Alexander G. Huth

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Current Position

Assistant professor, Computer Science & Neuroscience, **The University of Texas at Austin**, Texas USA **2017-present**

Education

University of California, Berkeley, California USA

- Ph.D., Helen Wills Neuroscience Institute **2013**

California Institute of Technology, Pasadena, California USA

- M. S., Computation & Neural Systems / Brains, Minds, & Society **2009**
- B. S., Engineering & Applied Science (focus on Computation & Neural Systems) **2007**

Previous Positions

Chief Technology Officer, Caseforge, Inc., Berkeley, California USA **2016-2021**

Gallant Lab, University of California, Berkeley, California USA
Postdoctoral scholar **2014-2017**
Graduate student **2009-2013**

Koch Lab, California Institute of Technology, Pasadena, California USA
Graduate student **2007-2008**
Undergraduate researcher **2006-2007**

Peer-Reviewed Publications

Antonello, R. J., & **Huth, A. G.** (2022) Predictive Coding or Just Feature Discovery? An Alternative Account of Why Language Models Fit Brain Data. ***Neurobiology of Language*** *(accepted)* doi: 10.1162/nol_a_00087

Vaidya, A. R., Jain, S., & **Huth, A. G.** (2022) Self-supervised models of audio effectively explain human cortical responses to speech. ***Proceedings of the 39th International Conference on Machine Learning (ICML) 2022***, 17-23 Jul 2022 arXiv:2205.14252

Antonello, R. J., Vo, V. A., Turek, J. S., & **Huth, A. G.** (2021) Low-Dimensional Structure in the Space of Language Representations is Reflected in Brain Responses. ***Advances in Neural Information Processing Systems (NeurIPS) 2021*** arXiv:2106.05426

LeBel, A., Jain, S., & **Huth, A. G.** (2021) Voxelwise encoding models show that cerebellar language representations are highly conceptual. ***The Journal of Neuroscience*** doi: 10.1523/JNEUROSCI.0118-21.2021

Popham, S. F., **Huth, A. G.**, Bilenko, N. Y., Gao, J. S., Nunez-Elizalde, A. O., & Gallant, J. G. (2021) Visual and linguistic semantic representations are aligned at the border of human visual cortex. ***Nature Neuroscience*** 24, 1628–1636 doi: 10.1038/s41593-021-00921-6

Kumar, A., Vaidya, A. R., & **Huth, A. G.** (2021) Physically Plausible Pose Refinement using Fully Differentiable Forces. ***The Eighth International Workshop on Egocentric Perception, Interaction and Computing (EPIC) at CVPR 2021***. arXiv:2105.08196

Kiremitçi, I., Yilmaz, Ö, Çelik, E., Shahdloo, M., **Huth, A.G.**, & Çukur, T. (2021) Attentional Modulation of Hierarchical Speech Representations in a Multitalker Environment. ***Cerebral Cortex*** doi: 10.1093/cercor/bhab136

Antonello, R. J., Beckage, N., Turek, J. S., & **Huth, A. G.** (2021) Selecting Informative Contexts Improves Language Model Finetuning. ***Association for Computational Linguistics and International Joint Conference on Natural Language Processing (ACL-IJCNLP 2021)***. arXiv:2005.00175

Mahto, S., Vo, V. A., Turek, J. S., & **Huth, A. G.** (2021) Multi-timescale representation learning in LSTM Language Models. ***International Conference on Learning Representations (ICLR) 2021***. OpenReview: 9ITXiTrAoT

Jain, S., Vo, V. A., Mahto, S., LeBel, A. I., Turek, J. S., & **Huth, A. G.** (2020) Interpretable multi-timescale models for predicting fMRI responses to continuous natural speech. ***Advances in Neural Information Processing Systems (NeurIPS) 2020*** OpenReview: kOiyWvWJIHJ

Oldfield, C. S., Grossrubatscher, I., Chavez, M., Hoagland, A., **Huth, A. G.**, Carroll, E. C., Prendergast, A., Qu, T., Gallant, J. L., Wyart, C., & Isacoff, E. Y. (2020) Experience, circuit dynamics and forebrain recruitment in larval zebrafish prey capture. ***eLife*** doi: 10.7554/eLife.56619

Scotti, P. S., Kulkarni, A., Mazor, M., Klapwijk, E., Yarkoni, T., & **Huth, A. G.** (2020) EduCortex: browser-based 3D brain visualization of fMRI meta-analysis maps. ***The Journal of Open Source Education (JoSE)*** doi: 10.21105/jose.00075

Turek, J. S., Jain, S., Vo, V., Capota, M., **Huth, A. G.**, & Willke, T. L. (2020) Approximating Stacked and Bidirectional Recurrent Architectures with the Delayed Recurrent Neural Network. ***Proceedings of the 37th International Conference on Machine Learning, (ICML) 2020***, 13-18 Jul 2020 arXiv:1909.00021

Zhang, Z., Yang, Z., Ma, C., Luo, L., **Huth, A. G.**, Vouga, E., & Huang, Q. (2020) Deep generative modeling for scene synthesis via hybrid representations. ***ACM Transactions on Graphics (TOG)*** doi: 10.1145/3381866

Deniz, F., Nunez-Elizalde, A. O., **Huth, A. G.**, & Gallant, J. L. (2019) The representation of semantic information across human cerebral cortex during listening versus reading is invariant to stimulus modality. ***The Journal of Neuroscience*** doi: 10.1523/JNEUROSCI.0675-19.2019

Nunez-Elizalde, A. O., **Huth, A. G.**, & Gallant, J. L. (2019) Voxelwise encoding models with non-spherical multivariate normal priors. ***NeuroImage*** doi: 10.1016/j.neuroimage.2019.04.012

Matusz, P. J., Dikker, S., **Huth, A. G.**, & Perrodin, C. (2019) Are We Ready for Real-world Neuroscience? ***Journal of Cognitive Neuroscience***. doi: 10.1162/jocn_e_01276

Jain, S., & **Huth, A. G.** (2018) Incorporating Context into Language Encoding Models for fMRI. ***Advances in Neural Information Processing Systems (NeurIPS) 2018***. doi: 10.1101/327601

Hamilton, L. S., & **Huth, A. G.** (2018) The revolution will not be controlled: natural stimuli in speech neuroscience. ***Language, Cognition and Neuroscience***. doi: 10.1080/23273798.2018.1499946

Turek, J., & **Huth, A. G.** (2018) Efficient, sparse representation of manifold distance matrices for classical scaling. In ***Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)***, Salt Lake City, June 2018. arxiv:1705.10887.pdf

de Heer, W. A.*, **Huth, A. G.***, Griffiths, T. L., Theunissen, F. E., & Gallant, J. L. (2017) The hierarchical cortical organization of human speech processing. ***The Journal of Neuroscience***, 3267-16. *(* these authors contributed equally)* doi: 10.1523/jneurosci.3267-16.2017

Nishimoto, S., **Huth, A. G.**, Bilenko, N. Y., & Gallant, J. L. (2017). Eye movement-invariant representations in the human visual system. ***Journal of Vision***. doi: 10.1167/17.1.11

Huth, A. G., Lee, T., Nishimoto, S., Bilenko, N. Y., Vu, A. T., & Gallant, J. L. (2016). Decoding the semantic content of natural movies from human brain activity. ***Frontiers in Systems Neuroscience***. doi: 10.3389/fnsys.2016.00081

Çukur, T., **Huth, A. G.**, Nishimoto, S., & Gallant, J. L. (2016). Functional Subdomains within Scene-Selective Cortex: Parahippocampal Place Area, Retrosplenial Complex, and Occipital Place Area. ***The Journal of Neuroscience,*** *36*(40), 10257-10273. doi: 10.1523/jneurosci.4033-14.2016

Huth, A. G., de Heer, W. A., Griffiths, T. L., Theunissen, F. E., & Gallant, J. L. (2016). Natural speech reveals the semantic maps that tile human cerebral cortex. ***Nature***. 532, 453-458. doi: 10.1038/nature17637

Gao, J. S., **Huth, A. G.**, Lescroart, M. D. & Gallant, J. L. (2015). Pycortex: an interactive surface visualizer for fMRI. ***Frontiers in Neuroinformatics***. 9:23. doi: 10.3389/fninf.2015.00023

Hamilton, L. S., Sohl-Dickstein, J., **Huth, A. G.**, Carels, V. M., Deisseroth, K., & Bao, S. (2013). Optogenetic activation of an inhibitory network enhances functional connectivity in auditory cortex. ***Neuron,*** *80*(4), 1066-1076. doi: 10.1016/j.neuron.2013.08.017

Çukur, T., **Huth, A. G.**, Nishimoto, S., & Gallant, J. L. (2013). Functional Subdomains Within Human FFA. ***The Journal of Neuroscience,*** *33*(42), 16748-16766. doi: 10.1523/jneurosci.1259-13.2013

Çukur, T., Nishimoto, S., **Huth, A. G.**, & Gallant, J. L. (2013). Attention during natural vision warps semantic representation across the human brain. ***Nature Neuroscience,*** *16*, 763-770. doi: 10.1038/nn.3381

Huth, A. G., Nishimoto, S., Vu, A. T., & Gallant, J. L. (2012). A continuous semantic space describes the representation of thousands of object and action categories across the human brain. ***Neuron,*** *76*(6), 1210-1224. doi: 10.1016/j.neuron.2012.10.014

Gastpar, M. C., Gill, P. R., **Huth, A. G.**, & Theunissen, F. E. (2010). Anthropic correction of information estimates and its application to neural coding. ***IEEE Transactions on Information Theory,*** *56*(2), 890-900. doi: 10.1109/tit.2009.2037053

Milosavljevic, M.*, Malmaud, J.*, **Huth, A.***, Koch, C., & Rangel, A. (2010). The drift diffusion model can account for value-based choice response times under high and low time pressure. ***Judgement & Decision Making,*** *5*, 437-449. *(* these authors contributed equally)* doi: 10.2139/ssrn.1901533

Saenz, M., Lewis, L. B., **Huth, A. G.**, Fine, I., & Koch, C. (2008). Visual Motion Area MT+ Responds to Auditory Motion in Human Sight-Recovery Subjects. ***The Journal of Neuroscience,*** *28*(20), 5141-5148. doi: 10.1523/jneurosci.0803-08.2008

Preprints

Tang., J., LeBel., A., Jain, S., & **Huth, A. G.** Semantic reconstruction of continuous language from non-invasive brain recordings. doi: 10.1101/2022.09.29.509744

LeBel, A., Wagner, L., Jain, S., Adhikari-Desai, A., Gupta, B., Morgenthal, A., Tang, J., Xu, L., & **Huth, A. G.** A natural language fMRI dataset for voxelwise encoding models. doi: 10.1101/2022.09.22.509104

Tang, J., LeBel, A., & **Huth, A. G.** Cortical Representations of Concrete and Abstract Concepts in Language Combine Visual and Linguistic Representations. doi: 10.1101/2021.05.19.444701

Huth, A. G., Griffiths, T. L., Theunissen, F. E., & Gallant, J. L. PrAGMATiC: a Probabilistic and Generative Model of Areas Tiling the Cortex. arXiv:1504.03622

Honors & Awards

Kavli Foundation Frontiers Fellow **2019 & 2022**

Association for Psychological Science Rising Star **2019**

Whitehall Foundation Research Award	**2019**
Alfred P. Sloan Research Fellow	**2018**
SCET Delta Prize (to Caseforge, Inc.)	**2016**
Burroughs Wellcome Fund Career Award at the Scientific Interface	**2016**
Allen Institute for Brain Science Next Generation Leader	**2016**
Dingwall Neurolinguistics Research Fellowship	**2012**
Caltech Summer Undergraduate Research Fellowship (SURF)	**2005**

Invited Talks

Collaborative Research in Computational Neuroscience (CRCNS) PI Meeting, Atlanta, GA Kavli Foundations of Science Israeli-American Symposium, Irvine, CA Ecole Normale Superieure, Paris, France California Cognitive Science Conference (Berkeley Cog. Sci. Student Assn.), Berkeley, CA *(virtual)* Northwestern U. Feinberg School of Medicine Neurology Research Seminar, Chicago, IL *(virtual)* Columbia University Psychology Department Seminar Series, New York, NY *(virtual)* Neuroscience & AI Seminar Series, Intel Labs, Hillsboro, OR *(virtual)* Banff International Research Seminar on Dynamical Principles of Biological and Artificial Neural Networks, Banff, Alberta, Canada *(virtual)*	**2022**
Society for Neurobiology of Language, Symposium *(virtual)* Spinoza Centre for Neuroimaging, Amsterdam, Netherlands *(virtual)* Computational Sensorimotor Learning Seminar, MIT, Cambridge, MA *(virtual)*	**2021**
Argentinian Society for Neuroscience Research (SAN), Buenos Aires, Argentina *(virtual)* Neuroimaging Seminar Series, University of California, Berkeley, CA *(virtual)*	**2020**
Collaborative Research in Computational Neuroscience (CRCNS) PI Meeting, Austin, TX Center for Cognitive Neuroscience Workshop on Semantics, Dartmouth College, Hanover, NH National Institutes of Mental Health (NIMH), Bethesda, MD Plenary lecture, SALC VII Conference, Aarhus, Denmark	**2019**
MIND Summer School, Dartmouth College, Hanover, NH "Neurobiology of Cognition" Gordon Research Conference, Sunday River, ME Computational and cognitive neuroscience summer school, Suzhou, China University of Texas at San Antonio, San Antonio, TX Columbia University, New York, NY Baylor College of Medicine, Houston, TX	**2018**
Max Planck Institute, Leipzig, Germany University of California, Santa Barbara, CA Mind Science Foundation, San Antonio, TX Science@Cal Lecture Series, Berkeley, CA Starkey Hearing Technologies, Berkeley, CA yConf, San Francisco, CA South by Southwest (SXSW), Austin, TX	**2017**

Showcase, Allen Institute, Seattle, WA **2016**
Duke University, Durham, NC
Dolby, San Francisco, CA
BMC seminar, UCLA, Los Angeles, CA
University of Texas, Austin, TX

Pattern Recognition in Affective Neuroscience workshop, Society for Affective Science, Oakland, CA **2015**
Memory and Decision Making Lunch, Stanford University, Palo Alto, CA
Computer Graphics & Visualization Seminar, College of Charleston, Charleston, SC
Dartmouth College, Hanover, NH
International Computer Science Institute, Berkeley, CA

Cognition and Computation Reading Group, Stanford University, Palo Alto, CA **2014**
Neurospin, Saclay, France

Vision Lunch, Stanford University, Palo Alto, CA **2013**

Service

Member

Organizing Committee Co-Chair, Kavli Frontiers of Science Israeli-American Symp. 2024 **2022-present**
Organizing Committee, NeurIPS 2022 Workshop **2022**
"Memory in Artificial and Real Intelligence (MemARI)"
Organizing Committee, ICLR 2021 Workshop **2021**
"How Can Findings About The Brain Improve AI Systems?"
Faculty Search Committee, Biomedical Engineering / Electrical & Computer Engineering **2020-2021**
Brain Imaging Center cluster search, The University of Texas at Austin
CRCNS Review Panel, National Science Foundation (NSF) **2020**
(Ad hoc) BRAIN Initiative U01 Study Section, National Institutes of Health (NIH) **2020**
Polymathic Scholars Steering Committee, The University of Texas at Austin **2017-present**
Organizing Committee, Kavli Frontiers of Science Israeli-American Sym. 2022 **2019-2022**
Faculty Search Committee, Department of Computer Science, The University of Texas at Austin **2019-2020**
Organizing Committee, NeurIPS 2019 Workshop **2019**
"Context & Compositionality in Biological and Artificial Neural Systems"
Allen Institute Next Generation Leaders Council **2016-2019**
Faculty Search Committee, Department of Neuroscience, The University of Texas at Austin **2018-2019**
Faculty Evaluation Committee, Department of Computer Science, The University of Texas at Austin **2018-present**

Reviewer

NeurIPS, Nature, Neuron, Nature Neuroscience, Nature Human Behaviour, Proceedings of the National Academy of Sciences (PNAS), Current Biology, eLife, Communications Biology, Journal of Neuroscience, Nature Communications, Human Brain Mapping, NeuroImage, PLoS Computational Biology, Frontiers in Human Neuroscience, Journal of Cognitive Neuroscience

Student Representative to Helen Wills Neuroscience Institute Executive Committee **2012-2013**
& Director Search Committee

Funding Sources

Unless otherwise noted, these are single-PI awards to Alexander Huth.

NIH R01 (1R01DC020088) - $1,896,690 **2021-2026**
"CRCNS: Discovering Computational Principles of Language Processing in the Brain"
PIs: Alexander Huth, Prof. Leila Wehbe (CMU)

Facebook, Inc. - $513,123 **2020-2021**
"Understanding the Saliency of Distractors using fMRI and EEG"
PIs: Prof. Liberty Hamilton (UT), Alexander Huth

Intel Research Grant - $85,000 **2021**
"States vs. weights"

Intel Research Grant - $85,000 **2020**
"Social information gain: learning what is good to learn"

Whitehall Foundation Research Award - $225,000 **2019-2022**
"Does visual experience organize language cortex?"

Intel Research Grant - $85,000 **2019**
"Multi-timescale language networks"

Alfred P. Sloan Research Fellowship - $65,000 **2018-2019**
These two-year fellowships are awarded yearly to 126 researchers in recognition of distinguished performance and a unique potential to make substantial contributions to their field.

Burroughs Wellcome Fund Career Award at the Scientific Interface - $500,000 **2016-2021**
This award provides postdoctoral and research funding for quantitative biologists or neuroscientists transitioning into faculty positions. It provides up to two years of postdoctoral funding and three years of faculty-level research funding.
PI (mentored portion): Prof. Jack Gallant (UC Berkeley)
PI (independent portion): Alexander Huth

Student Funding

Dingwall Neurolinguistics Dissertation Fellowship - $30,000 **2012-2013**
Two of these fellowships are awarded yearly to graduate students doing work in the field of neurolinguistics.

Summer Undergraduate Research Fellowship - $5,000 **2006**
This fellowship supported my research as an undergraduate in Christof Koch's lab at Caltech.

Conference Abstracts

2022

Tang, J., LeBel, A. I., Jain, S., & **Huth, A. G.** (2022) Semantic decoding of continuous language from non-invasive brain recordings. To be presented by JT at *Society for Neuroscience (SfN) 2022*.

Xu, L., Field, A., Hashemgeloogerdi, S., Desai, M., Hamilton, L. S., & **Huth, A. G.** (2022) Brain representations of distracting sounds during continuous story listening. To be presented by LX at *Society for Neuroscience (SfN) 2022*.

Jain, S., & **Huth, A. G.** (2022) Is the semantic system organized based on semantics or timescales? To be presented by SJ at *Society for Neuroscience (SfN) 2022*.

Toneva, M., Vo, V. A., Turek, J., Jain, S., Michelmann, S., Capotă, M., **Huth, A. G.**, Hasson, U. & Norman, K. (2022) Memory for Long Narratives. Presented by MT at *Context and Episodic Memory Symposium (CEMS) 2022*.

LeBel, A., Jain, S., Ivry, R. B., & **Huth, A. G.** (2022) Mapping the timescales of language representations in the cerebellum. Presented by AL at *Society for the Neurobiology of Language (SNL) 2022*.

Jain, S. & **Huth, A. G.** (2022) Discovering distinct patterns of semantic integration across cortex using natural language encoding models for fMRI. Presented by SJ at *Neurobiology of Language: Key Issues and Ways Forward II, MPI 2022*.

2021

Jain, S. & **Huth, A. G.** (2021) Discovering distinct patterns of semantic integration across cortex using natural language encoding models for fMRI. Presented by SJ at *Combinatorics, Leipzig Lectures on Language 2021*.

Antonello, R. & **Huth, A. G.** (2021) Low-Dimensional Structure in the Space of Language Representations is Reflected in Brain Responses. Presented by RA at *Society for the Neurobiology of Language (SNL) 2021*.

Tang, J. & **Huth, A. G.** (2021) Cortical Representations of Concrete and Abstract Concepts in Language Combine Visual and Linguistic Representations. Presented by JT at *Society for the Neurobiology of Language (SNL) 2021*.

Jain, S.*, Vo, V. A.*, Beckage, N. M., Chien, H. S., Obinwa, C., & **Huth, A. G.** (2021) A unifying computational account of temporal processing in natural speech across cortex. Presented by SJ at *Society for the Neurobiology of Language (SNL) 2021*.

Vo, V. A.*, Jain, S.*, Beckage, N. M., Chien, H. S., Obinwa, C., & **Huth, A. G.** (2021) A unifying computational account of temporal processing in natural speech across cortex. Presented by VV at *Society for Neuroscience (SfN) 2021*.

2020

Jain, S., LeBel, A. I. & **Huth, A. G.** (2020) Uncovering compositional semantics in fMRI language encoding with transformers. Presented by SJ at *From Neuroscience to Artificially Intelligent Systems (NAISyS), CSHL 2020*.

Jain, S., LeBel, A., & **Huth, A. G.** (2020) Natural language encoding models for fMRI reveal distinct patterns of semantic integration across cortex. Presented by SJ at *Society for the Neurobiology of Language (SNL) 2020*.

2019

Jain, S., & **Huth, A. G.** (2019) Contextualized Language Information Yields Massive Improvements in Encoding Models for Human fMRI. Presented by SJ at *Asilomar 2019*.

Jain, S., LeBel, A., & **Huth, A. G.** (2019) Improving language encoding for fMRI with transformers. Presented by SJ at *Society for Neuroscience 2019*.

Tang, J., LeBel, A., & **Huth, A. G.** (2019) Visually grounded language encoding models for fMRI highlight the influence of sensory experience on semantic representations. Presented by JT at *Society for Neuroscience 2019*.

LeBel, A., Jain, S., & **Huth, A. G.** (2019) Voxelwise encoding models of the cerebellum during natural speech processing. Presented by AL at *Society for Neuroscience 2019*.

Xu, L., LeBel, A., & **Huth, A. G.** (2019) Sparse experimental design for encoding models. Presented by LX at *Society for Neuroscience 2019*.

Griffith, I. M., LeBel, A., Jain, S., **Huth, A. G.**, & Hamilton, L. S. (2019) Phonological feature and pitch classification with a branched convolutional neural network. Presented by IG at *Society for Neuroscience 2019* and *Advances and Perspectives in Auditory Neuroscience (APAN) 2019*.

Kiremitci, I., Yilmaz, O., **Huth, A. G.**, Keles, U., & Çukur, T. (2019) Attentional modulation of articulatory and semantic representations during multi-speaker natural speech perception. Presented by IK at *Society for Neuroscience 2019*.

Huth, A. G. (2019) Unraveling the relationship between vision and language in the human brain. Presented at *Israeli-*

American Kavli Frontiers of Science Symposium 2019.

2018

Popham, S. F., **Huth, A. G.**, Bilenko, N. Y., & Gallant, J. L. (2018) Visual and linguistic semantic representations are aligned at the boundary of human visual cortex. Presented by SP at *Cosyne 2018*.

2017

Wehbe, L., Nunez-Elizalde, A. O., **Huth, A. G.**, Deniz, F., Bilenko, N. Y., & Gallant, J. L. (2017) Deep Multi-view Representation Learning of Brain Responses to Natural Stimuli. Presented by LW at *Cognitive Computational Neuroscience (CCN) 2017*.

Nunez-Elizalde, A. O., **Huth, A. G.**, & Gallant, J. L. (2017) Improving Predictive Models Using Non-Spherical Gaussian Priors. Presented by AONE at *Cognitive Computational Neuroscience (CCN) 2017*.

Huth, A. G. (2017) Using voxelwise encoding models to study cortical representations. Talk at *Organization for Human Brain Mapping (OHBM) 2017*.

Nunez-Elizalde, A. O., **Huth, A. G.**, Oliver, M., & Gallant, J. L. (2017) Unstated assumptions in representational similarity analysis. Presented by AONE at *Organization for Human Brain Mapping (OHBM) 2017*.

Wehbe, L., **Huth, A. G.**, Deniz, F., Kieseler, M.-L., & Gallant, J. L. (2017) Automated simulation of fMRI experiments. Presented by AH as poster and talk at *Organization for Human Brain Mapping (OHBM) 2017*.

Huth, A. G. (2017) Using natural stimuli study the human cortex. Talk at *Cognitive Neuroscience Society (CNS) 2017*.

2016

Huth, A. G., Popham, S. F., Bilenko, N. Y., & Gallant, J. L. (2016) The visual-linguistic interface: anatomically aligned semantic representations of vision and language. Presented by AH and SP at *Society for Neuroscience 2016*.

Huth, A. G., & Gallant, J. L. (2016) Using voxel-wise modeling of fMRI responses to natural stories and movies to study semantic representations in cortex. Talk at *Society for Neuroscience 2016*.

Nunez-Elizalde, A. O., **Huth, A. G.**, & Gallant, J. L. (2016) Improving predictive models using non-spherical Gaussian priors. Presented by AONE at *Society for Neuroscience 2016*.

Imamoglu, F., **Huth, A. G.**, & Gallant, J. L. (2016) The representation of semantic information during listening and reading. Presented by FI at *Society for Neuroscience 2016*.

Huth, A. G., Popham, S. F., Bilenko, N. Y., & Gallant, J. L. (2016) Semantic representations of language and vision revealed by fMRI with natural stimuli. Presented at *Collaborative Research in Computational Neuroscience (CRCNS) PI Meeting 2016*.

Feather, J., **Huth, A. G.**, & Gallant, J. L. (2016) Tikhonov regularized regression for voxel-wise modeling of fMRI responses to natural stories. Presented by JF at *Pattern Recognition in Neuroimaging (PRNI) 2016* and *Organization for Human Brain Mapping (OHBM) 2016*.

2015

Nishida, S., **Huth, A. G.**, Gallant, J. L., & Nishimoto, S. (2015) Word statistics in large-scale texts explain the human cortical semantic representation of objects, actions, and impressions. Presented by S. Nishida at *Society for Neuroscience 2015*.

Oldfield, C. S., **Huth, A.**, Chavez, M., Hoagland, A., Carroll, E. C., Prendergast, A., Wyart, C., & Isacoff, E. Y. (2015). Experience shapes prey capture behavior and neural representations in larval zebrafish. Presented by CSO at *Society for Neuroscience 2015*.

Abdel-Ghaffar, S., Gallant, J., **Huth, A.**, Stansbury, D., Cowen, A., & Bishop, S. (2015). Using voxel-wise encoding models to study occipito-temporal representations of the animacy, semantic and affective content of natural images. Presented by SA-G at *Vision Sciences Society Meeting*.

Huth, A. G., de Heer, W.A., Griffiths, T. L., Theunissen, F. E., & Gallant, J. L. (2015). PrAGMATiC: a Probabilistic and Generative Model of Areas Tiling the Cortex. Presented at *Cosyne 2015*.

2014

Huth, A. G., Griffiths, T. L., & Gallant, J. L. (2014). PrAGMATiC: a Probabilistic and Generative Model of Areas Tiling the Cortex. Presented at *Society for Neuroscience 2014*.

Çukur, T., Nishomoto, S., **Huth, A. G.**, & Gallant, J. L. (2014). Visual search for action categories alters semantic representation in the human brain. Presented by TÇ at *Society for Neuroscience 2014*.

Abdel-Ghaffar, S. A., **Huth, A. G.**, Stansbury, D. E., Cowen, & A. S., Bishop, S. J. (2014). Intertwined affective and semantic representations of the world around us: Applying voxel-wise encoding models to studying the cortical representation of emotional natural images. Presented by SA-G at *Society for Neuroscience 2014*.

Huth, A.G., Griffiths, T.L., & Gallant, J.L. (2014). PrAGMATiC: a Probabilistic and Generative Model of Areas Tiling the Cortex. Presented by JLG at *IEEE EMBS Brain Grand Challenges Conference*.

2013

Huth, A. G., de Heer, W. A., Theunissen, F. E., Griffiths, T. L., & Gallant, J. L. (2013). Cortical organization of semantic representations for natural speech revealed by fMRI. Presented at *Society for Neuroscience 2013*.

de Heer, W. A., **Huth, A. G.**, Griffiths, T. L., Gallant, J. L., & Theunissen, F. E. (2013). A combined model of speech perception indicates hierarchical representation of speech in the brain. Presented by WAdH at *Society for Neuroscience 2013*.

Bilenko, N. Y., **Huth, A. G.**, Nishimoto, S., & Gallant, J. L. (2013) Functional cross-subject mapping predicts brain activity to novel natural movies and speech. Presented by NYB at *Society for Neuroscience 2013*.

Gao, J. S., **Huth, A. G.**, & Gallant, J. L. (2013) Pycortex: a Python program for interactive surface visualization of fMRI data. Presented by JSG at *Society for Neuroscience 2013*.

Nishimoto, S., **Huth, A. G.**, Bilenko, N. Y., & Gallant, J. L. (2013). Human visual areas invariant to eye movements during natural vision. Presented by SN at the *Vision Sciences Society Meeting*.

2012

Hamilton, L. S., Sohl-Dickstein, J., **Huth, A. G.**, & Bao, S. (2012). Optogenetic stimulation of an inhibitory network enhances feedforward connectivity in auditory cortex. Presented by LSH at *Society for Neuroscience 2012*.

Çukur, T., **Huth, A. G.**, Nishomoto, S., Vu, A. T., & Gallant, J. L. (2012). Voxel-wise category tuning curves reveal several functional subdomains within human FFA. Presented by TÇ at *Society for Neuroscience 2012*.

Çukur, T., Nishimoto, S., **Huth, A.G.** & Gallant, J.L. (2012). Category-based attention shifts tuning toward the target object category during natural visual search. Presented by TÇ at *Vision Sciences Society 2012*.

Huth, A. G., Lee, T., Nishimoto, S., Vu, A. T., & Gallant, J. L. (2012). Decoding semantic content from fMRI responses to natural movies. Presented at *Cosyne 2012*.

2011

Çukur, T., Nishimoto, S., **Huth, A. G.**, & Gallant, J. L. (2011) Object-based attention shifts semantic selectivity toward an attended object category during natural vision. Presented by TÇ at *Society for Neuroscience 2011*.

2010

Huth, A. G., Nishimoto, S., Vu, A. T., Griffiths, T. L., & Gallant, J. L. (2010). Using linguistic models to predict and decode fMRI responses to natural movies. Presented at *Society for Neuroscience 2010*.

Bilenko, N. Y., Vu, A. T., Naselaris, T., **Huth, A. G.**, & Gallant, J. L. (2010). How much tuning information is lost when we average across subjects in fMRI experiments? Presented by NYB at *Vision Sciences Society Meeting*.

2009

Huth, A. G., Cadieu, C. F., Dale, C., Weber, D., Pantazis, D., Darvas, F., Leahy, R., Simpson, G., & Koepsell, K. (2009). Detecting functional connectivity in networks of phase-coupled neural oscillators. *Frontiers in Systems Neuroscience. Conference Abstract: Computational and systems neuroscience*. Presented at *Cosyne*.

2008

Cerf, M., Harel, J., **Huth, A. G.**, Einhäuser, W., & Koch, C. (2008). Decoding what people see from where they look: predicting visual stimuli from scanpaths. *WAPCV Conference Proceedings*. Presented by MC at *Workshop on Attention in Cognitive Systems*.

Huth, A. G., Wilimzig, C., Zinn, L., & Koch, C. (2008). The indirect role of saliency in selection for short-term visual memory. Presented at the *Vision Sciences Society Meeting*.

Teaching Experience

Neural Networks, University of Texas at Austin **2022-present**

CS 342, an upper-division undergraduate Computer Science course that covers neural networks from the basics (gradient backpropagation, feedforward networks) to advanced topics (transfer learning, self-attention), with applications to computer vision, speech recognition, and natural language processing.

Neurohackademy 2020 Summer School, Seattle, WA *(held virtually)* **2020**

Taught tutorial on Tikhonov regression for fMRI encoding models; mentored student projects.

Mapping the Human Cortex, University of Texas at Austin **2020-present**

NSC 110, an honors seminar where each week we discuss the function and anatomy of one area of cortex. Students read, participate in discussions, and each create their own inforgraphic map of the human cortex. Example course website: https://github.com/alexhuth/cortex-sp2021

Neurohackademy 2019 Summer School, Seattle, WA **2019**

Mentored students and oversaw their projects during week-long neuroimaging hackathon at this summer school. One project was eventually published by Scotti et al.: doi: 10.21105/jose.00075.

Neuro Data Analysis in Python, University of Texas at Austin **2018-present**

NEU 365 P, a neuroscience undergraduate course covering everything from basic python programming to machine learning, with applications to analyzing neuroscience data. Example course website: https://github.com/alexhuth/ndap-fa2018

MIND Summer School, Dartmouth College **2018**

Taught module on voxel-wise encoding models and regression analysis for fMRI data.

CCNSS Summer School, Suzhou, China **2018**

Co-taught module on low-dimensional spaces and regression for the Computational and cognitive neuroscience summer school at Cold Spring Harbor Asia.

Neural Computation, University of Texas at Austin **2017-2021**

CS 395 T graduate level Computer Science course on inferring what algorithms are used by computational systems. Using black box system identification to understand the function of real neural/brain systems. Using gradient propagation and other methods to understand the function of artificial neural networks. Ex. course website: https://github.com/alexhuth/neuralcomputation-sp2020

Machine Learning for Neuroimaging, University of Buenos Aires (UBA) **2017**

Five-day (15-hour) intensive course on machine learning, system identification, and doing neuroscience with natural stimuli. Taught at the Escuela de Ciencias Informaticas (ECI) winter school in 2017.

Neuroscience Bootcamp, University of California, Berkeley **2011-2013**

Developed and taught intensive one-day neuroimaging laboratory tutorial for incoming neuroscience graduate students in 2011 and 2012. Taught lecture on cognitive neuroimaging and fMRI in 2013.

Introductory Undergraduate Neuroscience, University of California, Berkeley **2010-2011**

Graduate Student Instructor for MCB 61: Brain, Mind, and Behavior (700+ student introductory class) in 2010. Head Graduate Student Instructor for same in 2011. Instructor: David Presti.

Introductory Probability and Statistics, California Institute of Technology, Pasadena **2008**

Teaching assistant for CNS 286: Introduction to Probability, Statistics, and Random Processes for graduate students. Instructor: Leonard Mlodinow.