Adebayo Braimah

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PRINCIPAL INTERESTS

Explainable artificial intelligence (XAI), explainable refinforcement learning (XRL).

EDUCATION

Ph.D. Computer Science Aug 2022 - Present
Stony Brook University, Stony Brook, NY

M.S. Neuroimaging & Informatics Aug 2017 - May 2018
University of Southern California, Los Angeles, CA

B.S. Chemistry (ACS Certified) & Mathematics Jun 2012 - Jul 2017
University of Kansas, Lawrence, KS

SPECIAL ACHIEVEMENTS

Awards

NDSEG Fellowship (awarded 2024) Aug 2024 - May 2027

- National Defense Science and Engineering Graduate Fellowship.
- Fellowship covers tuition, stipend, and student fees via the Department of Defense (DoD).

SUNY GREAT Award Mar 2025

- SUNY Graduate Research Empowering and Accelerating Talent (GREAT) Award.
- Provided to SUNY students who have been awarded prestigious national fellowships.

Turner Fellowship (awarded 2022) Aug 2022 – May 2027

- Dr. W. Burghardt Turner Fellowship at Stony Brook University.
- Intended for incoming doctoral students of historically underrepresented groups.

RESEARCH EXPERIENCE

Graduate Research Intern Jun 2025 – Aug 2025
Air Force Research Laboratory (AFRL)
AFRL, Information Directorate, Rome, New York

- Internship via the NDSEG fellowship program at AFRL.
- Worked alongside faculty/research advisor Assoc. Prof. Garrett Katz, PhD (courtesy of Syracuse University) and AFRL point of contact Simon Khan, PhD.
- Project: Explainable Multi-Agent Reinforcement Learning (MARL) for co-operative tasks of unmanned aerial vehicles (UAVs).

Graduate Research Intern Jun 2024 – Aug 2024
Griffiss Institute
AFRL, Information Directorate, Rome, New York

- Internship via the SFFP (Summer Faculty Fellowship Program) at the Air Force Research Laboratory (AFRL).
- Worked alongside faculty/research advisor Asst. Prof. Yifan Sun, PhD and AFRL point of contact Walter Bennette, PhD.
- Project: Explainability of machine learning models using loss landscape analysis.

Graduate Research Assistant Jan 2023 – May 2023
Department of Computer Science
Stony Brook University, Stony Brook, New York

- Project: Profiling eigenspectrum decomposition methods for very large matrices.
- Supervisor: Asst. Prof. Yifan Sun, PhD
- Focus: Eigenspectrum decomposition methods for very large matrices

Research Software Engineer (Research Assistant III) Jun 2018 - Jul 2022
Imaging Research Center
Department of Radiology
Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio

- Project: Functional and structural connectivity in neonates with hypoxic ischemic encephalopathy (HIE).
  - Principal investigator: Assoc. Prof. Stephanie Merhar, MD, MS
- Project: Functional and structural connectivity in neonates with neonatal abstinence syndrome (NAS).
  - Principal investigators: Assoc. Prof. Stephanie Merhar, MD, MS and Assoc. Prof. Nehal Parikh, DO, MS
- Project: Pre-clinical functional connectivity in rats to assess acute response to ketamine.
  - Principal investigator: Assoc. Prof. Diana Lindquist, PhD
- Project: Functional connectivity in school-aged children with ADHD to assess sluggish cognitive tempo (SCT).
  - Principal investigators: Assoc. Prof. Stephen P. Becker, PhD, Prof. Leanne Tamm, PhD, and Prof. Jeffery N. Epstein, PhD.
- Project: Structural connectivity in children to assess the effects of environmental exposure to air pollution.
  - Principal investigators: Prof. Kim Cecil, PhD,
- Supervisor: Jonathan Dudley, PhD
- Focus: Pediatric, neonatal and pre-clinical (rodent) neuroimaging, and data/image analysis.

Volunteer Graduate Research Assistant Aug 2017 – May 2018
Laboratory of Neuroimaging (LONI)
Mark & Mary Steven's Hall for Neuroimaging and Informatics
University of Southern California, Los Angeles, California

- Project: Pre-seizure EEG data analysis of epileptic patients and rats using unsupervised diffusion component analysis (UDCA).
- Project: MRI analysis of epileptic patients and rats.
- Supervisor: Asst. Prof. Dominique Duncan, PhD
- Focus: Single and multi-subject neuroimaging data analyses for the Epilepsy Bioinformatics Study for Antiepileptogenic Therapy (EpiBioS4Rx) Project.

Volunteer Undergraduate Research Assistant Jun 2016 – Jul 2017
Department of Molecular Biosciences
University of Kansas, Lawrence, Kansas

- Project: Computational self-assembly simulations of the Rhodococcus 20S proteasome (PDB: 1Q5R).
- Supervisors: Assoc. Prof. Eric Deeds, PhD and Abhishek Mallela
- Focus: Computational simulations

Undergraduate Research Assistant Oct 2013 – Jul 2016
Department of Chemistry
University of Kansas, Lawrence, Kansas

- Project: Dye-protein investigation with circularly polarized light.
- Supervisor: Prof. Carey K. Johnson, PhD and Will Newhart
- Focus: Spectropolarimetric analysis of fluorescently labeled proteins.

PROFESSIONAL AFFILIATIONS & ACTIVITIES

International Society for Magnetic Resonance in Medicine (ISMRM) Apr 2020 – Aug 2022

- Affiliation: Member

Engineering in Medicine and Biology Conference (EMBC) Nov 2020 – Nov 2021

- Affiliation: Abstract reviewer

American Chemical Society (ACS) Feb 2015 - Jun 2018

- Affiliation: Member

EMPLOYMENT HISTORY

Research Software Engineer (Research Assistant III) Jun 2018 - Jul 2022
Imaging Research Center
Department of Radiology
Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio

- Performed analyses of brain and abdominal MR images.
- Aggregated and organized imaging data for (pilot) studies.

Mutual Fund/Data Processing Associate Oct 2015 - Jul 2017
DST/Boston Financial Data Services, Lawrence, Kansas

- Organized and processed categorical financial data for mutual fund investments.

Undergraduate Research Assistant Oct 2013 – Jul 2016
Department of Chemistry
University of Kansas, Lawrence, Kansas

- Utilized spectropolarimetry to assess fluorescent dye−protein interactions.
- Wrote laboratory protocols.

SKILLS

Proficient with:

- Python, Bash/shell scripting, MATLAB, R (& R Studio), LaTeX

Familiar with:

- C/C++

JOURNAL PUBLICATIONS

S. P. Becker, A. Braimah, J. A. Dudley, L. Tamm, and J. N. Epstein, "Resting-state functional connectivity in a community sample of children with a range of cognitive disengagement syndrome symptoms," *JAACAP Open*, 2024

C. Tabacaru, A. Braimah, B. Kline-Fath, N. Parikh, and S. Merhar, "Diffusion tensor imaging to predict neurodevelopmental impairment in infants after hypoxic–ischemic injury," *American Journal of Perinatology*, 2023

C. R. Tabacaru, S. L. Merhar, A. Braimah, B. M. Kline-Fath, and N. Parikh, "Association of diffusion tensor imaging measures at term with absent fidgety movements in infants with hypoxic-ischemic encephalopathy," *Pediatrics*, vol. 149, no. 1 Meeting Abstracts February 2022, pp. 648–648, 2022

Z. Li, H. Li, A. Braimah, J. R. Dillman, N. A. Parikh, and L. He, "A novel ontology-guided attribute partitioning ensemble learning model for early prediction of cognitive deficits using quantitative structural mri in very preterm infants," *NeuroImage*, vol. 260, p. 119484, 2022

S. L. Merhar, W. Jiang, N. A. Parikh, W. Yin, Z. Zhou, J. A. Tkach, L. Wang, B. M. Kline-Fath, L. He, A. Braimah, *et al.*, "Effects of prenatal opioid exposure on functional networks in infancy," *Developmental Cognitive Neuroscience*, vol. 51, p. 100996, 2021

S. L. Merhar, J. E. Kline, A. Braimah, B. M. Kline-Fath, J. A. Tkach, M. Altaye, L. He, and N. A. Parikh, "Prenatal opioid exposure is associated with smaller brain volumes in multiple regions," *Pediatric research*, vol. 90, no. 2, pp. 397–402, 2021

D. B. Gandhi, A. Pednekar, A. B. Braimah, J. Dudley, J. A. Tkach, A. T. Trout, A. G. Miethke, M. D. Franck, J. A. Heilman, B. Dzyubak, *et al.*, "Assessment of agreement between manual and automated processing of liver mr elastography for shear stiffness estimation in children and young adults with autoimmune liver disease," *Abdominal Radiology*, vol. 46, pp. 3927–3934, 2021

M. Parikh, M. Chen, A. Braimah, J. Kline, K. McNally, J. Logan, L. Tamm, K. Yeates, W. Yuan, L. He, *et al.*, "Diffusion mri microstructural abnormalities at term-equivalent age are associated with neurodevelopmental outcomes at

3 years of age in very preterm infants," *American Journal of Neuroradiology*, vol. 42, no. 8, pp. 1535–1542, 2021

S. L. Merhar, N. A. Parikh, A. Braimah, B. B. Poindexter, J. Tkach, and B. Kline-Fath, "White matter injury and structural anomalies in infants with prenatal opioid exposure," *American Journal of Neuroradiology*, vol. 40, no. 12, pp. 2161–2165, 2019

R. Asch, A. Braimah, D. Lindquist, J. Schurdak, and R. McNamara, "T122. omega-3 fatty acids modulate neurochemical and functional responses to acute ketamine in rats: A 7 tesla multimodal neuroimaging study," *Biological Psychiatry*, vol. 85, no. 10, p. S176, 2019

S. Merhar, A. Braimah, T. Beiersdorfer, B. Poindexter, and N. Parikh, "3046 reduced structural and functional connectivity in infants with prenatal opioid exposure," *Journal of Clinical and Translational Science*, vol. 3, no. s1, pp. 52–52, 2019

D. Duncan, P. Vespa, A. Pitkänen, A. Braimah, N. Lapinlampi, and A. W. Toga, "Big data sharing and analysis to advance research in post-traumatic epilepsy," *Neurobiology of disease*, vol. 123, pp. 127–136, 2019

D. Duncan, G. Barisano, R. Cabeen, F. Sepehrband, R. Garner, A. Braimah, P. Vespa, A. Pitkänen, M. Law, and A. W. Toga, "Analytic tools for post-traumatic epileptogenesis biomarker search in multimodal dataset of an animal model and human patients," *Frontiers in neuroinformatics*, vol. 12, p. 86, 2018

M. S. DeVore, A. Braimah, D. R. Benson, and C. K. Johnson, "Single-molecule fret states, conformational interchange, and conformational selection by dye labels in calmodulin," *The Journal of Physical Chemistry B*, vol. 120, no. 19, pp. 4357–4364, 2016

CONFERENCE ABSTRACTS

A. B. Braimah, J. A. Dudley, J. Epstein, L. Tamm, and S. P. Becker, "Examining the association between sluggish cognitive tempo and functional connectivity in children with adhd: A pilot study," *ISMRM*, May 2021. in Virtual Conference

A. B. Braimah, J. A. Dudley, J. Epstein, L. Tamm, and S. P. Becker, "Examining the association between sluggish cognitive tempo and functional connectivity in children with adhd: A pilot study," *ASNR*, May 2020. in Virtual Conference

D. B. Gandhi, A. B. Braimah, J. Dudley, J. A. Tkach, A. Pednekar, A. T. Trout, A. G. Miethke, J. A. Heilman, B. Dzyubak, D. S. Lake, and J. R. Dillman, "Comparison of manual and automatic liver mr elastography processing for shear stiffness estimation in children and young adults," *ISMRM*, Aug. 2020. in Virtual Conference

A. B. Braimah, D. M. Lindquist, R. Asch, J. Schurdak, and R. McNamara, "Effects of omega-3 fatty acids on brain connectivity in long-evans rats," p. 3683,

ISMRM, 2019

A. Braimah, W. Newhart, and C. Johnson, "Dye-protein investigation with circularly polarized light," in *ABSTRACTS OF PAPERS OF THE AMERICAN CHEMICAL SOCIETY*, vol. 251, AMER CHEMICAL SOC 1155 16TH ST, NW, WASHINGTON, DC 20036 USA, 2016

A. Braimah, W. Newhart, and C. Johnson, "Dye-protein investigation with circularly polarized light," *Abstracts, 50th Midwest Regional Meeting of the American Chemical Society*, Oct. 2015. in St. Joseph, MO, USA

A. Braimah, W. Newhart, and C. Johnson, "Dye-protein investigation with circularly polarized light," *Wakarusa Valley ACS Student Research Symposium*, Nov. 2015. in Lawrence, KS, USA