of high-performance communication neural prostheses. Symposium at the American Society of Stereotactic and Functional Neurosurgery, Washington DC (2014)
69. **Stavisky SD**, Kao JC, Nuyujukian P, Ryu SI, Shenoy KV.
Motor cortical activity tracks the position of a brain-machine interface cursor. Poster presentation at the annual meeting of the Society for Neuroscience, San Diego, CA (2013)
70. Trautmann E, Gao P, Fan JM, Kao J, **Stavisky SD**, Nuyujukian P, Yu B., Santhanam G., Ryu, S., Ganguli S., Shenoy K.V.
Dimensionality in the motor cortical substrate for reaching, Poster presentation at the annual meeting of the Society for Neuroscience, San Diego, CA (2013)
71. Simeral JD, Bacher D, Sarma AA, Schmansky NJ, **Stavisky SD**, Jarosiewicz B, Milekovic T, Rosler DM, Gilja V, Pandarinath C, Cornwell AS, Henderson JM, Shenoy KV, Kirsch RF, Donoghue JP, Hochberg LR.
Evolution of the BrainGate real-time Brain-Computer Interface (BCI) platform for individuals with tetraplegia or limb loss. Poster presentation at the annual meeting of the Society for Neuroscience, San Diego, CA (2013)
72. Kao JC, Nuyujukian P, **Stavisky SD**, Ryu SI, Shenoy KV.
Online intracortical neural prosthetic control of a 2D cursor via low dimensional projections of neural observations. Poster presentation at the Janelia Conference: Machine Learning, Statistical Inference, and Neuroscience. Janelia Farms, VA (2012)
73. Nuyujukian P, Kao JC, Fan JM, **Stavisky SD**, Ryu SI, Shenoy KV.

A high-performance, robust brain-machine interface without retraining. Poster presentation at the 9th annual Computational and Systems Neuroscience (Cosyne) Meeting, Salt Lake City, UT (2012)

74. **Stavisky SD**, Simeral JD, Kim SP, Centrella KA, Donoghue JP, Hochberg LR.

Architecture of the BrainGate neural interface system in the ongoing pilot clinical trial for individuals with tetraplegia. Poster presentation at the annual meeting of the Society for Neuroscience, Chicago, IL (2009)

75. Simeral JD, Kim SP, **Stavisky SD**, Donoghue JP, Hochberg LR.

Assessment of BrainGate-enabled neural control of a point-and-click cursor by a person with tetraplegia 1000 days after array implant. Poster presentation at the annual meeting of the Society for Neuroscience, Chicago, IL (2009)

Patents

1. Wairagkar M, **Stavisky S**, Brandman D. US Patent Application No. 63/461,507. Systems and methods for synthesizing speech from biosignals (filed April 2023, pending).
2. **Stavisky S**, Miller LM, Brandman D, Varshney S. US Patent Application No. 63/450,317. Using automatic speech recognition to measure the intelligibility of speech synthesized from brain signals (filed March 2023, pending).
3. **Stavisky SD**, Shenoy KV, Henderson JM, U.S. Patent No. 12008987. Systems and Methods for Decoding Intended Speech from Neuronal Activity (issued June 2024). Licensed to medical device industry – Blackrock Neurotech and Neuralink – in 2021.
4. Even-Chen N, Shenoy KV, Kao JC, **Stavisky SD**. U.S. Patent No. 10779746. Task-outcome error signals and their use in brain-machine interfaces (issued 09/22/2020).
5. Sussillo D, Kao JC, **Stavisky SD**, Shenoy KV, U.S. Patent No. 10223634. Multiplicative recurrent neural network for fast and robust intracortical brain machine interface decoders (issued 3/5/2019). Licensed to medical device industry – Blackrock Neurotech – in 2021.
6. Sussillo D, Kao JC, **Stavisky SD**, Shenoy KV, U.S. Patent No. 11461618. Multiplicative recurrent neural network for fast and robust intracortical brain machine interface decoders (issued 10/4/2022). (continuation of 10223634).
7. Sussillo D, Kao JC, **Stavisky SD**, Shenoy KV, U.S. Patent No. 11989641. Multiplicative recurrent neural network for fast and robust intracortical brain machine interface decoders (issued 05/21/2024). (continuation of 10223634).

Teaching

Instructor, UC Davis BIM 209: Scientific Integrity for Biomedical Engineers (2024)

Instructor, UC Davis EEC 244: Introduction to Neuroengineering (2023, 2024)

Guest Lecturer, UC Davis NPB 125: Motor Control. “Cortical brain-computer interfaces” (2023)

Guest Lecturer, UC Davis NPB 17: The Path to Cyborgs: Introduction to Prostheses and Human Machine Interfaces. “A survey of the hardware, algorithms, and applications of brain-computer interfaces” (2023)

Guest Lecturer, UC Davis BIM 204: Physiology for Bioengineers. “Neuroprostheses for restoring the ability to communicate” (2023)

Secondary Instructor, UC Davis BIM 209: Scientific Integrity for Biomedical Engineers (2023)

UC Davis Venture Academia, “Challenges for brain-computer interfaces for restoring movement & speech” (2022)

Guest Lecturer, UC Davis NPB 17: The Path to Cyborgs: Introduction to Prostheses and Human Machine Interfaces. “Introduction to brain-computer interfaces for restoring movement & speech” (2022)

Neuromatch Academy student team project mentor (2022)

Guest Lecturer, UC Davis NPB 100: Neurobiology. “Brain-computer interfaces” (2022)

Guest Lecturer, UC Davis NSC 211: Advanced Topics in Neuroengineering. “An introduction to brain-computer interfaces for restoring movement & speech” (2022)

Neurotech@Davis Neurotech Seminar Series speaker (2022)

Guest Lecturer, UC Davis NPB 198: Neural Networks & Machine Learning in Biology. “Neural networks for treating neural networks: neuroprosthetics” (2022)

Guest Lecturer, UC Davis MAE 298: Introduction to Neural-Machine-Interfaces and Assisted Human Movement. “Brain-computer interfaces to restore movement” (2021)

Guest Lecturer, UC Davis NPB 125: Motor Control. “Cortical brain-computer interfaces to restore movement & speech” (2021)

Instructor, Stanford NENS 230: Analysis Techniques for the Biosciences using MATLAB, Stanford University (2015)

Instructor, Stanford NENS 230: Data Analysis Techniques for Neuroscience, Stanford University. Co-developed and co-taught this new graduate-level course (2011)

Lecturer, Stanford NBIO 206: The Nervous System. Prepared and taught the cortical control of movement portion of Stanford Medical School’s 1st year neurology course (two quarters: 2013, 2014)

Guest Lecturer, Stanford PSYCH 202: Cognitive Neuroscience (2013)

Teaching Assistant, Stanford NBIO 206: The Nervous System (three quarters: 2012, 2013, 2014)

Grants (as faculty)

UC Davis Venture Catalyst Science Translation and Innovative Research (STAIR) Grant
Miller, (PI), Stavisky (Co-I) 09/01/24 – 08/31/25

Title: *Restoring Speech Communication with an Adaptive Biosignal Decoder-Synthesizer*
\$70,000 direct costs at UC Davis

Google Research Scholars Award
Stavisky (PI), Brandman (Co-I) 05/01/24 – 04/30/25
Title: *An “AI Listener” for Speech Restoration via Brain- and Muscle-Computer Interfaces*
\$60,000 unrestricted gift to UC Davis

ALS Association Assistive Technology Grant
Brandman (PI), Stavisky (Co-I) 12/01/24 – 11/30/25
Title: *Empowering users for on-demand use of a speech neuroprosthesis*
\$318,270 total costs at UC Davis

Simons Collaboration for the Global Brain
Stavisky, Henderson (Multi-PIs), 10/01/23 – 09/30/25
Title: *Single-neuron population dynamics in human Broca's area and motor cortex when preparing and producing speech.* (renewed)
\$370,000 total costs at UC Davis

UC Davis School of Medicine Cultivating Team Science Award 05/01/2023 – 04/30/2025
Miller (PI), Stavisky, Brandman, O'Reilly, Farais (Co-Investigators)
Title: *A Speech Brain-Computer-Interface dynamically optimized for Intelligibility.*
\$200,000 direct costs at UC Davis

MIND Prize (Maximizing Innovation in Neuroscience Discovery)
Stavisky (PI) 06/01/23 – 05/31/26
Title: *Next-generation cellular-resolution neural interfaces for restoring human cognitive abilities.*
\$750,000 total costs at UC Davis

Searle Scholars Award
Stavisky (PI) 07/01/23 – 06/30/26
Title: *Understanding and restoring speech production through cellular-resolution measurements of neural ensemble dynamics.*
\$300,000 direct costs at UC Davis

Department of Defense Congressionally Directed Medical Research Program, ALS Research Program
Stavisky (PI) 03/15/23 – 03/14/26
Title: *A brain-computer interface for voice synthesis in people with ALS.*
\$1,174,439 direct costs at UC Davis

ALS Association Seed Grant
Stavisky (PI) 10/01/22 – 09/30/23
Title: *A brain-computer interface for restoring speech in people with ALS.*
\$50,000 total costs at UC Davis

NIH Director's New Innovator Award (DP2)
Stavisky (PI) 09/01/2022 – 08/31/2027

Title: *Understanding and restoring speech production using an intracortical brain-computer interface.*
\$1,500,000 direct costs at UC Davis

UC Davis Health Clinical and Translational Science Center Highly Innovative Award
Miller (PI), Stavisky, Brandman, O'Reilly, Farais (Co-Investigator) 08/01/2022 – 05/31/2023
Title: *A Neuroprosthesis to Restore Speech in People with Anarthria.*
\$49,743 total costs at UC Davis

UC Davis Faculty Senate New Research Initiatives and Interdisciplinary Research grant
Stavisky (lead PI) 07/01/2022 – 09/30/2023
Title: *A new interdisciplinary initiative for restoring lost speech: developing a clinically validated deep learning-based intelligibility measure for speech synthesized from brain signals.*
\$24,993 total costs at UC Davis

UC Davis Award for Innovation and Creative Vision
Stavisky (PI) 2022
Title: *Restoring lost speech using an intracortical brain-computer interface.*
\$40,000 total costs at UC Davis

Simons Collaboration for the Global Brain
Stavisky, Henderson (Multi-PIs) 10/01/21 – 09/30/23
Title: *Single-neuron population dynamics in human Broca's area and motor cortex when preparing and producing speech.*
\$400,000 total costs at UC Davis

Burroughs Wellcome Fund Career Award at the Scientific Interface
Stavisky (PI) 10/01/21 – 09/30/26
Title: *Brain-computer interfaces to actualize the movements and speech of people with paralysis*
\$500,000 total costs at UC Davis

Fellowships awarded to trainees in my lab

(does *not* include minor awards like conference travel grants or best poster/talk)

“NeuralStorm: Training Program Trainee under NSF NRT Award #2152260
Fellow: Srinivasan (PhD student) 07/01/24 – 06/30/25
\$66,551 total costs at UC Davis

Simons Foundation Shenoy Undergraduate Research Fellowship in Neuroscience
Stavisky (PI), Brown, Card (postdoc co-mentors) 05/01/2023 – 05/31/2024
Supports undergraduate Plyfaa Suwanamalik-Murphy for the academic year.
\$11,598 total costs at UC Davis

ARCS (Achievement Rewards for College Scientists) Foundation Fellowship
Fellow: Singer-Clark (PhD student) 09/25/23 – 06/30/24
\$12,352 total costs at UC Davis

“NeuralStorm: Training Program Trainee under NSF NRT Award #2152260
Fellow: Singer-Clark (PhD student) 07/01/23 – 06/30/24
\$56,469 total costs at UC Davis

Burroughs Wellcome Fund Postdoctoral Diversity Enrichment Program
Project title: Developing faster, more accurate, and less frustrating communication neuroprosthesis for people with lost or diminished speech
Fellow: Brown (postdoc) 09/01/23 – 08/31/26
\$60,000 total costs at UC Davis

Schmidt Science Fellowship
Fellow: Brown (postdoc) 10/1/23 – 09/31/25
Project title: Developing faster, more accurate, and less frustrating communication neuroprosthesis for people with lost or diminished speech
\$200,000 total stipend paid to the fellows

ALS Association Milton Safenowitz Postdoctoral Fellowship Program
Project title: Understanding the neural basis of speech and restoring it in people with ALS
Fellow: Card (postdoc) 08/01/23 – 07/31/25
\$150,000 total costs at UC Davis
Declined due to conflict with Dr. Card’s AP Giannini fellowship.

UC Davis Graduate Group in Computer Science Research Fellowship
Fellow: Hou (PhD student) 04/03/23 – 06/29/23
\$18,670 total costs at UC Davis

A.P. Giannini Foundation Postdoctoral Fellowship and Leadership Award
Project title: Understanding the neural basis of speech and restoring it in patients with anarthria
Fellow: Card (postdoc) 06/01/23 – 05/31/26
\$186,000 total costs at UC Davis

American Society for Engineering Education / NSF Engineering Postdoctoral Fellowship
Fellow: Brown (postdoc) 12/1/22 – 11/30/24
\$259,200 total costs at UC Davis
Surrendered after one year due to conflict with Dr. Brown’s Schmidt Science Fellowship

Professional Service

Scientific Advisor to Sonera, a startup developing magnetic sensing semiconductor devices to non-invasively measure neural activity (2024 to now)

Ad hoc proposal reviewer for the United Kingdom’s Advanced Research + Innovation Agency (ARIA) (2024)

Ad hoc proposal reviewer for the U.S. Department of Defense Congressionally Directed Medical Research Program’s ALS Research Program (2024)

Organizer and chair of the “Speech Neuroprostheses” minisymposium at the annual meeting of the Society for Neuroscience, Chicago (2024)

Panelist at the 7th annual SOMA (Seminar Outreach for Minority Advocacy) Summit: “Unlocking Academic Career Opportunities With Your PhKey” (2024)

Co-organizer of the Society for the Neural Control of Movement’s 33rd Annual Meeting Satellite Meeting called “Artificial sensorimotor control from restoration to augmentation“, in Dubrovnik, Croatia. Also co-organized a main meeting Session titled “Neural control of speech: What did we miss in the last 20 years?”

Faculty mentor for the Simons Foundation Transition to Independence (TTI) fellowship program (2024)

Faculty Search Committee for Cognitive/computational Neuroscientist recruitment by the UC Davis Department of Neurological Surgery and Center for Neuroscience (2023/2024)

Faculty participant in UC Davis Neuroscience Initiative to Enhance Diversity (NIED) (2023)

UC Davis School of Medicine Neurological Surgery Residency Program Interviewer (2011, 2022, 2023)

Executive Committee for the UC Davis Designated Emphasis in Neuroengineering Program (2023 to now)

Scientific Advisor to ALVI Labs, a medical device startup developing muscle-machine interfaces to control prostheses for patients who have hand amputations (2023 to 2024)

Professors for the Future Faculty Fellow (2023 to now)

Ad hoc reviewer for the David J. Tomassoni ALS Research Grant Program (2023)

Workshop co-organizer and chair, “Understanding and Utilizing the Neural Basis of Speech: From Basic Science to Neuroprostheses” at the 10th International BCI Meeting in Brussels, Belgium (2023)

Reviewer for Simons Foundation Shenoy Undergraduate Research Fellowship (SURFiN) Program (2021, 2022, 2023)

Reviewer for BCI Society International BCI Meeting (2023)

Future of Basic Sciences Committee at UC Davis School of Medicine (2023)

Reviewer for internal limited submissions for the HHMI Gilliam Fellowship (2022)

Invited Discussion Leader for the session “Signal Processing to Decipher Neural Information” at the Gordon Research Conference on Neuroelectronic Interfaces (2022)

UC Davis NeuroFest speaker (one of four faculty selected as speakers for UCD’s major annual neuroscience outreach event) (2022)

Interviewer and participant in UC Davis Neuroscience Graduate Group Recruitment Week (2022, 2023)

Admissions Committee, UC Davis Biomedical Engineering Graduate Group (2022)

Stanford FLI (First-Generation and/or Low-Income) Community Mentor (2020 to 2021)

Stanford Neurosciences PhD Application Assistance Program (2020 to 2021)

Brain-Computer Interface Society, Student and Postdoc Committee (2020 to 2021)

Scientific Advisor to wispr.ai, a startup building neural interfaces for the next generation of human-computer interaction (2021 to 2022)

Scientific Advisor to Nēsos Corp., a medical device company developing neurotechnology to affect the neuro-immune axis (e.g., rheumatoid arthritis) and mood disorders (e.g., postpartum depression). My focus was multimodal physiology (including imaging, deep brain recordings, and autonomic measures) to determine and optimize device mechanism of action in support of clinical trials (2018 to 2022)

Scientific Advisor to Broad Mind Inc. I was advising this early-stage startup on how to validate a non-invasive MEG-based brain activity sensor for clinical applications (2019 to 2021)

Organizer and chair of the "Decoding Speech from Neural Signals" minisymposium at the annual meeting of the Society for Neuroscience, Washington, DC (scheduled for October 2020, rescheduled to 2021 due to COVID-19)

Co-organizer, "From speech decoding to speech neuroprostheses" workshop at the virtual BCI Society meeting (2021)

Jury for the 2020 Annual BCI Award

Co-organizer, Simons Collaboration on the Global Brain West Coast Postdoc Meeting Series (2019 to 2021)

Ad hoc reviewer for eLife, Nature Neuroscience, Nature Communications, Science Translational Medicine, Neuron, Cell Reports, Current Biology, Science Advances, Journal of Neural Engineering, Journal of Neuroscience, IEEE Transactions in Biomedical Engineering, IEEE Transactions on Neural Systems and Rehabilitation Engineering, NeuroImage, PLOS Biology, Nature Human Behavior, Neurons Behavior Data analysis and Theory (NBDT), Frontiers in Systems Neuroscience, Neuroscience, Human Brain Mapping

Stanford Neurosciences Graduate Program's Student Program Committee (2014 to 2016)

Judge for "Innovate to Mitigate", a science competition for middle- and high-schoolers (2015)

National Science Foundation's IGERT Video and Poster Competition: winner of both Public Choice and Community Choice (2013)

Guest lecturer on motor control for Stanford's summer programs for high school students in the diversity-promoting SIMR and EXPLORE programs (Summer 2013 and Summer 2014)

Mentoring

Trainees mentored at UC Davis:

Elena Hilary Rondoni (Visiting PhD Student from Sant'Anna School of Advanced Studies, Italy)
My role: faculty mentor in the UCD Neuroprosthetics Lab during her 6-9 month externship.

Elizaveta Okorokova, PhD (postdoctoral fellow)

My role: faculty mentor in the UCD Neuroprosthetics Lab.

Plyfaa Suwanamalik-Murphy (undergraduate majoring in cognitive science)

My role: faculty mentor in the UCD Neuroprosthetics Lab through the Simons Foundation Shenoy Undergraduate Research Fellowship in Neuroscience (SURFiN) program.

Daril Brown, PhD (postdoctoral fellow)

My role: faculty mentor in the UCD Neuroprosthetics Lab.

Nicholas Scott Card, PhD (postdoctoral fellow)

My role: faculty mentor in the UCD Neuroprosthetics Lab.

Maitreyee Wairagkar, PhD (postdoctoral fellow)

My role: faculty mentor in the UCD Neuroprosthetics Lab.

Tyler Singer-Clark (PhD Student in Neurosciences Graduate Group)

My role: faculty mentor in the UCD Neuroprosthetics Lab.

Suvi Varshney (masters student in Computer Science Graduate Group)

My role: faculty mentor in the UCD Neuroprosthetics Lab.

Chaodan Luo (Junior Specialist)

My role: faculty mentor in the UCD Neuroprosthetics Lab.

Current position: PhD student in Psychology at University of Southern California.

Xianda Hou (PhD student in Computer Science Graduate Group)

My role: faculty mentor in the UCD Neuroprosthetics Lab.

Venina Kalistratova, MA (medical student)

My role: faculty mentor in the UCD Neuroprosthetics Lab.

Current position: conducting breast cancer research in the Aghi Lab at UCSF.

Kayla Kim (undergraduate majoring in biomedical engineering)

My role: faculty mentor in the UCD Neuroprosthetics Lab.

Maryam Vahdati Nia (masters student in Computer Science Graduate Group)

My role: faculty mentor in the UCD Neuroprosthetics Lab.

Austin Sy Clark (medical student)

My role: faculty mentor during a medical school research rotation in the UCD Neuroprosthetics Lab.

Current position: Resident in General Surgery, UC Davis Health

Brian Huo (PhD student in Biomedical Engineering Graduate Group)

My role: faculty mentor in the UCD Neuroprosthetics Lab during a 1st year rotation.

Current position: Hull Lab, UC Davis

Dissertation and/or Qualifying Committees:

Erin Scott (PhD student in the Neuroscience Graduate Group)

My role: Member of Qualifying Exam Committee. Erin's graduate advisor is Lin Tian.

Greg Disse (MD/PhD student, Physician Scientist Training Program and Neuroscience Graduate Group)
My role: Member of Dissertation Committee. Greg's graduate advisor is Karen Moxon.

Tanner Stevenson (PhD student in the Neuroscience Graduate Group)
My role: Member of Qualifying Exam Committee. Tanner's graduate advisors are Tim Hanks and Rishi Chaudhuri.

Mentoring outside of UC Davis:

Nima Ryan Hadidi (PhD student at UCLA)
My role: Invited external member of the Qualifying Exam Committee. Nima's graduate advisor is Jonathan Kao.

Geena Ianni (PhD student at Rockefeller University, part of the Tri-Institutional MD-PhD Program)
My role: Invited sole external member of the PhD Thesis Committee. Geena's graduate advisor was Winrich Freiwald.