

Guy Wilson

✉ ghwilson@stanford.edu

🔄 github.com/guyhwilson

🌐 guyhwilson.com

EDUCATION | **Stanford University**, Stanford, CA **2018 – Present**
Ph.D. in Neuroscience (expected May 2023)

University of California, Berkeley, Berkeley, CA **2014 – 2018**
B.A. in Mathematics, B.A. in Molecular & Cell Biology with Honors
Thesis: *Spatiotemporal dynamics of contextual processing in human intracranial recordings*

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 | **Neurosciences Program, Stanford University**, Stanford, CA **2018 – Present**

Advisors: Krishna Shenoy & Shaul Druckmann

- Developing BCI algorithms for speech decoding, 2D cursor control, and unsupervised recalibration.

Dept of Psychology, University of California, Berkeley, Berkeley, CA

Advisor: Robert Knight

Fall 2015 – 2018

- Flexibly organized scheduling and ran trials for a twenty subject EEG study.
- 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 full-semester course on neurotechnologies. Topics include statistical inference, fMRI, EEG/MEG, ECoG, TMS/tDCS, DBS, optogenetics, and in-vivo imaging.

PUBLICATIONS | **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, 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)*.

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*.

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.

**SKILLS
& OTHER**

Programming: Python, MATLAB, HTML, NumPy, Cython, PyTorch, GitHub.
Basic French, running, coffee.