

# Jefferey S. Mentch

AUDITION | PERCEPTION | COMPUTATION

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## Education

### Harvard University

Cambridge, MA

DOCTOR OF PHILOSOPHY, SPEECH AND HEARING BIOSCIENCE AND TECHNOLOGY (SHBT)

Expected 2024

- **Research:** Applying data-driven machine learning approaches to large openly accessible datasets related to autism, naturalistic neuroimaging, and voice data with Satrajit Ghosh in the Senseable Intelligence Group at MIT.

### Dartmouth College

Hanover, NH

MASTER OF ARTS, DIGITAL MUSICS

June 2017

- **Thesis Title:** *Stimulus-Model-Based Reconstruction of Naturalistic Music Stimuli from High-Field fMRI*
- **Coursework:** Neuroscience of Music (Michael Casey), MVPA (Jim Haxby), fMRI, EEG, music information retrieval, sonification

### The Pennsylvania State University

University Park, PA

BACHELOR OF SCIENCE, BIOLOGY

May 2014

- Minor in Music Technology, Deans List

## Experience

### Dartmouth College, Psychological and Brain Sciences (Prof. Caroline Robertson)

Hanover, NH

### MIT, McGovern Institute for Brain Research (Prof. Nancy Kanwisher)

Cambridge, MA

LAB MANAGER, TECHNICAL ASSOCIATE

Sep. 2017 - July 2019

- Developed a naturalistic real-world VR eye-tracking experiment to investigate visual salience and atypical attention in ASD.
- Built and analyzed machine learning models of attention using eye-gaze data and 360° images.
- Coordinated a pharmaceutical study exploring the role of GABA in binocular rivalry.

### Dartmouth College, Bregman Media Labs (Prof. Michael Casey)

Hanover, NH

RESEARCH ASSISTANT, TA

Sep. 2015 - Sep. 2017

- Implemented a neural encoding model based musical stimulus reconstruction framework on the HPCC.
- Applied multivariate pattern analysis to 7T fMRI data.
- TA: Intro to Sonic Arts (*Ashley Fure*), Sonic Space and Form (*Sangwook "Sunny" Nam*), Intro to Sonic Arts (*Clara Latham*)

### Abington Neurological Associates, Clinical Trial Center (Dr. David Weisman)

Willow Grove, PA

CLINICAL RESEARCH COORDINATOR

Sep. 2014 - Aug. 2015

- Coordinated phase II and phase III clinical trials of investigational drugs for the treatment of Alzheimer's disease.
- Patient care including: patient interviews, dispensing investigational products, collecting lab samples, taking vital signs.

### The Pennsylvania State University, Deep Sea Lab (Prof. Charles Fisher)

University Park, PA

RESEARCH ASSISTANT

Jan. 2013 - Aug. 2014

- Conducted multivariate statistical analysis using Primer, R, and ArcGIS to assess impact of Deepwater Horizon oil spill.

### QuantTera, R&D Microelectronics Company

Scottsdale, AZ

NSF REU INTERN, SEASONAL TECH

Apr. 2011 - Jan. 2013

- Investigated novel techniques for semiconductor device wafer bonding; exhibit at 2013 Consumer Electronics Show

### Children's Hospital of Philadelphia, Center for Applied Genomics

Philadelphia, PA

SUMMER RESEARCH INTERN

Summer 2011

- Used pharmacological inhibitors to delineate DcR3 signaling pathway in EBV cell lines; proteomics of IBD

## Publications/Presentations

### JOURNAL ARTICLES

#### Visual processing in genetic conditions linked to autism: A behavioral study of binocular rivalry in individuals with 16p11.2 deletions and age-matched controls

Yeo Bi Choi, Jeff Mentch, Amanda J. Haskins, Caitlin Van Wicklin, Caroline E. Robertson

*Autism Research* 1-10 (Feb 2023)

## **Neuroscout, a unified platform for generalizable and reproducible fMRI research**

Alejandro Vega, Roberta Rocca, Ross W. Blair, Christopher J. Markiewicz, Jeff Mentch, James D. Kent, Peer Herholz, Satrajit S. Ghosh, Russell A. Poldrack, Tal Yarkoni  
*Elife* 11-e79277 (Aug 2022)

## **Brief Report: Differences in naturalistic attention to real-world scenes in adolescents with 16p.11.2 deletion**

Amanda J. Haskins, Jeff Mentch, Caitlin Van Wicklin, Yeo Bi Choi, Caroline E. Robertson  
*Journal of Autism and Developmental Disorders* 1-10 (Dec 2022)

## **Autistic group differences in naturalistic social attention are magnified by perceptual load (PsyArXiv)**

Amanda J. Haskins, Jeff Mentch, Thomas L. Botch, Brenda D. Garcia, Alexandra L. Burrows, Caroline Elizabeth Robertson  
*PsyArXiv* (May 2022)

## **Privileged Zero-Shot AutoML (Submitted+arXiv)**

Nikhil Singh, Brandon Kates, Jeff Mentch, Anant Kharkar, Madeleine Udell, Iddo Drori  
*arXiv:2106.13743* (Feb 2021)

## **Image2Reverb: Cross-Modal Reverb Impulse Response Synthesis**

Nikhil Singh, Jeff Mentch, Jerry Ng, Matthew Beveridge, Iddo Drori  
*International Conference on Computer Vision (ICCV)* (Oct 2021)

## **Active vision in immersive, 360° real-world environments**

Amanda J. Haskins, Jeff Mentch, Thomas L. Botch, Caroline E. Robertson  
*Scientific Reports* 10, 14304 (Aug 2020)

## **GABAergic inhibition gates perceptual awareness during binocular rivalry**

Jeff Mentch, Alina Spiegel, Catherine Ricciardi, Caroline E. Robertson  
*The Journal of Neuroscience* 0836-19 (Aug 2019)

## **Slower Binocular Rivalry in the Autistic Brain**

Alina Spiegel, Jeff Mentch, Amanda J. Haskins, Caroline E. Robertson  
*Current Biology* (Aug 2019)

## **Stimulus-Model-Based Reconstruction of Polyphonic Music Features from High-Field fMRI (In Preparation)**

Michael Casey, Jefferey Mentch

## **Ecosystem Impacts of Oil and Gas Inputs to the Gulf of Mexico (ECOGIG)**

Charles R. Fisher, Iliana B. Baums, Amanda W.J. Demopoulos, Nicole Dubilier, Fanny Girard, Kaitlin Kovacs, Melissa Kurman, Jeff Mentch, Jillian Petersen, Miles Saunders, Lizbeth Sayavedra, Ryan J. Sibert, Sam Vohsen  
*Oceanography* 28.1, Supplement: New Frontiers in Ocean Exploration: The E/V Nautilus 2014 Gulf of Mexico and Caribbean Field Season (2015) pp. 28-29

## **PRESENTATIONS**

### **Identifying Brain Networks in a Clinically Rich and Naturalistic Dataset using Tensor Decomposition (Poster and Talk)**

Jeff Mentch, Jian Li, Satrajit Ghosh  
*Organization for Human Brain Mapping Annual Meeting*, July 2023

### **vrGazeCore: an open-source package for virtual reality eye-tracking analysis (Presented by TLB)**

Thomas L. Botch, Amanda J. Haskins, Deepasri Prasad, Jeff Mentch, Caroline E. Robertson  
*Vision Sciences Society Annual Meeting*, Aug 2023

### **Autistic group differences in social attention are magnified by real-world perceptual and linguistic features (Presented by AJH)**

Amanda J. Haskins, Jeff Mentch, Thomas L. Botch, Brenda D. Garcia, Alexandra L. Burrows, Caroline E. Robertson  
*Vision Sciences Society Annual Meeting*, Aug 2023

### **Binocular Rivalry Dynamic Discriminates Autism Genetic Subgroups (Presented by YBC)**

Yeo Bi Choi, Jeff Mentch, Caitlin Van Wicklin, Caroline E. Robertson  
*International Society for Autism Research*, May 2021, 38228

### **Active Vision Impacts How We Move Our Eyes and What We Attend To: Evidence from Eye-tracking in Immersive, 360° Real-World Environments (Presented by AJH)**

Amanda J. Haskins, Jeff Mentch, Thomas L. Botch, Adam Steel, Caroline E. Robertson  
*Vision Sciences Society Annual Meeting*, Oct 2020, 20.11.1423

### **Music Stimulus-Encoding-Model Reconstruction for Validation of Cognitive Representations in fMRI (Presented by MAC)**

Michael A. Casey, Jeff Mentch  
*Biennial Meeting of the Society for Music Perception and Cognition*, Aug 2019, KC802

### **Differences in Naturalistic Scene-Viewing in Individuals with Genetic Variations Linked to Autism**

Jeff Mentch, Caroline E. Robertson  
*Vision Sciences Society Annual Meeting*, May 2019, 36.425

### **Gaze Behavior During 360°, Naturalistic Scene-Viewing (\*Presented by TLB)**

Thomas L. Botch, Jeff Mentch, Caroline E. Robertson  
*Vision Sciences Society Annual Meeting*, May 2019, 36.358

### **Causal Push-and-Pull Modulation of Binocular Rivalry Dynamics using GABAergic Drugs**

Jeff Mentch, Alina Spiegel, Catherine Ricciardi, Nancy Kanwisher, Caroline E. Robertson  
*Vision Sciences Society Annual Meeting*, May 2018, 53.356

### **Visual Salience Model of Active Viewing in 360° Real-World Scenes**

Caroline E. Robertson, Jeff Mentch, Nancy Kanwisher  
*Vision Sciences Society Annual Meeting*, May 2018, 56.462

### **Stimulus-Model-Based Reconstruction of Polyphonic Music Features from High-Field fMRI**

Michael Casey, Jeff Mentch  
*The Neurosciences and Music VI: Music, Sound and Health*, Jun. 2017, B3-5

### **Stimulus-Model-Based Reconstruction of Naturalistic Musical Stimuli from High-Field fMRI**

Michael Casey, Jeff Mentch  
*Dartmouth College Graduate Student Poster Session*, Apr. 2017

## Skills

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<b>Software</b>	Python, MATLAB, bash, Unity/C#, p5.js, MaxMSP, Adobe Creative Suite, ArcGIS, Logic Pro, Ableton Live, LaTeX
<b>GRE</b>	170/170V, 167/170Q
<b>Languages</b>	English, Spanish
<b>Hobbies</b>	Music Production, Audio Post Production, Podcast Editor (OHBM Neurosalience), Tennis