

**Jenelle Feather**  
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## Education

**Massachusetts Institute of Technology** Sept 2016-Sept 2022  
PhD in Brain and Cognitive Sciences  
Thesis: *Evaluating Machine Learning Models of Sensory Systems*

**Massachusetts Institute of Technology** Sept 2009-June 2013  
Bachelor of Science in Physics  
Bachelor of Science in Brain and Cognitive Sciences

## Research Groups

**Carnegie Mellon University** September 2025  
Assistant Professor, Neuroscience Institute and Psychology

**Flatiron Institute Center for Computational Neuroscience** Oct 2022-August 2025  
Research Fellow, Advisors Eero Simoncelli & SueYeon Chung

**Laboratory for Computational Audition, MIT** Sept 2016-Sept 2022  
PhD Candidate, Advisor Josh McDermott

**Google** June 2019-Sept 2019  
Research Intern, Machine Perception

**Lawrence Livermore National Lab** June 2018-Aug 2018  
CSGF Summer Practicum, Center for Applied Scientific Computing

**UC Berkeley & UCSF Graduate Program in BioEngineering** Sept 2015-Aug 2016  
PhD Student (Transferred)

**Kanwisher Lab, MIT** June 2013-Aug 2015  
Research Assistant, Advisor Nancy Kanwisher

**MITRE Corporation** May 2012-Sept 2012  
Summer Intern, ISR Division

**Moore Lab, MIT** Jan 2010-Aug 2011  
Undergraduate Research Assistant, Advisor Dominique Pritchett

## Fellowships

**Friends of McGovern Institute Graduate Fellowship** 2020-2021

**Department of Energy Computational Science Graduate Fellowship** 2016-2020

**National Science Foundation Graduate Fellowship (declined)** 2016

## Journal Publications

Model metamers reveal divergent invariances between biological and artificial neural networks. **Feather, J.**, Leclerc, G., Mądry, A., McDermott, J. *Nature Neuroscience* (2023).

Many, but not all, deep neural network audio models predict brain responses and exhibit hierarchical layer-region correspondence. Tuckute, G.\* **Feather, J.\***, Boebinger, D., McDermott, J. *PLOS Biology* (2023). \*co-first authors

Intracranial recordings from human auditory cortex reveal a neural population selective for song. Norman-Haignere, S., **Feather, J.**, Brunner, P., Ritaccio, S., McDermott, J., Schalk, G., and Kanwisher, K. *Current Biology*. (2022).

Representational similarity precedes category selectivity in the developing ventral visual pathway. Cohen, M., Dilks, D., Koldewyn, K., Weigelt, S., **Feather J.**, Kell, A., Keil, B., Fischl, B., and Zöllei, L., Wald, L. Saxe, R., Kanwisher K. *Neuroimage*. (2019).

Connectivity precedes function in the development of the visual word form area. Saygin, Z., Osher, D., Norton, E., Youssoufian, D., Beach, S., **Feather J.**, Gaab, N., Gabrieli, J., & Kanwisher, K. *Nature Neuroscience*. (2016).

Open Science Collaboration. Estimating the reproducibility of psychological science. *Science*. (2015).

Open Science Collaboration. An Open, Large-Scale, Collaborative Effort to Estimate the Reproducibility of Psychological Science. *Perspectives on Psychological Science*. (2012).

### Review Articles

Unveiling the benefits of multitasking in disentangled representation formation. **Feather, J.** and Chung, S. *Trends in Cognitive Science*. (2023).

### Conference Proceedings

Discriminating image representations with principal distortions. **Feather, J\***, Lipshutz, D.\*, Harvey, S., Williams, A., Simoncelli, E. International Conference on Learning Representations (2025). \*co-first authors

Contrastive-Equivariant Self-Supervised Learning Improves Alignment with Primate Visual Area IT. Yerxa, T., **Feather, J.**, Simoncelli, E., Chung, S. *Advances in Neural Information Processing Systems* (2024).

A Spectral Theory of Neural Prediction and Alignment. Canatar, A.\*, **Feather, J.\***, Wakhloo, A., and Chung, S. *Advances in Neural Information Processing Systems* (2023, spotlight). \*co-first authors

Neural Population Geometry Reveals the Role of Stochasticity in Robust Perception. Dapello, J.\*, **Feather, J.\***, Le, H.\*, Marques, T., Cox, D., McDermott, J., DiCarlo, J.J. and Chung, S. *Advances in Neural Information Processing Systems* (2021). \*co-first authors

Deep Network Perceptual Losses for Speech Denoising. Saddler MR.\*, Francl A.\*, **Feather J.**, Qian K. Qian, Zhang Y., & McDermott JH. *Interspeech* (2021). \*co-first authors

Metamers of neural networks reveal divergence from human perceptual systems. **Feather J.**, Durango A. Gonzalez R., & McDermott J. *Advances in Neural Information Processing Systems* (2019).

Untangling in Invariant Speech Recognition. Stephenson C., **Feather J.**, Padhy S. Elibol O., Tang H., McDermott J., Chung S. *Advances in Neural Information Processing Systems* (2019).

Auditory texture synthesis from task-optimized convolutional neural networks. **Feather J.** & McDermott, J. *Conference on Cognitive Computational Neuroscience* (2018). (Podium Presentation).

### Invited Talks and Panels

Mathematics of Neuroscience and AI Conference	May 2025
McGovern 25th Anniversary Symposium, MIT	April 2025
Bridging the senses symposium, ARO 2025	February 2025
Speech Hearing Language Science Colloquium, City University of New York	February 2025
Detection and Classification of Acoustic Scenes and Events, Keynote Speaker	October 2024
Battle of the (Brain-Model-Mapping) Metrics, CCN 2024	August 2024
The Leadership Alliance Dana Neuroscience and Society Scholars Program	July 2024
Flation Institute Center for Computational Neuroscience Bi-Annual Retreat	June 2024
SIAM-Simons Undergraduate Summer Research Program, Career Panel	June 2024
Re-Align Workshop Panel Discussion, ICLR 2024	May 2024
Princeton Neuroscience Institute, Princeton University	April 2024
Center for Computational Brain Science, Brown University	March 2024
The geometry & dynamics of learning, Cosyne Workshops	March 2024
Neuroscience Institute, Carnegie Mellon University	January 2024
Cognition, Brain & Behavior Research Seminar, Harvard University	Nov 2023

<b>Junior Scientist Workshop on Theoretical Neuroscience, Janelia Campus</b>	Nov 2023
<b>Comparing artificial and biological networks, Cognitive Computational Neuroscience</b>	Aug 2023
<b>Junior Theoretical Neuroscience Workshop, Flatiron CCN</b>	June 2023
<b>Flatiron-Wide Machine Learning Meeting</b>	June 2023
<b>Auditory SPLASH, University of Pennsylvania</b>	April 2023
<b>Deep learning in brains, minds and machines, Brown, Guest Lecture</b>	April 2023
<b>Shared Visual Representations in Humans and Machines, NeurIPS Workshop</b>	Dec 2022
<b>Conference on Frontiers in Applied &amp; Computational Mathematics, NJIT</b>	May 2022
<b>Center for Computational Neuroscience, Flatiron Institute</b>	February 2022
<b>BCS-CSAIL Bridge, MIT</b>	November 2021
<b>Cog Lunch, MIT Department of Brain and Cognitive Sciences</b>	February 2021
<b>Social Cognitive Neuroscience Laboratory, MIT</b>	January 2021
<b>CBMM Panel Discussion: Should models of cortex be falsifiable?, MIT</b>	December 2020
<b>Computational Research in Boston and Beyond</b>	October 2020
<b>Scrutinizing Models of Brain Function, Cosyne Workshop</b>	March 2020

### Teaching Experience

<b>MIT Brain And Cognitive Sciences Project Mentor</b> Projects in the Science of Intelligence	Sept 2020-Dec 2020
<b>MIT Brain And Cognitive Sciences Teaching Assistant</b> Introduction to Neural Computation	Feb 2017-May 2017
<b>MGH/HST Martinos Center</b> Technical Assistant Functional MRI Visiting Fellowship, Multimodality Short Course	Sept 2013, April 2014, Sept 2014
<b>MIT's Concourse Program</b> Teaching Assistant Introduction to Classical Mechanics, Introduction to Electricity and Magnetism	Sept 2011-May 2013

### Mentoring Programs

<b>Flatiron Institute Summer Intern Program, Mentor</b>	2023, 2024
<b>Pennsylvania Governors School for the Sciences, Alumni Mentor</b>	2019,2023
<b>MIT Undergraduate Research Opportunities Program, Mentor</b>	2018-2022
<b>MIT BCS Postbaccalaureate Program, Mentor</b>	2018-2020
<b>Center for Brain Minds and Machines Summer Research Program, Mentor</b>	2017, 2020

### Professional Activities

<b>Choose Your Stimuli Wisely, JOV Special Issue Editor</b>	2025
<b>Flatiron Junior Theoretical Neuroscience Workshop, Organizer</b>	2025
<b>Cognitive Computational Neuroscience, Program Committee</b>	2025
<b>Model-optimized stimuli: more than just pretty pictures, VSS Symposium Organizer</b>	2025
<b>Brain-Score Advisory Board</b>	2024-Present
<b>Flatiron Institute Diversity Committee, Center Representative</b>	2023-2025
<b>Student Representative on BCS Department Head Search Committee</b>	2021
<b>Cosyne Workshop Organizer: Scrutinizing Models of Brain Function</b>	2020
<b>MIT Computational Tutorials, Seminar Organizer</b>	2016-2022
<b>Openmind Computing Cluster, Group Representative</b>	2016-2022
<b>MIT Undergraduate Reading Group in Audition, Organizer</b>	Fall 2012

## Honors and Awards

Top Reviewer Award (Complementary Registration), NeurIPS 2024	2024
Top 10% High-Scoring Reviewer Award (Complementary Registration), NeurIPS 2023	2023
Top 10% High-Scoring Reviewer Award (Complementary Registration), NeurIPS 2020	2020
Speed Up Green Up AI Hackathon: Most heroic achievement	2020
Travel award for NeurIPS	2019
MIT IBM Quest: Best Poster Award	2019
Travel award for ARO Annual MidWinter Meeting	2019
Travel award for Conference on Cognitive Computational Neuroscience	2018
Hans-Lukas Teuber Award for Outstanding Academics in BCS at MIT	2013

## Reviewing

**Journals:** Nature Communications, Nature Human Behavior, PLOS Biology, PLOS Computational Biology, Scientific Reports, Cell Reports, Entropy, i-Perception

**Conferences:** Neural Information Processing Systems (NeurIPS), International Conference on Machine Learning (ICML), International Conference on Learning Representations (ICLR), Cognitive Computational Neuroscience (CCN), Computational and Systems Neuroscience (COSYNE)

## Conference and Workshop Abstracts

Principal distortions for discrimination of image representations. **Feather, J\***, Lipshutz, D.\*, Harvey, S., Williams, A., Simoncelli, E. VSS Abstracts (2025). \*co-first authors

Changes in tuning curves, not neural population covariance, improve category separability in the primate ventral visual pathway. **Feather, J.**, Sha, L., Okazawa, G., Lo, N., Chung, S. Kiani, K. COSYNE Abstracts (2025).

Comparing image representations in terms of sensitivities to local distortions. Lipshutz, D.\*, **Feather, J\***, Harvey, S., Williams, A., Simoncelli, E. COSYNE Abstracts (2025). \*co-first authors

Contrastive-Equivariant self-supervised learning improves alignment with primate visual area IT. Yerxa, T., **Feather, J**, Simoncelli, E., Chung, S. COSYNE Abstracts (2025).

Comparing the local information geometry of image representations. **Feather, J\***, Lipshutz, D.\*, Harvey, S., Williams, A., Simoncelli, E. UniReps, NeurIPS Workshop (2024). \*co-first authors

Spectral theory of neural alignment and prediction. **Feather, J.\***, Canatar, A.\*, Wakhloo, A., Chung, S. From Neuroscience to Artificially Intelligent Systems (2024). \*co-first authors

Equivariant Self-Supervised Learning Improves IT Predictivity. Yerxa, T., **Feather, J**, Simoncelli, E., Chung, S. Conference on Cognitive Computational Neuroscience (2024).

Deep neural networks, trained on invariant recognition tasks, struggle to predict hierarchical invariance of speech representations in auditory cortex. Liao, G., Boebinger, D., Nourski, K., Howard, M., Garcia, C., Wychowski, T., Pilcher, W., **Feather, J.**, Norman-Haignere, S. Conference on Cognitive Computational Neuroscience (2024).

Geometric changes in monkey V4 and IT neural responses during visual category learning. **Feather, J.**, Sha, L., Okazawa, G., Lo, N., Chung, S., Kiani, R., Journal of Vision Abstr. (2024) (Podium Presentation).

A Spectral Theory of Neural Alignment and Prediction. Canatar, A.\*, **Feather, J.\***, Wakhloo, A., Chung, S. Cosyne Abstracts (2024). \*co-first authors

Model metamers complement existing benchmarks of biological and artificial neural network alignment. **Feather J.**, & McDermott, J. Computational and Systems Neuroscience (Cosyne) (2023)

Many But Not All Deep Neural Network Audio Models Predict Auditory Cortex Responses and Exhibit Hierarchical Layer-Region Correspondence. **Feather J.**, Tuckute, G., Boebinger, D., & McDermott, J. Association for Research in Otolaryngology Midwinter Meeting. (2023).

Many, but not all, deep neural network audio models predict auditory cortex responses and exhibit hierarchical layer-region correspondence. Tuckute, G., **Feather J.**, Boebinger, D., & McDermott, J. Cosyne Abstracts. (2022).

Adversarial training aligns invariances between artificial neural networks and biological sensory systems. **Feather J.**, Durango, A., Leclerc, G., Mađry, A., & McDermott, J. Cosyne Abstracts. (2021).

Adversarially robust training aligns auditory invariances between artificial neural networks and human observers. **Feather J.**, Durango, A., Leclerc, G., Mađry, A., & McDermott, J. Advances and Perspectives in Auditory Neuroscience (APAN). (2020).

Compression of sound texture statistics reveals low dimensional texture representation . Durango, A.\*, **Feather J.\***, & McDermott, J. Advances and Perspectives in Auditory Neuroscience (APAN). (2020). \*co-first authors

Model metamers reveal that deep neural network invariances differ from human perceptual invariances. **Feather J.** Durango, A., Gonzalez, R., & McDermott, J. Computational and Systems Neuroscience (Cosyne). (2020).

Hearing-impaired deep neural networks replicate behavioral deficits of hearing-impaired humans. Saddler, M., **Feather J.**, Francl, A., & McDermott, J. Computational and Systems Neuroscience (Cosyne). (2020).

Metamers of audio-trained deep neural networks. **Feather J.**, Durango, A., Gonzalez R., & McDermott, J. Advances and Perspectives in Auditory Neuroscience (APAN). (2019).

Auditory Texture Models Derived from Task-Optimized Deep Neural Network Representations. **Feather J.** & McDermott, J. Association For Research In Otolaryngology (ARO) Annual MidWinter Meeting. (2019) (Podium Presentation).

Auditory texture synthesis from task-optimized convolutional neural networks. **Feather J.** & McDermott, J. Society for Neuroscience (2018).

Neural Selectivity for Music, Speech, and Song in Human Auditory Cortex. Norman-Haignere, S., **Feather J.**, Brunner, P., Ritaccio, A., McDermott, J., Kanwisher, N., & Schalk, G. Society for Neuroscience (2018).

Model sonification reveals advantages of task-optimized sensory models. **Feather J.** & McDermott, J. Computational and Systems Neuroscience (Cosyne). (2018).

Sonification of auditory models via synthesis of statistically matched stimuli. **Feather J.** & McDermott, J. International Conference on Auditory Cortex. (2017).

High-resolution intracranial recordings provide direct electrophysiological evidence for music and speech-selective neural populations in human auditory cortex. **Feather J.**, Norman-Haignere, S., Brunner, P., Ritaccio, A., McDermott, J., Kanwisher, N., & Schalk, G. American Academy of Neurology. (2017) (Podium Presentation).

High-resolution intracranial recordings provide direct electrophysiological evidence for music and speech-selective neural populations in human auditory cortex. Norman-Haignere, S., **Feather J.**, Brunner, P., Ritaccio, A., McDermott, J., Kanwisher, N., & Schalk, G. Society for Neuroscience (2016).

Tikhonov regularized regression for voxel-wise modeling of fMRI responses to natural stories. **Feather J.**, Huth, A., Nunez-Elizalde, A., & Gallant, J. Pattern Recognition for Neural Imaging (2016), and Organization for Human Brain Mapping (2016).

Common representational structures across the ventral visual pathway of children and adults. Cohen, M., Dilks, D., **Feather J.**, Koldewyn, K., Weight, S., & Kanwisher, N. Journal of Vision. (2016).

- Saygin, Z., Scott, T., **Feather J.**, Fedorenko, E., & Kanwisher, N. The VWFA and FFA have sharply contrasting functional selectivities and patterns of connectivity. *Journal of Vision* 15.12 (2015): 914-914.
- Lafer-Sousa R., Conway, B., Kell, A., **Feather J.**, Takahashi, A., Kanwisher N. Similar organization of the ventral visual pathway in humans and macaque monkeys: Color regions sandwiched between face and scene regions. *Soc. Neurosci. Abstr.* (2014).
- Lafer-Sousa R., Kell, A., Takahashi, A., **Feather J.**, Conway, B., Kanwisher N. Parallel processing of colors and faces in human ventral visual stream: functional evidence and technical challenges. *Journal of Vision Abstr.* (2014).