

Guy Wilson

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EDUCATION | **Stanford University**, Stanford, CA **2018 – 2023**
Ph.D. in Neuroscience

University of California, Berkeley, Berkeley, CA **2014 – 2018**
B.A. in Mathematics, B.A. in Molecular & Cell Biology with Honors

AWARDS & HONORS | BCI Society Student Award **2021**
Mind, Brain, Computation, & Technology Student Membership **2020**
National Science Foundation Graduate Research Fellowship **2018 – 2021**
Regina Casper Stanford Graduate Fellowship **2018 – 2023**
Phi Beta Kappa National Honor Society (offered) **2018**
Departmental Honors (MCB) **2018**
Distinction in General Scholarship **2018**

EXPERIENCE | **Postdoctoral Scholar, Stanford University**, Stanford, CA **2023 – Present**
Supervisor: Jaimie Henderson
○ Intracortical and EMG-based neural interfaces.

PhD Candidate, Stanford University, Stanford, CA **2018 – 2023**
Advisors: Krishna Shenoy & Shaul Druckmann
○ Developed BCI algorithms for speech decoding, cursor control, and unsupervised recalibration.

BMI Software Intern, Neuralink, CA **Summer 2021**
Supervisor: Joey O'Doherty
○ Oversaw research projects end-to-end including problem identification, data collection, analysis, and codebase implementation.

University of California, Berkeley, Berkeley, CA **Fall 2015 – 2018**
Advisor: Robert Knight
○ Developed and coded analysis pipelines for human behavioral and ECoG data using dimensionality reduction, non/linear classifiers, and state-space methods.

Psych 98/198: Neurotechnology Research Review Decal **Fall 2017**
○ Designed and co-taught a new course on neurotechnology. Topics include statistical inference, fMRI, EEG/MEG, ECoG, TMS/tDCS, DBS, optogenetics, and in-vivo imaging.

PUBLICATIONS | **GH Wilson**, FR Willett, E Stein, F Kamdar, DT Avansino, LR Hochberg, KV Shenoy, S Druckmann, JM Henderson (2023). Long-term unsupervised recalibration of cursor BCIs. (*bioRxiv*).
FR Willett*, E Kunz*, C Fan*, DT Avansino, **GH Wilson**, EY Choi, F Kamdar, LR Hochberg, S Druckmann, JM Henderson, KV Shenoy (2023). A high-performance speech neuroprosthesis. (*bioRxiv*).
GH Wilson*, SD Stavisky*, FR Willett, DT Avansino, LR Hochberg, JM Henderson, S Druckmann, KV Shenoy (2020). Decoding spoken English from intracortical electrode arrays in dorsal precentral gyrus. *Journal of Neural Engineering*.

SD Stavisky, FR Willett, **GH Wilson**, B Murphy, P Rezaii, DT Avansino, et al. (2019). Neural ensemble dynamics in dorsal motor cortex during speech in people with paralysis. [eLife](#).

RF Helfrich, M Huang, **GH Wilson**, RT Knight (2017). Prefrontal cortex modulates posterior alpha oscillations during top-down guided visual perception. [Proceedings of the National Academy of Sciences](#).

- TALKS** | **GRC Workshop: current advances in neurolinguistics**, Zurich, Switzerland **Oct 2020**
Decoding spoken English from intracortical recordings in dorsal motor cortex. (Virtual)
- Stanford Computational Neuroscience Club**, Stanford, CA **Nov 2019**
Linear dynamical systems for time-series data analysis.

- CONFERENCE ABSTRACTS** | **GH Wilson***, R Elisha*, T Benster*, Y Lee, KV Shenoy, JM Henderson, Z Bao, S Druckmann. Leveraging deep state-space models for silent speech decoding. *BCI Society 2023*.
- GH Wilson**, SD Stavisky, D Avansino, LR Hochberg, JM Henderson, KV Shenoy, S Druckmann. Leveraging task structure for unsupervised recalibration of cursor BCIs. *Society for Neuroscience 2022*.
- FR Willett*, E Kunz*, C Fan*, DT Avansino, **GH Wilson**, EY Choi, F Kamdar, LR Hochberg, S Druckmann, JM Henderson, KV Shenoy). A high-performance speech neuroprosthesis. *Society for Neuroscience 2022*.
- GH Wilson**, SD Stavisky, D Avansino, LR Hochberg, JM Henderson, KV Shenoy, S Druckmann. Decoding spoken English phonemes from dorsal motor cortex. *BCI Society International Meeting 2021, (virtual)*.
- SD Stavisky, **GH Wilson**, FR Willett, D Avansino, P Rezaii, LR Hochberg, S Druckmann, KV Shenoy, JM Henderson. Decoding speech production using intracortical electrode arrays in dorsal precentral gyrus. *BCI Unconference 2020, (virtual)*.
- GH Wilson**, SD Stavisky, D Avansino, LR Hochberg, JM Henderson, KV Shenoy, S Druckmann. Neural state space geometry underlying speaking different phonemes. *Computational and Systems Neuroscience (COSYNE) 2020, Breckenridge, CO*.
- SD Stavisky, **GH Wilson**, FR Willett, D Avansino, P Rezaii, LR Hochberg, S Druckmann, KV Shenoy, JM Henderson. Neural population dynamics in motor cortex during human speech. *CNEP UC Berkeley/San Francisco Annual Retreat 2019*.
- GH Wilson**, RF Helfrich, RT Knight. Spatiotemporal dynamics of contextual processing in human intracranial recordings. *MCB Honors Research Symposium 2018, Berkeley CA*.
- M Huang, RF Helfrich, **GH Wilson**, RT Knight. Sequential and temporal predictions in the human brain employ neuronal alpha oscillations. *MCB Honors Research Symposium 2017, Berkeley CA*.

- OTHER PROJECTS** | **Auditory-articulatory inversion model for speech decoding** **2019**
GH Wilson, S Druckmann
- o Built neural network models for predicting articulatory kinematics from audio waveforms.
 - o Experience with data cleaning, feature selection, and audio preprocessing approaches (frequency decompositions, voice conversion for data augmentation). Built in Python.
- Persistent homology of global functional connectivity for depression classification** **2017**
AR Hu, GH Wilson
- o Designed and implemented a topological data analysis pipeline for detection of clinical depression using resting-state fMRI.
- Recurrent neural networks for neoantigen prediction** **2017**
W Wang, L Huang, GH Wilson, J Price
- o Used a combination of existing genomics tools and structure-based machine learning to identify predict HLA-epitopes for cancer immunotherapy. Developed in Python for SVAI Genomics Hackathon.