

Robert Jones

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EDUCATION

University of Michigan

PhD Candidate, Electrical and Computer Engineering

PhD Student, Electrical and Computer Engineering

Ann Arbor, MI

May 2024 - Present

Aug 2022 - May 2024

- **Major:** Signal & Image Processing and Machine Learning

Bates College

Bachelor of Arts, Double Major in Biological Chemistry and Mathematics

Lewiston, ME

Sept 2013 - May 2017

- **Senior Thesis, Biological Chemistry:** “Investigating the Role of *Borrelia burgdorferi* Ribonucleases in the Transmission of Lyme Disease.” Advisor: Prof. Paula Schlax
- **Senior Thesis, Mathematics:** “An Examination of a Theorem from Jacobson.” Advisor: Prof. Martin Montgomery

RESEARCH EXPERIENCE

Laboratory for Computational Neuroimaging, Athinoula A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital

Boston, MA

Data Analyst

Sept 2021 - Aug 2022

Research Technician

Aug 2017 - Aug 2021

- Actively assisted PIs and post-docs in preparing results, papers and grants for multiple concurrent research projects
- Collected, processed and analyzed ex vivo and in vivo MRI and optical imaging data
- Developed and optimized software tools for analysis of imaging data
- Prepared conference abstracts, journal publications and preliminary results for grant applications

Boston Adolescent Neuroimaging of Depression and Anxiety (BANDA) Study

Boston, MA

MRI study site coordinator

June 2018 - Aug 2022

- Performed 2 hour MRI scans on over 150 adolescent study participants
- Responsible for quality assurance of imaging data and management of IRB protocol

IronTract Challenge, MICCAI 2019

Boston, MA

Organizer, Imaging Team

Apr 2019 - Oct 2019

- Prepared data and analysis tools for open challenge assessing diffusion MRI tractography algorithms

FreeSurfer Boston Course

Boston, MA

Course Staff

Spring 2019, Fall 2019

- Educated participants on the use FreeSurfer software tools

Bates College, Department of Chemistry

Lewiston, ME

Undergraduate Research Assistant

Sept 2016 - Apr 2017

- Investigated the role of ribonucleases, mRNA decay and host-specific differential gene expression in *Borrelia burgdorferi*, the causative agent of Lyme disease
- Performed Western blots to test the efficacy of primary antibodies developed to target *B. burgdorferi* ribonucleases

- R. Jones**, L. Liu, D. You, J.A. Fessler, J.M. Balter. 2026. "Evaluation of volumetric breathing motion prediction of the stomach using dynamic golden-angle radial MRI." *Physics in Medicine and Biology*, 71(17), Pp. 175017. DOI: 10.1088/1361-6560/ae9117.
- C. Maffei, G. Girard, K. Schilling, B. Aydogan, N. Aduluru, A. Zhylyka, Y. Wu, M. Mancini, A. Hamamci, A. Sarica, A. Telliach, S. Baete, D. Karimi, F. Yeh, M. Yildiz, A. Gholipour, Y. Bihan-Poudec, B. Hiba, An. Quattrone, Al. Quattrone, T. Boshkovski, N. Stikov, P.T. Yap, A. De Luca, J. Pluim, A. Leemans, V. Prabhakaran, B.B. Bendlin, A. Alexander, B. Landman, E. Canales-Rodriguez, M. Barakovic, J. Rafael-Patino, T. Yu, G. Rensonnet, S. Schiavi, A. Daducci, M. Pizzolato, E. Fischi-Gomez, J.P. Thiran, G. Dai, G. Grisot, N. Lazovski, S. Puch, M. Ramos, P. Rodrigues, V. Prchkovska, **R. Jones**, J. Lehman, S. Haber, A. Yendiki. 2022. "Insights from the IronTract challenge: optimal methods for mapping brain pathways from multi-shell diffusion MRI." *NeuroImage*, 257, Pp. 119327. DOI: 10.1016/j.neuroimage.2022.119327.
- N.A. Hubbard, R.P. Auerbach, V. Siless, N. Lo, I.R. Frosch, D.E. Clark, **R. Jones**, R. Kremens, M. Pinaire, F. Vaz De Souza, S. Ghosh, A. Henin, S.G. Hofmann, D.A. Pizzagalli, I.M. Rosso, A. Yendiki, S. Whitfield-Gabrieli, J.D.E. Gabrieli. 2022. "Connectivity patterns evoked by fearful faces demonstrate reduced flexibility across a shared dimension of adolescent anxiety and depression." *Clinical Psychological Science*, 11(1), Pp. 3-22. DOI: 10.1177/21677026221079628.
- C. Liu, W. Ammon, **R. Jones**, J. Nolan, R. Wang, S. Chang, M. P. Frosch, A. Yendiki, D. A. Boas, C. Magnain, B. Fischl, H. Wang. 2022. "Refractive-index matching enhanced polarization sensitive optical coherence tomography quantification in human brain tissue." *Biomedical Optics Express*, 13(1), Pp. 358-372. 10.1364/BOE.443066.
- C. Maffei, C. Lee, M. Planich, M. Ramprasad, N. Ravi, D. Trainor, Z. Urban, M. Kim, **R. Jones**, A. Henin, S.G. Hofmann, D.A. Pizzagalli, R.P. Auerbach, J.D.E. Gabrieli, S. Whitfield-Gabrieli, D.N. Greve, S.N. Haber, A. Yendiki. 2021. "Using diffusion MRI data acquired with ultra-high gradients to improve tractography in routine-quality data." *NeuroImage*, 245, Pp. 118706. DOI: 10.1016/j.neuroimage.2021.118706.
- R. Jones**, C. Maffei, J. Augustinack, B. Fischl, H. Wang, B. Bilgic, A. Yendiki. 2021. "High-fidelity approximation of grid- and shell-based sampling schemes from undersampled DSI using compressed sensing: Post mortem validation." *NeuroImage*, 244, Pp. 118621. DOI: 10.1016/j.neuroimage.2021.118621.
- R.P. Auerbach, D. Pagliaccio, N.A. Hubbard, I. Frosch, R. Kremens, E. Cosby, **R. Jones**, V. Siless, N. Lo, A. Henin, S.G. Hofmann. 2021. "Reward-Related Neural Circuitry in Depressed and Anxious Adolescents: A Human Connectome Project." *Journal of the American Academy of Child & Adolescent Psychiatry*. 61(2), pp.308-320. DOI: 10.1016/j.jaac.2021.04.014.
- R. Jones**, G. Grisot, J. Augustinack, C. Magnain, D. A. Boas, B. Fischl, H. Wang, A. Yendiki. 2020. "Insight into the fundamental trade-offs of diffusion MRI from polarization-sensitive optical coherence tomography in ex vivo human brain." *NeuroImage*, 214, Pp. 116704. DOI: 10.1016/j.neuroimage.2020.116704.
- V. Siless, N. A. Hubbard, **R. Jones**, J. Wang, N. Lo, C. C.C. Bauer, M. Goncalves, I. Frosch, D. Norton, G. Vergara, K. Conroy, F. Vaz De Souza, I. M. Rosso, A. H. Wickham, E. A. Cosby, M. Pinaire, D. Hirshfeld-Becker, D. A. Pizzagalli, A. Henin, S. G. Hofmann, R. P. Auerbach, S. Ghosh, J. Gabrieli, S. Whitfield-Gabrieli, A. Yendiki. 2020. "Image acquisition and quality assurance in the boston adolescent neuroimaging of depression and anxiety study." *NeuroImage Clin.*, 26, Pp. 102242. DOI: 10.1016/j.nicl.2020.102242.
- N. A. Hubbard, V. Siless, I. Frosch, M. Goncalves, N. Lo, C. Bauer, K. Conroy, E. Cosby, A. Hay, **R. Jones**, M. Pinaire, F. Vaz De Souza, G. Vergara, S. Ghosh, A. Henin, D. R. Hirshfeld-Becker, S. Hofmann, I. M. Rosso, R. P. Auerbach, D. Pizzagalli, A. Yendiki, JDE Gabrieli, S. Whitfield-Gabrieli. 2020. "Brain Function and Clinical Characterization in a Human Connectome Adolescent Depression and Anxiety Study." *NeuroImage Clin.*, 27, Pp. 102240. DOI: 10.1016/j.nicl.2020.102240.

PREPRINTS

C. Maffei, M.R. Celestine, T. Gong, **R. Jones**, E. Dann, J. Lehman, J. Augustinack, H. Wang, S.N. Haber, A. Yendiki. 2026. “The modular nature of long-association pathways in the human brain.” *bioRxiv*, pp.2026-01. [Preprint]. DOI: 10.64898/2026.01.07.698021.

C.J. Liu, W. Ammon, **R. Jones**, J.C. Nolan, D. Gong, C. Maffei, B.L. Edlow, J.C. Augustinack, C. Magnain, A. Yendiki, M. Villiger, B. Fischl, H. Wang. 2023. “Quantitative imaging of three-dimensional fiber orientation in the human brain via two illumination angles using polarization-sensitive optical coherence tomography.” *bioRxiv*, pp.2023-10. [Preprint]. DOI: 10.1101/2023.10.20.563298.

MANUSCRIPTS IN REVIEW

R. Jones, L. Liu, D. You, J.A. Fessler, J.M. Balter. 2026. “Evaluation of Volumetric Breathing Motion Prediction of the Stomach Using Dynamic Golden-Angle Radial MRI.” *Physics in Medicine & Biology*. [Submitted March 2026, under review].

CONFERENCE PRESENTATIONS

R. Jones, D. You, J. Fessler, J. Balter. 2025. “Characterizing contractile motion along the stomach medial axis from dynamic MRI.” *11th Annual Symposium on Magnetic Resonance in Radiation Therapy (MRinRT)* (**oral presentation**).

R. Jones, C. Maffei, Q. Tian, S. Huang, V. Sundaresan, A. Yendiki. 2022. “In vivo demonstration of generalized anisotropy profiles for resolving boundaries between subcortical gray and white matter.” In ISMRM (**oral presentation**, summa cum laude).

R. Jones, G. Grisot, J. Augustinack, D.A. Boas, B. Fischl, H. Wang, B. Bilgic, A. Yendiki. 2019. “Validation of DSI compressed sensing reconstruction in ex vivo human brain.” In ISMRM (**oral presentation**).

CONFERENCE PAPERS AND ABSTRACTS

C. Maffei, E. Dann, M. Celestine, **R. Jones**, J. Lehman, H. Wang, S. Haber, and A. Yendiki. 2024. “Multi-modal multi-scale imaging reveals that long-association cortico-cortical systems are composed of short-range relay fibers.” In OHBM, p. 2153.

C. Maffei, E. Dann, **R. Jones**, M. R. Celestine, H. Wang, S. Haber, and A. Yendiki. 2024. “Multi-modal multi-scale imaging reveals that long-association cortico-cortical systems are composed of short-range relay fibers.” In ISMRM, p. 2156.

H. Veeraraghavan, **R. Jones**, D. You, N. Tyagi, J.M. Balter. 2024. “Kalman filter-based tracking of abdominal organ motions along the medial axis.” In MRinRT.

C. Maffei, G. Girard, K. G. Schilling, D. B. Aydogan, N. Adluru, A. Zhylka, Y. Wu, M. Mancini, A. Hamamci, A. Sarica, D. Karimi, F. C. Yeh, M.E. Yildiz, A. Gholipour, A. Quattrone, A. Quattrone, P. T. Yap, A. de Luca, J. Pluim, A. Leemans, V. Prabhakaran, B. B. Bendlin, A. L. Alexander, B. A. Landman, E.J. Canales-Rodríguez, M. Barakovic, J. Rafael-Patino, T. Yu, G. Rensonnet, S. Schiavi, A. Daducci, M. Pizzolato, E. Fischl-Gomez, J. P. Thiran, G. Dai, G. Grisot, N. Lazovski, S. Puch, M. Ramos, P. Rodrigues, V. Prchkovska, **R. Jones**, J. Lehman, S. Haber, and A. Yendiki. 2021. “New insights from the IronTract challenge: Simple post-processing enhances the accuracy of diffusion tractography.” In ISMRM, p. 0864.

M. Kim, D. Pagliaccio, **R. Jones**, A. Henin, S.G. Hofmann, D.A. Pizzagalli, J.D.E. Gabrieli, R.P. Auerbach, S. Whitfield-Gabrieli, A. Yendiki. 2021. “Multivariate associations of brain function, structure, and mental health disorders in adolescents.” In OHBM, p. 1142.

R. Jones, C. Maffei, Q. Fan, J. Augustinack, B. Wichtmann, A. Nummenmaa, S. Huang, and A. Yendiki. 2021. “Validation of between-bundle differences and within-bundle continuity of microstructural indices in ex vivo human brain tissue.” In ISMRM.

- R. Jones**, Q. Tian, C. Maffei, J. Augustinack, A. Nummenmaa, S. Huang, and A. Yendiki. 2021. “Generalized anisotropy profiles distinguish cortical and subcortical structures in ex vivo diffusion MRI.” In ISMRM.
- H. Wang, **R. Jones**, D. Varadarajan, C. Magnain, A. Yendiki, J.R. Polimeni, B. Fischl. 2021. “Optical property revealing vascular network and pathological lesion in human brain tissues with as-PSOCT.” In Proc. SPIE BiOS 11629.
- A. Yendiki, **R. Jones**, A. Dalca, H. Wang, and B. Fischl. 2020. “Towards taking the guesswork (and the errors) out of diffusion tractography.” In ISMRM.
- C. Maffei, **R. Jones**, C. Johnson, H. Wang, A. Yendiki. 2020. “Investigating SLFI anatomy using high-resolution dMRI.” In ISMRM.
- C. Maffei, G. Girard, K. G. Schilling, N. Adluru, D. B. Aydogan, A. Hamamci, F.-C. Yeh, M. Mancini, Y. Wu, A. Sarica, A. Teillac, S. H. Baete, D. Karimi, Y.-C. Lin, F. Boada, N. Richard, B. Hiba, A. Quattrone, Y. Hong, D. Shen, P.-T. Yap, T. Boshkovski, J. S. W. Campbell, N. Stikov, G. B. Pike, B. B. Bendlin, A. L. Alexander, V. Prabhakaran, A. Anderson, B. A. Landman, E. J. Z. Canales-Rodríguez, M. Barakovic, J. Rafael-Patino, T. Yu, G. Rensonnet, S. Schiavi, A. Daducci, M. Pizzolato, E. Fischl-Gomez, J.-P. Thiran, G. Dai, G. Grisot, N. Lazovski, A. Puente, M. Rowe, I. Sanchez, V. Prchkovska, **R. Jones**, J. Lehman, S. Haber, and A. Yendiki. 2020. “The IronTract challenge: Validation and optimal tractography methods for the HCP diffusion acquisition scheme.” In ISMRM.
- N.A. Hubbard, N. Lo, M. Goncalves, I. Frosch, V. Siless, C.C. Bauer, K. Conroy, E. Cosby, A. Hay, **R. Jones**, M. Pinaire, F. Vaz De Souza, G. Vergara, A. Henin, D. Hirshfeld-Becker, S. Hofmann, D. Pizzagalli, A. Yendiki, R. Auerbach, S. Ghosh, J.D.E. Gabrieli, S. Whitfield-Gabrieli. 2019. “Cognitive control-related brain activation patterns predict adolescent anhedonia symptoms.” In APS Annual Convention.
- G. Grisot, **R. Jones**, J. Augustinack, D. Boas, B. Fischl, H. Wang, A. Yendiki. 2018. “Validation of high angular resolution diffusion MRI models in the human brain with PS-OCT.” In OHBM.

HONORS & AWARDS

ISMRM Summa Cum Laude Merit Award

In vivo demonstration of generalized anisotropy profiles for resolving boundaries between subcortical gray and white matter

2022

ISMRM Outstanding Abstracts from the Annual Meeting

In vivo demonstration of generalized anisotropy profiles for resolving boundaries between subcortical gray and white matter

2022

TECHNICAL COMPETENCIES

- Matlab, Python, Julia, Linux, ImageJ, LaTeX, Word, PowerPoint, Excel

MEMBERSHIPS

International Society for Magnetic Resonance in Medicine (ISMRM)

Trainee Member

2019 - 2023, 2025 - Present

Sigma Xi, The Scientific Research Honors Society

Associate Member, Southern Maine Chapter

2017

TRAINING

MR IDEA Imaging Calculation Programming

Siemens Healthineers, PEPconnect

November 2024

- Technical training in IDEA programming for developing and implementing MRI imaging and reconstruction algorithms

Computational Machine Learning for Scientists and Engineers

University of Michigan, Continuum Jumpstart

Winter 2020

- Cloud-based interactive course on understanding, designing and employing machine learning algorithms and neural networks.

HST.583: Functional Magnetic Resonance Imaging: Data Acquisition and Analysis

Harvard-MIT Health Sciences and Technology

Fall 2019

- Graduate-level course on design, conduct and interpretation of fMRI studies in the human brain, including physics of image encoding, mechanisms of anatomical and functional contrasts, and physiological basis of fMRI signals

Diffusion & Microstructure: Fundamentals & Frontiers

Educational Session, ISMRM 27th Annual Meeting, Montreal

Spring 2019

- Foundations of diffusion physics and experimental design, overview of image artifacts and diffusion signal models and representations

HST.584: Magnetic Resonance Analytic, Biochemical, and Imaging Techniques

Harvard-MIT Health Sciences and Technology

Spring 2018

- Graduate-level course on NMR theory, detailed study of NMR imaging techniques including image reconstruction, image contrast, flow and real-time imaging, and hardware design considerations

Basic Biostatistics for Clinical Research

MGH Division of Clinical Research

Winter 2018

- Introduction to biostatistical concepts and applications to issues in clinical investigation

REFERENCES

Anastasia Yendiki, Associate Professor in Radiology

Harvard Medical School

(617)726-9343, ayendiki@mgh.harvard.edu

Bruce Fischl, Professor in Radiology

Harvard Medical School

(617)726-4897, fischl@nmr.mgh.harvard.edu

Hui Wang, Assistant Professor in Radiology

Harvard Medical School

(617)726-9338, hwang47@mgh.harvard.edu

Martin Montgomery, Visiting Assistant Professor of Mathematics

Bates College

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