

PK Douglas, Ph.D

PKDouglas16@gmail.com

[Google Scholar](#)

Research Domains

Brain-computer interface, brain computational models, functional neuroimaging, EEG, fMRI, transcranial ultrasound, brain stimulation, Brain-Inspired Artificial Intelligence, Explainable Artificial Intelligence (XAI)

Education

Johns Hopkins University

B.S. Biomedical Engineering, Mathematics Concentration

University of Pennsylvania

M.S. Bioengineering, *Summa Cum Laude*

University of California, Los Angeles

Ph.D. Neuroengineering,

1st Person to Achieve High Pass+ on Graduate Written Qualifying Exam

Postdoctoral Fellowships

University College London, Wellcome Trust Centre for Neuroimaging

Postdoctoral Fellow: KJ Friston, Methods Group

University of California, Los Angeles

Postdoctoral Mentor: Mark S Cohen, Simultaneous EEG-fMRI

Academic Appointments

University College London (2023-)

Senior Lecturer/ Associate Professor

Queen Square Institute for Neurology

UC Florida IST (2016-2022)

Assistant Professor

Modeling and Simulation, Computer Science

University of California, Los Angeles (2015-2022)

Assistant Research Professor

Department of Psychiatry & Biobehavioral Medicine

Invited Lectures (Selected)

2024

IEEE Brain-Computer Interface Meeting, Korea

Keynote Lecture, "Towards a White Matter Ephaptic Coupling Model for 1/f biorhythms"

- 2024 Foresight Vision Conference, Germany
Keynote Lecture, "Towards Non-invasive Neuroenhancement"
- 2023 Organization for Human Brain Mapping (OHBM), Multimodal Workshop
"Advances in EEG Generative Models and Multimodal EEG-fMRI"
- 2023 IEEE ICASSP: Unraveling the Brain Workshop
"Clever Hans Techniques for Explainable AI"
- 2023 Institute of Pure & Applied Mathematics (IPAM) - Explainable AI Workshop
"Exploring XAI Techniques for Neuroimaging"
- 2022 Keynote, CoSyne MAIN Meeting
"Exploring a White Matter Ephaptic Coupling Model for 1/f"
- 2021 BioRTC TrEND Meeting
"Interpretable Deep Learning for Exploratory Research"
- 2020 Montreal Artificial Intelligence & Neuroscience (MAIN) Meeting
"Introduction to Interpreting Deep Learning"
- 2020 Organization for Human Brain Mapping Meeting (OHBM), Pattern Recognition in Neuroimaging
Educational Workshop, "Deep Learning for Neuroimaging: An Introduction"
- 2020 National Institute of Health (NIH -NIMH)
"Explainable AI for Neuroimaging: Challenges and Future Directions"
- 2020 University of Zurich Neuroeconomics Speaker Series
"Transparency In Deep Learning for Neuroimaging"
- 2019 Keynote Lecture – MICCAI -ML
"On the Similarity of Deep Learning Representations In Neuroimaging"
- 2019 Symposium Lecture - Organization for Human Brain Mapping (OHBM)
"Bridging (Big) Data and Theory"
- 2019 Redwood Center for Theoretical Neuroscience, UC Berkeley Speaker Series
"Latency and Structural Organization for Brain Computational Models"
- 2019 IEEE Brain Computer Interface IEEE Winter Conference
"Reconsidering White Matter Priors in EEG Source Localization"
- 2019 Max Planck Tubingen
"Integrating Marr's Levels with Brain Computational Models"
- 2018 Montreal Artificial Intelligence & Neuroscience (MAIN) Conference Speaker
"Building Brain Computational Models"
- 2018 INCF, Neuroinformatics Conference

“Interpreting Encoding and Decoding Models”

- 2018 Organization of Human Brain Mapping (OHBM), Educational Course “Beyond Linear Decoding: An Introduction to Deep Learning Methods” Workshop, “Good Noise in Artificial and Neural Computation”
- 2017 Institute for Pure & Applied Mathematics (IPAM), “Neuroimaging and Machine Learning (NIML)”
- 2017 Society for Neuroscience (SFN) Symposium “White Matter Alterations in Attention-Deficit/Hyperactivity Disorder”

Mentorship

Completed Graduate Students:

- Cintya Nirvana Dutta (PhD Mentor, now postdoc at Georgetown)
- Farzad Vasheghani-Farahani (PhD mentor, now postdoc at Johns Hopkins)
- Alan Paris (PhD committee member)
- Steven D. Pyle (PhD committee member, now founder of AI startup)
- Seyed Yahya Shirazi (PhD committee member)
- Maham Saeidi (PhD committee member)

Postdoc Mentorship

- Leonardo Cristov-Moore (Postdoc mentor, now research faculty USC)

NS IDP Thesis & SRP Mentees:

Daniel Moyer (now MIT), Kyle Kelson (now Albert Einstein School of Medicine), Afghan Sheikh, Edward Lau, Michael Durnhofer, Diana Shadbeh, Margaret Wollner, Patrick Ku, Daniel Ku, Autessa Anosseh, Mayuko Boffelli, Bella Townsend, Lucy Yin

Teaching

UCLA Neuroimaging Affinity Course (2016-2022)

- Graduate course in advanced neuroimaging analysis methods, coordinated by Prof. Jesse Rissman; guest lecture on topics related to machine learning, deep learning, and interpreting decoding models for neuroimaging analysis

IST SMST (2016-2022)

- Brain Inspired AI: (formerly called Modeling Neuronal Systems) - from micro to meso to systems level, an integrated view on how computational neuroscience can inspire new deep learning architectures, and conversely how AI models can be used to model computation in the human brain.
 - Selected student comments: *“I appreciate strong interdisciplinary approach between computer science and neuroscience, allowing students from multiple backgrounds to come together and contribute. Most importantly, I appreciate the passion demonstrated during class lectures. A course having all of these elements is truly awesome.”* -Student 2018
 - *“Everything about this course was great! 11/ 10”* - Student 2021
- Research Methods In Modeling & Simulation: appreciating how to identify research questions of import in M&S, design experimental paradigms to answer these questions, and write an effective research paper for publication in this domain

- Research Practicum: a core curriculum course for SMST students, explores fundamental and applied research on contemporary issues in modeling and simulation including experimental design involving human subjects, generative modeling/simulation, best practices for reporting results in scientific literature, and how to patent and/or protect your intellectual property

UCLA Computer Science Guest Lecturer (2016-2018)

- Decoding Brain Networks Using Deep Learning

MOOC University of Waikato, Computer Science (2016-2021) (Online)

- Online lecturer as part of a MOOC series to educate participants about using the open source Java toolbox, WEKA, a repository for machine learning algorithms
- Topics include: feature selection, classifying neuroimaging data

University of Queensland St. Lucia, Brisbane, Australia (2016)

- Machine learning (ML) and multivoxel pattern analysis (MVPA)
- Topics included: a variety of ML algorithms, methods for dimension reduction and feature extraction, methods for classification that are interpretable, and model selection

UCLA NIH-NITP Advanced Neuroimaging Course (2010-2016)

- Co-coordinated (with Prof. Jesse Rissman and Prof. Mark Cohen) an internationally attended and recognized course in advanced Neuroimaging Topics with live and archival online streaming (2016)
- Lecturer in this course. Topics included: Dimension Reduction, Machine Learning of fMRI, WEKA, Dynamic Causal Modeling of EEG data, and Independent Component Analysis (ICA) (2010-2013, 2015-2016)

Publications

* Self - marked in blue

Cristov-Moore, L, Reggente, N, Vaccaro, A, Schoeller, F, Pluimer, B, [Douglas, PK](#), Iacoboni, M, Kaplan, J. "Preventing Antisocial robots: A pathway to artificial empathy" *Science Robotics* 8(80) eabq3658 (2023)

Vice, J, Ruiz-Sanchez, N, [Douglas, PK](#), Sukthankar, G, "Visual Episodic Memory-based Exploration", *FLAIRS Conference Proceedings* (2023)

Huang, Y, Barham, CT, [Douglas, PK](#), "TTERGM: Social Theory-Driven Network Simulation" *NeurIPS Temporal Graph Learning Workshop* (2022)

Farahani, FV, D'Esposito, M, Bettzel, RF, Fafowicz, M, Bohaterewicz, B, Marek, T, [Douglas, PK](#), Karwowski, W, "Diurnal variations of resting-state fMRI data: A graph-based analysis" *NeuroImage* 256: 119246 (2022)

Larios-Dutta, C, Cristov-Moore, L, Ombao, H, [Douglas, PK](#) "Neuroprotection in Late Life ADHD: A Review of Pharmacotherapy and Phenotype across the Lifespan" Accepted Pending Minor Edits, *Frontiers in Human Neuroscience. Vo. 16* (2022)

Saeidi, M, Karwoowski, W., Farahani, FV, Fiok, K, Sawyer, BD,, Hancock, P, [Douglas, PK](#) "Decoding Task-Based fMRI Data with Graph Neural Networks, Considering Individual Differences," *Brain Sciences (Accepted, August 2022)*

Cristov-Moore, L, Reggente, N, Vaccaro, A, Schoeller, F, Pluimer, B, Douglas, PK, Iacoboni, M, Kaplan, J. "A Neuroscientific Approach to Artificial Ethics" Under Review (August 2022)

Douglas, PK, Vice, J, Blair, G, "A White Matter Ephaptic Coupling Model for 1/f Spectral Densities", *Computational and Systems Neuroscience, Cosyne (Conference Paper, Peer-Reviewed)* (2022)

Vice, J, Douglas, PK, Sukthankar, G, "Guiding Exploration with Intrinsic Motivation from Visual Episodic Memory", *IEEE Robotics and Automation Society* (2022)

Vice, J, Douglas, PK, Sukthankar, G, "Leveraging Evolutionary Algorithms for Feasible Hexapod Locomotion Across Uneven Terrain", *35th International FLAIRS Conference* (2022)

Dutta, CN, Douglas, PK, Ombao, H, "Structural Brain Asymmetries in Youths with Combined and Inattentive Presentations of Attention Deficit Hyperactivity Disorder" Under Review (2022)

Choupan, J, Gal, Y, Douglas, PK, Cohen, MS, Reutens, DC, Yang, Z, "Spatiotemporal Feature Selection Improves Prediction Accuracy of Multi-Voxel Pattern Classification" *Accepted J Neuroscience Methods* (2022)

Douglas, PK & Farahani, F, "On the Similarity of Deep Learning Representations Across Didactic and Adversarial Examples" *MED NeurIPS* (2020)

Choupan, J, Gal, Y, Douglas, PK, Cohen, MS, Reutens, DC, Yang, Z, "Temporal embedding and spatiotemporal feature selection boost multi-voxel pattern analysis decoding accuracy" *Journal of Neuroscience Methods* 345, 108836 (2020)

Anderson, AE, Diaz-Santos, M, Frei, S, Dang, BH, Kaur, P, Lyden, P, Buxton, R, Douglas, PK, Bilder, R, Esfandiari, M, Friston, KJ, Nookala, U, Bookheimer, SY, "Hemodynamic latency is associated with reduced intelligence across the lifespan: an fMRI DCM study of aging, cerebrovascular integrity, and cognitive ability," *Brain Structure & Function*, 225 (6), 1705-1717 (2020)

Cristov-Moore, L, Reggente, N, Douglas, PK, Feusner, J, Iacoboni, M. "Predicting Empathy From Resting State Brain Connectivity: A Multivariate Approach" *Frontiers in Integrative Neuroscience*: 14(3) (2020)

Dutta, CN, Cristov-Moore, L, Anderson, A, Kogch, Z, Kaur, P, Farahani, FV, Douglas, PK. "Interhemispheric Asymmetry Patterns in the ADHD Brain: A Neuroimaging Replication Study" *SIPAIM Proceedings* (2019)

Farahani, FV, Fafrowicz, M, Karwowski, W, Douglas, PK, Domagalik, A, Beldzik, W, Oginska, H, Marek, T. "Effects of chronic sleep restriction on the brain functional network, as revealed by graph theory" *Frontiers in Neuroscience*. 13: 1087 (2019)

Kriegeskorte, N & Douglas, PK "Interpreting Encoding & Decoding Models" *Curr Opinion in Neurobiology* (2019)

Douglas, DB, Ro, T, Toffoli, T, Krwchuk, B, Muldermans, J, Gullo, J, Dulberger, A, Anderson, AE, Douglas, PK, Wintermark, M. "Neuroimaging of traumatic brain injury" *Medical Sciences* 7, 12 (2019)

Douglas, PK, Douglas, DB, "Reconsidering Spatial Priors in EEG Source Localization" *Proceedings of the IEEE Winter Conference on Brain-Computer Interfaces* (2019)

Douglas, PK "Interhemispheric Asymmetry Differences in ADHD Youths: A Reproducibility Study" *24th Annual Meeting Organization of Human Brain Mapping* (2019)

Kriegeskorte, N., Douglas, PK, "Computational Cognitive Neuroscience" *Nature Neuroscience* 21: 1148–1160 (2018)

Douglas, PK, Gutman, B., Anderson, A., Larios-Dutta, C., Lawrence, K., Narr, K., Sengupta, B., Cooray, G., Douglas, DB, Thompson, P., McGough, J., Bookheimer, S., "Hemispheric Brain Asymmetry Differences in Youths with Attention- Deficit/ Hyperactivity Disorder" *NeuroImage Clinical* 18; 744-752 (2018)

Douglas, PK, Anderson, A. "Interpreting fMRI Decoding Weights: Additional Considerations," *NIPS Proceedings* (2017)

Pyle, S., Douglas, PK, "Evolution of Biologically Inspired Ion Channel Neural Networks for Simple Brain Behaviors" *Proceedings 2nd Annual Cognitive Computational Neuroscience* (2017)

Jianwen Xi, MS; Douglas, PK, PhD; M. Alex O Vasilescu, PhD; Ying Nian Wu, PhD; Arthur L Brody, MD; Ariana Anderson, PhD. Decoding the Encoding of fMRI Brain Networks. *Journal of Neuroscience Methods*: 282, 81-94 (2017)

Hoogman, M. Douglas, PK, <80 authors>.....Franke, B. "Subcortical brain volume differences in participants with attention deficit hyperactivity disorder in children and adults: a cross-sectional mega-analysis" *Lancet Psychiatry*: 3(4): 310-319 (April 2017)

Douglas, PK "Interpreting Weight Vectors: Additional Complications" *Proceedings 2nd Annual Cognitive Computational Neuroscience* (2017)

Douglas, PK, Frank, E, Witten, I. Classifying Neuroimaging data with the WEKA Brain Toolbox. *22st Annual Meeting Organization for Human Brain Mapping*. 2016. (Geneva, Switzerland)

Douglas, PK, "Leveraging Sparsity to Detect HRF Variability in FMRI," *Proceedings of the 12th International Conference on Medical Image Processing* (December 2016)

Sengupta, B., Cooray, GK, Douglas, PK, Friston, K. "Towards a Neuronal Gauge Theory," *PLoS Biol* 14(3): e1002400. (2016)

Cooray, GK., Sengupta, B. Douglas, PK, Friston, K. "Dynamic Causal Modelling of Electrographic Seizure Activity using Bayesian Belief Updating." (2016) *Neuroimage*. Jan 15;125:1142-54. PMID: 26220742

Douglas, DB, Iv, M., Douglas, PK, Anderson, A., Zeineh, M, Wintermark , M. Diffusion tensor imaging of TBI – Potentials and challenges. (2015) *Top Magn Reson Imaging*. 2015 Oct;24(5):241-51. PMID: 26502306

Cooray, GK, Sengupta, B, Douglas, PK, Englund, M. Wickstrom, R. Friston, K. "Characterizing Seizures in anti-NMDA- receptor encephalitis with dynamic causal modelling. *Neuroimage*. 30:118-508 (2015). PMID: 26032883

Gilles, J. Meyer, T. Douglas, PK. "Low Rank + Sparse Decomposition for EEG Artifact Removal." *MICCAI Sparsity Techniques in Medical Imaging* (2014). [http:// stmi2014.ece.cornell.edu/papers/STMI_Proceeding_2014.pdf](http://stmi2014.ece.cornell.edu/papers/STMI_Proceeding_2014.pdf)

A Anderson, Douglas, PK, WT Kerr, A Yuille, J Xie, YN Wu, J Brown and MS Cohen. (2014). "Non-negative Matrix Factorization of Multimodal MRI, fMRI and Phenotypic Data reveals Differential Changes in Default Mode Subnetworks in ADHD." *NeuroImage*. Nov 15;102P1:207-219. PMID: 24361664

Douglas, PK, Head, A., Anderson, A. Kerr, W, Reid, R. Bramen, J, Chong, C, Gordon, B, Pisani, M, Li, W, Cohen, MS. (2014). "Method for Simultaneous fMRI/EEG data collection and MR Compatible Differential Thermometry Device." *JoVE*. Jan 5;(83):e3298. PMID: 24429915

Kerr WT,* Douglas, PK*, Anderson A, Cohen MS. (2014). "The utility of data-driven feature selection: Re: Chu et al. 2012." *NeuroImage*. Jan 1;84:1107-10. * Two first authors contributed equally. PMID: 23891886

Douglas, PK, Lau, E. Anderson, A., Kerr, W, Wollner, M. Moyer, D. Cohen, M.S. "Single Trial Decoding of Belief Decision Making from EEG and fMRI using Independent Component Features," *Frontiers in Hum Neurosci*, 2013, 7:392. PMID: 23914164

Kerr, W.T. Cho, A.Y, Anderson, A., Douglas, PK, Lau, E.P., Hwang, E.S. Raman, K.R. Treffler, A. Cohen, M.S., Nguyen,S.T., Reddy, N.M. Silverman, D.H. "Balancing Clinical and Pathologic Relevance in the Machine Learning Diagnosis of Epilepsy." *IEEE Pattern Recognition in Neuroimaging (PRNI)*, 2013 DOI: 10.1109/PRNI.2013.31

Kerr, W., Anderson, A., Lau, E.P., Cho, A.Y., Xia, H., Bramen, J., Douglas, PK, Braun, E., Stern, J. Cohen, M.S. "Computer Aided Diagnosis and Localization of Lateralized temporal lobe Epilepsy using Interictal FDG-PET." *Frontiers in Neurology*. March 2013. PMID: 23565107

Kerr, W., Anderson, A., Lau, E.P., Cho, A.Y., Xia, H., Bramen, J., Douglas, PK, Braun, E., Stern, J. Cohen, M.S. "Automated Diagnosis of Epilepsy Using EEG Power Spectrum." *Epilepsia*. 2012, 53 (11). PMID: 22967005

Colby, JB, Rudie, JD, Brown, JA, Douglas, PK, Cohen, M.S., Shehzad, Z, "Insights into Multimodal Imaging Classification of ADHD." *Frontiers in System Neuroscience*. 2012. 6:59. PMID: 22912605

Anderson, A, Han, D, Douglas, PK, Bramen, J, Cohen, MS, "Real-time functional MRI Classification of Brain States using Markov-SVM Hybrid Models: Peering inside the rt-fMRI black box. *NIPS Proceedings*. 2012 January. DOI: 10.1007/978-3-642-34713-9_31

Anderson, A, Bramen, J, Douglas, PK, Lenartowicz, A., Cho, A., Culbertson, C., Brody, A.L., Yuille, A. Cohen MS. "Large Sample group-ICA of fMRI Using Anatomical-Atlas Based Reduction, Bagging and Clustering" *International Journal of Imaging Systems and Technology*. 2011 June; 21(2): 223-231. PMID: 22049263

Bystritsky, A, Korb, AS, Douglas, PK, Cohen, MS, Melega, WP, Mulgaonkar, AP, Desalles, A, Min BK, Yoo, SS, "A Review of Low Intensity Focused Ultrasound Pulsation" *Brain Stimulation*. 2011 July; 4(3): 125-136. PMID: 21777872

Douglas, PK, Harris, S. Yuille, A., Cohen MS. "Performance Comparison of Machine Learning Classifiers and Number of Independent Components Used in fMRI Decoding of Belief vs. Disbelief." *NeuroImage*, 2011 May; 56(2): 544-53. PMID: 21073969

Douglas, PK, Cohen MS, DiStefano JJ, III. "Chronic exposure to aerosolized Mn may have lasting effects: a Physiologically Based Toxicokinetic Model" *J Toxicology & Environ Chem*, 2010; 92(2): 279-299. *Selected First Author Conference Proceedings & Presentations:*

Douglas, PK. Leveraging Sparsity: A Sampling Method for Characterizing Hemodynamic Variability. *21st Annual Meeting Organization for Human Brain Mapping*. 2015. (Honolulu, HI)

Douglas, PK. Analysis of Concurrent EEG-fMRI Data. *20st Annual Meeting Organization for Human Brain Mapping*. 2014. (Hamburg, Germany) (Morning Workshop Organizer & Presenter)

Douglas, PK Moyer, D. Cohen, MS. EEG-fMRI Coupling is Task Related and Spectrally Dependent. *Society for Neuroscience*, 2013. (Oral Presentation)

Douglas, PK, Wollner, M, Gutman, B. Anderson, A. Thompson, P. 3D Surface Changes in Caudate Shape are Age Dependent Biomarkers of ADHD. *Society for Neuroscience*, 2013. (Oral Presentation)

Douglas, PK, Moyer, D. et al. "Colocalizing EEG and fMRI in the Spatial Domain" *19th Annual Meeting Organization for Human Brain Mapping*, Seattle, Washington. Postdoctoral Abstract Trainee Award, 2013. (Oral Presentation)

Douglas, PK, Bramen, J. Lavretsky, H. "Changes in Default Mode Subnetwork Activity during a Focused Attention Task," *19th Annual Meeting Organization for Human Brain Mapping*, Seattle, Washington, 2013.

Douglas, PK, Bramen, J. Lavretsky, H. "Colocalizing EEG and fMRI" *Society for Neuroscience*, 2012. (Oral Presentation) Douglas, PK, Moyer, D., "Temporal Kernel Canonical Correlation Analysis & Colocalization of EEG and fMRI in Space" *18th Annual Meeting Organization for Human Brain Mapping*, 2012.

Douglas, PK, Colby, J., Rudie, J.D., Brown, J.A., Shehzad, Z. "Insights into Multimodal Classification of ADHD," *18th Annual Meeting Organization for Human Brain Mapping*, 2012.

Douglas, PK & Rudie, JD, Brown, JA, Cohen, MS, Bookheimer, SY, Dapretto, M. "Resting State Functional Connectivity MRI Based Prediction of Autism vs. Typically Developing" *17th Annual Meeting Organization for Human Brain Mapping*, Quebec, Canada. 2011.

Douglas, PK, Lau, E. Harris, S, Durnhofer, M, Li, W., Harris, S., Cohen, MS. "Machine Learning Classification of Belief vs. Disbelief States Using both Tomographic and Topographic Dimension Reduction." 2010. 40th Annual Meeting, Society for Neuroscience, San Diego, CA.

Douglas, PK, Harris, S, Yuille, A, Durnhofer, M, Cohen, MS. "Independent Component Masking for Event Related fMRI Classification." 2010. 16th Annual Meeting OHBM, Barcelona, Spain

Douglas, PK, DiStefano, J. Cohen, MS. "Physiologically Based Toxicokinetic Modeling of Mn Toxicity in Rat," Poster, *16th Annual Meeting Organization for Human Brain Mapping*, 2010.

Douglas, PK Harris, S., Yuille, A. Cohen MS. "Naïve Bayes Classification of Belief vs. Disbelief using event related fMRI data." Poster, *15th Annual Meeting Organization for Human Brain Mapping*, 2009.

Book Chapters

Douglas, PK, Gilles, J., FV Farahani, Anderson, A. "Empirical Methods for Multimodal Integration of EEG-fMRI". Editors: Louis Lemieux & Karl Friston (2022, under review)

Douglas, PK, Anderson, A. "Feature Fallacy in Decoding Functional Neuroimaging." In "Explainable AI" Editors: Gregorie Montavon and Klaus Robert-Muller (2019)

Douglas, PK, Anderson, A. Cohen, M.S. "Independent Component Based Classification in Functional Neuroimaging. (New Research Publishers, 2011)

Selected Press

CBS: <http://www.cbsnews.com/news/mri-scans-reveal-brain-differences-in-kids-with-adhd/>
Time: <http://time.com/4671981/adhd-hyperactivity-disorder/>
Fox: <http://radio.foxnews.com/2017/02/16/study-links-adhd-to-neurological-disorder-not-behavioral-issues/>
CNN: <http://edition.cnn.com/2017/02/15/health/adhd-brain-scans-study/>
ABC: <http://abcnews.go.com/Health/wireStory/kids-adhd-smaller-brain-regions-normal-45521384>
CBC: <http://www.cbc.ca/news/health/adhd-brain-structures-1.3983919>
Yahoo: <https://www.yahoo.com/news/adhd-brain-disorder-not-just-bad-behaviour-study-233957957.html>
Daily Telegraph: <http://www.telegraph.co.uk/science/2017/02/15/adhd-brain-disorder-not-label-poor-parenting-say-scientists/>
TIME magazine: <http://time.com/4670266/adhd-children-brains-study-normal/>
Japan Times: <http://www.japantimes.co.jp/news/2017/02/16/world/science-health-world/kids-adhd-smaller-brain-regions-normal/#.WKWbNjuLS70>

Professional Experience

UCLA INTELLECTUAL PROPERTY OFFICE, Scientific Reviewer
UPENN INCUBATOR, Boekel Microhybe Summer Research Consultant
NASA, JSC, National Space Biomedical Summer Research Fellow

Honors & Awards

NARSAD Brain & Behavior Young Investigator Award
Postdoctoral Abstract Award, Organization for Human Brain Mapping (OHBM) Meeting
UCLA Graduate Division Fellowship Awardee
UCLA NIH-NITP, UCLA Graduate Research Awardee
National Science Foundation NSF-IGERT, Graduate Student Fellowship
Heath Foundation Award
NASA National Space Biomedical Research Fellowship
Johns Hopkins Provost Award for Research Excellence

Grants

Cognitive and Computational Neurosciences
AFOSR FA9550-18-S-0003 (2020-2023)
Role: PI

A White Matter Cable Theoretic Model of EEG Biorhythms

This proposal aims to develop and test a novel white matter cable theoretic model of EEG biorhythms. Data from the Human Connectome project including MEG and diffusion imaging data will be used for ephaptic coupling parameter estimation and to adjudicate between competing models.

DURIP AFOSR
FA9550-18-S-0003 (awarded 2022)
Role: PI

Electrical Steering for Transcranial Ultrasound Neuromodulation of EEG Signals

This award funds the purchase of completely novel low intensity ultrasound brain stimulation equipment - developed by the PI. This new transcranial ultrasound sonication (TUS) equipment leverages a unique electrical

steering technique in combination with neuronavigation to target deep brain regions with millimeter specificity to suppress or excite neuronal activity.

NSF SBIR 1913380

Role: Co-Investigator

Accurate Aneurysm Diagnosis with Deep Learning and Augmented Slice-by-Slice Viewing

This proposal aims to develop and test an augmented/ virtual reality system to aid radiologists in the detection of aneurysms. At present, detection using slice by slice viewing has very low sensitivity. This grant is in partnership with Stanford University.

Completed Funding

NIH Career Award

K01 NIMH 1MH110645 (2017-2022)

Role: PI

Structural and Functional Biomarkers of Attention-Deficit/Hyperactivity Disorder

This grant aims to quantify inter-hemispheric asymmetries in volumetric and morphological alterations in structural MRI and white matter tracts in treatment naïve ADHD youths, and after a 3 month course of psychostimulant medication treatment. These measures along with quantitative behavioral measures will be combined to create models of treatment efficacy that correspond to the classic disease phenotypic presentations.

NARSAD YOUNG INVESTIGATOR GRANT

Brain & Behavior Research Foundation 2017- 2022

Role: PI

Psychostimulant Effects on Brain Symmetry in Adolescents with ADHD

This grant seeks to identify brain symmetry changes before and after initiation of psychostimulant treatment in youths diagnosed with ADHD across the large TRECC database using structural MRI, functional MRI, and DTI neuroimaging data.

NIH/ NCATS UL1TR000124 –

K Bridge Award Award 6/1/2015-6/31/2017

Role: PI

Translating Archetypal ADHD Neuroimaging Clusters for Diagnosis

This grant seeks to identify neuroimaging features that are predictive of an ADHD diagnosis, and perform non-negative matrix factorization (NMF) to identify quantitative neuroimaging clusters that collaboratively define the spectrum of ADHD presentations.

Klingenstein Third Generation Foundation

Postdoctoral Award

8/31/2014-9/1/2016

Role: PI

High Throughput Analysis of the ADHD 200 Data Set

This proposal seeks to find structural and functional neuroimaging features that characterize the ADHD brain using machine learning analysis of the “big data” ADHD 200 data set.

WM Keck Foundation 4/1/2014-4/1/2016

PI: Weiss, P

Role: Postdoctoral Fellow

Leveraging Sparsity in Image Computing

Our goal is to leverage mathematical advances in sparsity to transform the way imaging and related data are acquired, analyzed, and understood.

5 R33 DA026109-05

NIH 5 R33 DA026109-05

PI: Cohen

Role: Investigator

Real-Time Automated Detection of Craving States with fMRI and EEG

The goal of this project is to develop, characterize and validate a method of real-time detection of cognitive states relevant to the study of drug abuse using concurrent electrophysiological recordings, first to enhance the state discriminations and, later, to serve potentially as a proxy for the neuroimaging brain-state data.

NIH T90 DA 22768-5 8/1/12-7/31/2016

Role: Graduate Student Researcher

Comprehensive training in Neuroimaging Fundamentals and Applications

This grant has established an ongoing program for graduate and postdoctoral fellows to receive training in the most advanced methods in the field of neuroimaging.

NSF IGERT T90 DA 22768-5 8/1/12-7/31/2016

Role: Graduate Student Recipient

Neuroengineering Training Award

This grant provided graduate funding for the recipient to receive .

Refereeing for Scientific Journals (selected)

Nature Neuroscience

NeuroImage

Human Brain Mapping

Scientific Reports

Clinical Neurophysiology

Organization for Human Brain Mapping

PLoS One

PLoS Biology

IEEE TMBE

IEEE SPMB

IEEE EMBS

IEEE JBHI

Entropy

Biological Psychiatry

SIPAAM

Journal of Child Psychology & Psychiatry

MICCAI

Journal of Machine Learning

External Service

NIH-NIMH Study Section

NSF Study Section (CAREER, CRCNSI panels)

Women In Machine Learning (WIML)

SFN Brain Awareness Program

Outreach & Synergistic Activities

- Co-organized an Educational workshop on Deep Learning at the Organization for Human Brain Mapping (OHBM) Meeting (2017-2019)
- Program Coordinator for TRenD, a Collaborative Science Symposium with the University of Zambia and University of Nairobi in Africa (2019-)
- Co-Founder of NIML, the Neuroimaging and Machine Learning, Academic Conference, held at the Institute of Pure and Applied Mathematics (IPAM) (2017-)
- Instructor at Neurohackademy, a hands on course for extracting signals from large scale data sets (e.g., human connectome project), hosted by McGill, University de Montreal (2019-)

Editorial Service

Topic Editor - Frontiers in Digital Health (2022)

Digital Health Integration and Neuromodulation

Co-Editor: Taylor Kuhn

Editor - Neuroimage (2023)

“Generative Models of Brain Dynamics in Health and Disease”

Co-Editors: Michael Breakspear, Adeel Razi