

University of California, Berkeley
 Electrical Engineering and Computer Science
 Berkeley AI Research (BAIR) Labs

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EDUCATION

2023 PhD, Computational Cognitive Neuroscience, Stanford University
 2016 Research Fellow, Department of Brain and Cognitive Sciences, MIT
 2013 BA, Comparative Literature & Chemistry, Columbia University
 2009 AA, Chemical Engineering, Miami Dade Community College

APPOINTMENTS

2023 Postdoctoral Research Fellow, Berkeley AI Research (BAIR) labs, Berkeley, CA
 2021 Affiliate, Center for Open and REproducible Science (CORES), Stanford, CA
 2019 Science Envoy, Wonderfest, San Francisco, CA
 2018 Member, Stanford's Center For Mind, Brain, Computation, and Technology, Stanford, CA
 2016 Trainer, Center for Brains, Minds + Machines Summer Course, Woods Hole, MA
 2015 Graduate Student Affiliate, MIT Center for Brains, Minds, and Machines, Cambridge, MA
 2014 Research Scientist, Max Planck Institute's Neuroanatomy and Connectivity Group, Leipzig

AWARDS & HONORS

2023 University of California President's Postdoctoral Fellowship Program (PPFP)
 2021 NIH Blueprint D-SPAN Award, F99/K00
 2020 Diversifying Academia, Recruiting Excellence (DARE) Fellowship, Stanford University
 2016 National Science Foundation Graduate Research Fellowship
 2009 Dean's List, Columbia University
 2009 Program for Academic Leadership and Success Scholarship, Columbia University
 2007 Tools for Success (STEM) Scholarship, Miami Dade Community College
 2007 Dean's List, Miami Dade Community College

PUBLICATIONS

2024 **Bonnen**, Fu, Bai, O'Connell, Friedman, Kanwisher, Tenenbaum, Efros. Evaluating Multiview Object Consistency in Humans and Image Models, *NeurIPS*
 2024 **Bonnen**, Wagner, Yamins. Algorithmic and architectural constraints on human 3D visual inferences, *Cognitive Computational Neuroscience*
 2024 **Bonnen**, Peterlinz, Kanazawa, Efros. Evaluating the perceptual alignment between generative visual models and human observers on 3D shape inferences, *Cognitive Computational Neuroscience*
 2024 Lee, Watrous, Chen, Kotar, **Bonnen**, Yamins. A biologically plausible route to learn 3D perception, *Cognitive Computational Neuroscience*
 2023 **Bonnen**, Wagner, Yamins. Perirhinal cortex supports object perception by integrating over visuospatial sequences. *arXiv preprint (In Review)*
 2023 O'Connell, **Bonnen**, Friedman, Tewari, Tenenbaum, Sitzmann, Kanwisher. Approaching human 3D shape perception with neurally mappable models. *arXiv preprint (In Review)*
 2023 **Bonnen**, Eldridge. Inconsistencies between human and macaque lesion data can be resolved with a stimulus-computable model of the ventral visual stream. *eLife*
 2023 O'Connell, **Bonnen**, Friedman, Tewari, Tenenbaum, Sitzmann, Kanwisher. Humans and 3D neural field models make similar 3D shape judgments. *Journal of Vision*
 2023 DiCarlo, Yamins, Ferguson, Fedorenko, Bethge, **Bonnen**, Schrimpf. Let's move forward:

- Image-computable models and a common model evaluation scheme are prerequisites for a scientific understanding of human vision, *Behavioral and Brain Sciences*
- 2022 **Bonnen**, Wagner, Yamins. The medial temporal lobe enables visual perception not possible 'at a glance', *Cognitive Computational Neuroscience*
- 2021 **Bonnen**, Yamins, Wagner. When the ventral visual stream is not enough: A deep learning account of medial temporal lobe involvement in perception. *Neuron*
- 2019 Bonnen, Yamins, Wagner. Formalizing a Perceptual-Mnemonic Theory of the Medial Temporal Lobe, *Cognitive Computational Neuroscience*
- 2017 Oligschläger, Huntenburg, Golchert, Lauckner, **Bonnen**, Margulies. Gradients of connectivity distance are anchored in primary cortex. *Brain Structure and Function*
- 2015 Gorgolewski, Mendes, Wilfling, Wladimirow, Gauthier, **Bonnen**, Smallwood. A high resolution 7-Tesla resting-state fMRI test-retest dataset with cognitive and physiological measures. *Scientific data*
- 2009 Conrad, Tosado, Dutton, Dougherty, Jin, **Bonnen**, Robey. C₆₀ cluster formation at interfaces with pentacene thin-film phases. *Applied Physics Letters*

INVITED TALKS

- 2024 *Algorithmic (mis) alignment between humans and large vision models*, brAIIn Seminar Series, Carnegie Mellon University
- 2024 *Modeling neural function requires a mechanistic account of neural function*, UPenn Mindcore Seminar Series
- 2024 *Understanding neural function within a biologically plausible optimization framework*, Emerging Innovators in Biology Symposium, UC Berkeley
- 2023 *Seeing fast and slow; isolating the contributions of ventral and medial temporal cortex in visual object perception*, Johns Hopkins Early Career Colloquium
- 2022 *Disentangling MTL from VVS contributions to visual object perception*, Kanwisher Lab, Massachusetts Institute of Technology (MIT)
- 2022 *Medial temporal lobe contributions to visual object perception*, Vision Journal Club, NYU
- 2022 *Understanding memory-related behaviors: From psychological constructs to function approximation*, Princeton Neuroscience Institute
- 2021 *Is the medial temporal lobe involved in perception? Situating lesion and electrophysiological data within a deep learning framework*. Johns Hopkins Early Career Colloquium
- 2021 *Using biologically plausible computational models to formalize MTL involvement in perception*. Preston Lab, UT Austin, Center for Learning and Memory
- 2021 *Biologically plausible computational models of perception, formalizing theories of medial temporal lobe function, and routes to emotion-related research—oh my!* Dunsmoor Lab, UT Austin
- 2020 *Identifying neuroanatomical substrates that enable humans to outperform computational models of vision*. Facebook Artificial Intelligence Research (FAIR)
- 2020 *Formalizing the involvement of the medial temporal lobe in perception: From psychological constructs to function approximation*. Saxelab, Massachusetts Institute of Technology (MIT)
- 2020 *Is the medial temporal lobe involved in perception? Formalizing perceptual demands in concurrent visual discrimination tasks*. National Institute of Mental Health, Bethesda, MD
- 2019 *Traces: On Lines, Memory, and Threads*. Materia, Division of Literatures, Cultures, and Languages Focal Unit. Stanford University, Co-presented with Robalino, M.G.
- 2019 *How does an experience become a memory? Information processing in the brain, from perceptual encoding to conscious recollection*. Wonderfest, San Francisco, CA
- 2019 *Mnemonic Representations: from taxonomies and constructs to function approximation*. Interdisciplinary workshop Locating Representations in the Brain, Stanford University

CONFERENCE PRESENTATIONS

- 2022 *Complementary Learning Systems supporting 3D object perception*, Shared Visual Representations in Humans and Machines (SVRHM), NeurIPS
- 2022 *Neural and behavioral constraints on human visual reasoning; a case study from 3D object perception*, Beyond Bayes: Paths Towards Universal Reasoning Systems, ICML
- 2021 *When the ventral visual stream is not enough: A deep learning account of medial temporal lobe involvement in perception*. Black in Neuro Conference, Virtual
- 2019 *A stimulus-computable model of inferior temporal cortex predicts perceptual demands on perirhinal cortex*. Bay Area Memory Meeting, San Jose State University, CA
- 2019 *Disambiguating the role of perirhinal cortex in perception: A biologically plausible computational approach*. Nanosymposium talk at the Society for Neuroscience (SfN), Chicago, IL
- 2013 *'Speechless' Terror: the Neural and Social Correlates of Trauma, Language, and Sensation*. Minding the Body: Dualism and Its Discontents, English Student Association, Graduate Student Conference, CUNY

POSTER PRESENTATIONS

- 2024 Bonnen, Fu, Bai, O'Connell, Friedman, Kanwisher, Tenenbaum, Efros. *Evaluating Multiview Object Consistency in Humans and Image Models*, NeurIPS Vancouver
- 2024 Bonnen, Peterlinz, Kanazawa, A Efros. *Algorithmic and architectural constraints on human 3D visual inferences*, Cognitive Computational Neuroscience (CCN) Boston
- 2024 Bonnen, Peterlinz, Kanazawa, A Efros. *Evaluating the perceptual alignment between generative visual models and human observers on 3D shape inference*, Cognitive Computational Neuroscience (CCN) Boston
- 2024 Lee, Watrous, Chen, Kotar, Bonnen, Yamins. *A biologically plausible route to learn 3D perception*, Cognitive Computational Neuroscience (CCN) Boston
- 2022 Bonnen, Yamins, Wagner. *The medial temporal lobe enables visual perception not possible 'at a glance'* Cognitive Computational Neuroscience (CCN), San Francisco
- 2021 Bonnen, Yamins, Wagner. *Formalizing Medial Temporal Lobe involvement in perception: From psychological constructs to function approximation*. Cognitive Neuroscience Society (CNS), Virtual
- 2020 Wang, Jian., Bonnen, Iyer, Wagner. *Similarity structure of semantic knowledge modulates variability in episodic memory behavior through cortical-hippocampal interactions*. Cognitive Neuroscience Society (CNS), Virtual
- 2020 Bonnen, Yamins, Wagner. *Formalizing a perceptual-mnemonic theory of the medial temporal lobe*. Computational and Systems Neuroscience (Cosyne), Denver, CO
- 2019 Bonnen, Yamins, Wagner. *Formalizing a perceptual-mnemonic theory of the medial temporal lobe*. Cognitive Computational Neuroscience (CCN), Berlin, Germany
- 2018 Bonnen, Yamins, Wagner. *A stimulus-computable model of inferior temporal cortex predicts perceptual demands on perirhinal cortex*. Bay Area Memory Meeting, San Jose State University, CA

RESEARCH EXPERIENCE

- 2024 Postdoctoral researcher, advised by Alexei Efros, Jitendra Malik, Angjoo Kanazawa, UC Berkeley
Modeling human behavior within a biologically plausible optimization framework
- 2016 Doctoral researcher, co-advised by Anthony Wagner and Daniel Yamins, Stanford University
Using deep learning to formalize theories of medial temporal lobe involvement in perception
- 2014 Research Fellow with Rebecca Saxe: Department of Brain and Cognitive Science, MIT
Multivariate analyses with human neuroimaging data

- 2014 Research Scientist with Daniel Margulies, Max Planck's Neuroanatomy and Connectivity Group
Identifying principles of cortical organization with a large scale resting state data
- 2010 Research Aid in Leadership Computing Facility Division with John Hammond, Argonne Labs, IL
Modeling the intercalation of lithium ions onto graphene using DFT computational methods
- 2008 Summer Undergraduate Research Fellow with John Doerty, NIST, Gaithersburg, MD
Methods for characterization of a prototypical organic donor-acceptor interface.
- 2004 Clinical Massage Therapist with Tiffany Fields, Touch Research Institute, Miami, FL
Cataloging physiological benefits of touch in preterm infants, pregnant mothers, AIDS patients

TEACHING EXPERIENCE

- 2023 Guest Lecturer, *Learning, Memory and Plasticity Core Concepts*, UC Davis
- 2020 Teaching Assistant, *Models and Mechanisms of Memory*, Stanford University
- 2020 Teaching Assistant, *Statistical Methods for Behavioral and Social Science*, Stanford University
- 2019 Instructor, Inspirit AI in Delhi, Mumbai, and Dubai
- 2019 Teaching Assistant, *Introduction to Statistical Methods*, Stanford University
- 2017 Instructor, Center For Brain Minds and Machines Summer School, MIT
- 2012 Teacher's Assistant, Organic Chemistry Laboratory, Columbia University
- 2012 Curriculum Consultant, The Center for Intersectionality, Columbia University
- 2010 Student Intern & Coordinator, Men's Peer Educator, Columbia University
- 2004 Pedagogical Instructor, Humana People to People, Angola & South Africa

SERVICE TO THE PROFESSION

Reviewer: Cosyne, Cerebral Cortex, Cognitive Computational Neuroscience, Neuropsychologia, Shared Visual Representations in Human and Machine Intelligence NeurIPS Workshop, eLife

SERVICE TO THE INSTITUTION

- 2024 Berkeley AI Research (BAIR) labs Research Experience for Undergrads (REU) from HBCUs
- 2021 Wu Tsai Neuroscience Institute Diversity Inclusion Belonging Equity and Justice Committee
- 2020 Mind, Brain, Computation, and Technology Seminar Series, Organizer
- 2020 BELONG (BIPOC Emerging Leaders of the Next Generation), Co-founder and Organizer
- 2018 Stanford University Building Naming Committee, Member
- 2018 Men and Masculinities Project, a program within the Women's Community Center, Organizer
- 2016 Frisem (Neuroscience/Cognitive Areas) Seminar Series, Organizer
- 2017 Psychology Diversity Committee, Member
- 2016 Affective Seminar Series, Organizer

REFERENCES

- Dr. Alexei Efros, UC Berkeley <efros@eecs.berkeley.edu>
- Dr. Angjoo Kanazawa, UC Berkeley <kanazawa@berkeley.edu>
- Dr. Anthony Wagner, Stanford University <awagner@stanford.edu>
- Dr. Daniel Yamins, Stanford University <yamins@stanford.edu>
- Dr. Morgan Barense, University of Toronto <morgan.barense@utoronto.ca>
- Dr. Jay McClelland, Stanford University <jlmcc@stanford.edu>

MENTEES

- 2024 Stephanie Fu (Computer Science) <fus@berkeley.edu>
- 2024 Cheyenne Wakeland-Hart (Psychology) <cdw2147@columbia.edu>
- 2024 Riley Peterlinz (Computer Science) <peterlinz@berkeley.edu>

2023 Joseph Outa <jouta1@jh.edu>
2022 Chris Iyer (Psychology) <c.iyer@columbia.edu>
2020 Anmol Dhaliwal (Computer Science) <v07135anmol@dpsrpk.net>
2019 Ayesha Nadiadwala (Neuroscience) <anadiadwala@utexas.edu>
2018 Kylo Littlejohn (Neuroscience) <kl3092@columbia.edu>
2017 Mina Caraccio (Psychology) <mina.caraccio@yale.edu>