Megan deBettencourt

I am a research scientist (PhD Princeton, BS Columbia) with expertise in neuroscience, engineering, and human psychology. My goal is to use technology to augment and improve human behavior, using brain-computer interfaces, machine learning, and data analysis in conjunction with neural recordings. I have been an invited panelist and reviewer for NeurIPS workshops and have led multiple cross-functional academic-industry partnerships, funded by Intel Labs, Wellcome Leap, NIH, and NSF.

EDUCATION

Princeton University
PhD in Neuroscience 2016
MA in Neuroscience 2012

Columbia University
BS in Applied Mathematics 2010
Magna Cum Laude

LINKS

Github:// **debetten**
LinkedIn:// **megan-debettencourt**
Twitter:// **@MdeBettencourt**

SKILLS

Programming
Python • Matlab • R • Bash

Computational analysis
scikit-learn • pandas • numpy • scipy

Neuroscience modalities
fMRI • EEG • fNIRS • EOG • Pupillometry • Eye-tracking

Human psychology expertise
Attention • Learning • Memory

Data collection
Online (1000+ subjects MTurk & Prolific) • On site (1000+ subjects Psychtoolbox & Psychopy) • In hospital (50+ patients)

Communication
Writing • Presentations • Experiment design • Statistics • Data analysis • Data visualization • Mentoring

LANGUAGES

English native
French proficient

HOBBIES

Wheel-thrown functional ceramics
Trail running, birding
NYTimes crossword puzzles

EXPERIENCE

Ruby Neurotech | Research Scientist | 2023-Present
- Designing and building **brain-computer interfaces** to improve **mental health**, funded by Wellcome Leap in collaboration with Uppsala University

Stanford University | Consultant | 2023 - Present
- Providing expert advice on collaborative project to improve **human memory** from **real-time pupil** dynamics, funded by Wu Tsai Human Performance Alliance

University of Chicago | Post-doctoral fellow | 2016 - 2023
Institute for Mind and Biology, Grossman Institute for Neuroscience
- Designed platforms that could forecast **attention lapses** from **multivariate patterns of EEG**, human behavior, and **pupillometry**

Princeton University | Graduate fellow | 2010 - 2016
Princeton Neuroscience Institute, Computational Memory Lab
- Pioneered fMRI **brain-computer interfaces** with **closed-loop neurofeedback** from **real-time multivariate decoding**, resulting in 4 publications (500+ citations)
- Launched **Intel Labs** partnership for Brainiak, a cloud platform for fMRI analysis

Columbia University | Undergraduate researcher | 2007 - 2010
Department of Biomedical & Electrical Engineering
- Developed **signal processing** tools and **SVMs** to decode single-trial EEG-fMRI

PRESENTATIONS

- Invited speaker and panelist at **Neuroethics and the Future of Reality**
- **NeurIPS 2022 invited panelist** at "All Things Attention: Bridging Different Perspectives on Attention" workshop and **reviewer** for "Gaze meets ML" workshop
- 50+ invited **talks and presentations**, including at Brown, FSU, CMU, JHU, MIT, NIH, Stanford, UCLA, UCSB, UCSD, UCSF, UT Austin, UofT, VaTech

RESEARCH FUNDING & AWARDS

Awarded over $400,000 in grants for research funding including:
- $200,774 **National Institutes of Health Brain Initiative** K99, 2022-23
- $150,527 **National Institute of Mental Health** NRSA F32, 2018-21
- $130,000 **National Science Foundation** Graduate Research Fellowship, 2012-15

SELECTED PUBLICATIONS

- MT deBettencourt, JD Cohen, RF Lee, KA Norman, NB Turk-Browne (2015) Closed-loop training of attention with real-time brain imaging. ***Nature Neuroscience***
- MT deBettencourt, PA Keene, E Awh, EK Vogel (2019) Real-time triggering reveals concurrent lapses of attention and working memory. ***Nature Human Behaviour***
- CD Wakeland-Hart, SA Cao, MT deBettencourt*, WA Bainbridge*, MD Rosenberg* (2022) Predicting visual memory across images and within individuals. ***Cognition***
- PA Keene*, MT deBettencourt*, E Awh, EK Vogel (2022) Pupillometry signatures of sustained attention and working memory. ***Attention, Perception, & Psychophysics***