# Jordan B. **Harrod**

Ph.D. Candidate

jordan.b.harrod@gmail.com www.jordanharrod.com harrodjordan harrodjordan

## Education

### Harvard-MIT Health Sciences and Technology — *Cambridge, MA*

Ph.D. Candidate in Medical Engineering and Medical Physics — *Aug. 2018 - Present*

- Technical Concentration: Course 6 (Electrical Engineering and Computer Science)
- Neuroimaging Training Program Fellow, Whitaker Health Sciences Fund Fellow, NSF Graduate Research Fellow, GEM University Fellow

### Meinig School of Biomedical Engineering, Cornell University — *Ithaca, NY*

B.S. in Biomedical Engineering — *Aug. 2014 - May 2018*

- Concentration in Electrical Engineering and Computer Science

## Experience

### Graduate Research Assistant, Neuroscience Statistics Research Lab + Synthetic Neurobiology Group — *Cambridge, MA*

Department of Brain and Cognitive Sciences, MIT — *January 2019 - Present*

- Investigating clinically-relevant neuromodulation tools for Alzheimer's Disease
- Modeling and developing novel non-invasive brain stimulation tools.
- Created machine learning pipelines for neuroimaging and closed-loop anesthesia regulation.
- Used deep brain stimulation to investigate neural structures and circuits related to pain and consciousness

### Graduate Research Assistant, Camera Culture — *Cambridge, MA*

MIT Media Lab — *September 2018 - December 2018*

- Tested a new implementation of multi-party computation (SPDZ) encryption for use in differentially-private analysis of HIPAA-protected medical data
- Developed a neural network to validate data encryption against unencrypted data.

### Undergraduate Researcher, Bonassar Lab (BME) and Estroff Group (MSE) — *Ithaca, NY*

Meinig School of Biomedical Engineering/Department of Materials Science and Engineering, Cornell University — *May 2015 – May 2018*

- Created meniscal enthesis constructs using trabecular bone cores containing mineralization gradients and tested tensile strength of constructs to determine the ideal demineralization profile for enthesis.
- Created custom MATLAB scripts to analyze the demineralization profile of partially demineralized trabecular bone cores.
- Established a standardized demineralization procedure for trabecular bone cores to further improve the mechanical properties of meniscal enthesis constructs.
- Analyzed microCT scans of demineralized bone experimental samples qualitatively by creating 3D renderings in Avizo Fire.
- Implemented histological techniques to compare protein localization and collagen fiber alignment in meniscal enthesis constructs to the native enthesis.

### Amgen Scholar, Laboratory of Dr. Lei Xing — *Stanford, CA*

Department of Radiation Oncology, Stanford University — *Jun. 2017–Aug. 2017*

- Developed a generative recurrent convolutional neural network to generate the next image in a real-time MRI sequence for applications in real-time artifact detection.
- Developed a deep convolutional neural network that automates aliasing artifact identification on MRI images.
- Developed Python algorithm to introduce aliasing motion artifacts in complex-valued MRI images.

### Biomarker Development Intern — *East Hanover, NJ*

Clinical and Translational Imaging Group, Novartis Institute for Biomedical Research — *Jun. 2016–Aug. 2016*

- Generated Proof-of-Concept data for several concurrent preclinical studies for transition to the next stage in FDA approval.
- Analyzed optical coherence tomography images of intra-retinal fluids to determine drug efficacy on reduction of fluid volumes in a clinical trial.
- Validated novel software that aimed to better visualize intra-retinal fluids using three-dimensional reconstructions and user-delineated fluid selections.
- Evaluated clinical trial data to determine systemic and local effects of a new topical analgesic treatment using Spotfire and Microsoft Excel visualization and data analysis techniques.

**Research Assistant, Biomaterials and Interface Tissue Engineering Lab** *New York City, NY*

Department of Biomedical Engineering, Columbia University *Jun. 2014–Aug. 2014*

- Mapped tensile properties of nanofiber scaffolds to validate them as a replacement for native periodontal ligamentous tissue.
- Electrospun polymer nanofiber scaffolds of different chemical compositions. (PLA, PLGA, Gelatin combinations
- Performed fluorescence assays on cell-seeded scaffolds to determine DNA content and cell viability.
- Performed mechanical testing to determine failure energies of polymer scaffolds and interpreted results using MATLAB and Microsoft Excel.

## Fellowships

| | | |
|---|---|---|
| 2023 - 2024 | **Neuroimaging Training Program Fellowship ($100,000)**, National Institutes of Health | *Cambridge, MA* |
| 2019 - 2023 | **NSF Graduate Research Fellowship ($138,000)**, National Science Foundation | *Cambridge, MA* |
| 2021 - 2022 | **Whitaker Health Sciences Fund Fellowship ($100,000)**, Whitaker Foundation | *Cambridge, MA* |
| 2018 - 2019 | **GEM University Fellowship ($16,000)**, The National GEM Consortium | *Cambridge, MA* |

## Publications

Daniel Susser, Daniel S. Schiff, Laura Y. Cabrera, Sara Gerke, I. Glenn Cohen, Megan Doerr, **Jordan B. Harrod**, Kristin Kostick-Quenet, Jasmine McNealy, Michelle N. Meyer, W. Nicholson Price II, Jennifer K. Wagner. 2024. "Synthetic Health Data: Real Ethical Promise and Peril." Hastings Center Report (Accepted)

Nalini Singh; **Jordan B. Harrod**; Sandya Subramanian; Mitchell Robinson; Suheyla Cetin-Karayumak; Adrian Vasile Dalca; Simon Eickhoff; Michael Fox; Loraine Franke; Polina Golland; Daniel Haehn; Juan Eugenio Iglesias; Lauren J. O'Donnell; Yangming Ou; Yogesh Rathi; Shan H. Siddiqi; Haoqi Sun; M. Brandon Westover; Susan Whitfield-Gabrieli; Randy L. Gollub, *"How Machine Learning is Powering Neuroimaging to Improve Brain Health"* (2022) Neuroinformatics, DOI: 10.1007/s12021-022-09572-9

Hao Zhou, Alexander J. Boys, **Jordan B. Harrod**, Lawrence J. Bonassar, Lara A. Estroff, *"Mineral Distribution Spatially Patterns Bone Marrow Stromal Cell Behavior on Monolithic Bone Scaffolds"* (2020) Acta Biomaterialia, DOI: 10.1016/j.actbio.2020.05.032.

Alexander Boys, Hao Zhou, **Jordan Harrod**, Mary Clare McCorry, Lara Estroff, and Lawrence Bonassar. *"Top-down Fabrication of Spatially Controlled Mineral Gradient Scaffolds for Interfacial Tissue Engineering"* (2019) ACS Biomaterials Science and Engineering, DOI: 10.1021/acsbiomaterials.9b00176

Hao Zhou, Alexander Boys, **Jordan Harrod**, Lawrence Bonassar, Lara Estroff. *"Fabrication of a Mineral Gradient Containing Bone Matrix Scaffold and Its Biocompatibility towards Mesenchymal Stem Cells"* (Abstract) BMES Annual Meeting, 2018, October 17th, 2018

**Jordan Harrod**, Morteza Mardani, John Pauly, Lei Xing. *"Deep Predictive Coding For Super Time-Resolved MR Imaging"* (Abstract) Neural Information Processing Systems 2017, December 9th, 2017

**Jordan Harrod**, Morteza Mardani, Lei Xing. *"Automated Artifact Identification in MR Images Using Deep Convolutional Networks"* (Abstract) BMES Annual Meeting, 2017, October 11th, 2017

Guillaume Normand, Eric H Souied, Bruno Lay, Ronan Danno, Rocio Blanco-Garavito, Perrinne Charrard, **Jordan Harrod**, Michael Maker, Sudeep Chandra, Georges Weissgerber. *"Validation of 3D volumetry for a novel anti-angiogenic therapy of neovascular age-related macular degeneration"* (Abstract), ARVO Annual Meeting 2017, May 8, 2017

## Presentations + Invited Talks

| | | |
|---|---|---|
| Oct. 2023 | **Opening Keynote**, What If? Summit by Tech Circus | *Remote* |
| Aug. 2023 | **Keynote: AI Literacy for Content Marketers**, American Marketing Association, Content Marketing Virtual Conference | *Remote* |
| Jun. 2023 | **Panel: Women in AI Luncheon**, Museum of Science Women In Science and Engineering Committee | *Boston, MA* |
| Feb. 2023 | **Increasing AI Literacy**, Generative AI 2023 | *San Francisco, CA* |
| Sept. 2022 | **The Creator Economy — YouTube and Creator-Built Businesses**, VidSummit 2022 | *Los Angeles, CA* |
| Aug. 2022 | **Wrong Answers Only: AI Edition**, LabX, Presented by the National Academy of Sciences | *Virtual* |
| Mar. 2022 | **Empathable: Our Path to Human Empathy in a World of Machine Learning and AI (Panel)**, Museum of Science | *Boston, MA* |
| Nov. 2021 | **Panelist, Inspiring the future : Activism and Advocacy in Neuro-AI**, Montreal AI and Neuroscience (MAIN) 2021 | *Virtual* |
| Dec. 2021 | **Panelist, Neurodivergence and Artificial Intelligence**, NeurIPS Queer in AI Workshop | *Virtual* |
| Nov. 2021 | **Education Panelist**, Data Science Insititute Symposium 2021 | *Newark, DE* |
| Oct. 2021 | **Public Engagement as a Tool to Combat Algorithmic Bias**, Humane Futures: Augmentation Technologies and Technical Communication (Seminar, University of Minnesota, Fall 2021) | *Virtual* |
| Feb. 2021 | **Data Bias and Discrimination In Programming: The Emerging Risk of Racism, Sexism and Xenophobia in Automation and AI (Moderator)**, Sadie T.M. Alexander Conference for Economics and Related Fields | *Virtual* |
| Feb. 2021 | **Frontiers in Clinical Functional Brain Imaging (Moderator)**, Closing the Gap Between Research and Clinical Application: Neuroimaging Indicators of Brain Structure and Function (Symposium) | *Virtual* |
| Feb. 2021 | **Science Communication 101 (Workshop)**, TRUST Fellowship at Harvard University | *Virtual* |
| Jan. 2021 | **Creating AI From Experience: Why Your Experiences Should Inform Your Algorithms (Closing Keynote)**, Creating Coding Festival | *Virtual* |
| July 2020 | **Applications of Machine Learning for Transcutaneous Treatment to Heal the Depressed Brain**, Machine Learning-Generated Indices for Brain Health Mini-Symposium | *Virtual* |
| Nov. 2019 | **AI Literacy, or How Understand How AI Works Will Help You Every Day**, TEDxBeaconStreet | *Boston, MA* |
| Nov. 2019 | **Responsible Design (Panel)**, All Tech is Human: NYC | *New York, NY* |
| May. 2019 | **Presenting Yourself on Social Media (Panel)**, Symposium on Careers and Collaboration in Science (Boston Postdoctoral Association) | *Boston, MA* |
| Aug. 2017 | **Motion Artifact Detection for Real-Time MR Imaging**, Stanford Summer Research Program Symposium | *Stanford, CA* |

## Books, Essays, etc.

**Harrod, Jordan**. "How Should We Talk About Artificial Intelligence?" *The Black Agenda: Bold Solutions for a Broken System.* Edited by Anna Gifty Anna Gifty Opoku-Agyeman. St. Martin's Press. 2022

## Honors & Awards

| | | |
|---|---|---|
| Jul. 2024 | **2024 Women in AI Award Nominee - AI Research**, VentureBeat | *San Francisco, CA* |
| Dec. 2019 | **NeurIPS 2019 Travel Award ($1000)**, NeurIPS 2019 Organizing Committee | *Vancouver, Canada* |
| Jul. 2019 | **ComSciCon Flagship Workship 2019 ($500)**, ComSciCon National | *San Diego, CA* |
| Feb. 2019 | **Science Talk '19 Travel Award ($350)**, Burroughs Wellcome Fund | *Portland, OR* |
| Aug. 2018 | **Science Policy Symposium Travel Award ($100)**, Science and Education Policy Association + National Science Policy Network | *New York, NY* |

## Skills

**Programming/Technical**: Machine Learning. TensorFlow. Keras. PyTorch. Python. Java. MATLAB. Swift. C. iOS App Development. Analog/Mixed Signal Circuit Development. Analog/Mixed Signal Processing.
**Clinical:** Clinical Trial Design, Experimental Design. X-Ray Image Processing. microCT Image Processing. Statistical Analysis
**Animal Work:** Deep Brain Stimulation (Rodent). Temporal Interference Stimulation. SimNIBS. Stereotactic Rodent Surgery.
**Other:** Polymer Electrospinning. Microsoft Office Suite. Statistical Analysis. Biomaterial Fabrication. Mechanical Testing. Histology. Cell Viability Analysis. Sterile Cell Culture Techniques. Experimental Design.
**Languages**: English (Native), French (Conversational)