Ariel Rokem

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Education

2010 **Ph.D.** Neuroscience, University of California, Berkeley
Advisor: Michael Silver, Thesis: "Neural mechanisms of perceptual learning"
2005 **M.A.** (*Summa cum Laude*) Cognitive Psychology, Hebrew University of Jerusalem
Advisor: Merav Ahissar, Thesis: "Interactions of cognitive and auditory abilities in the blind"
2002 **B.Sc.** (*Cum Laude*) Biology and Psychology, Hebrew University of Jerusalem

Work Experience

2021 - present	**Research Associate Professor** *University of Washington Department of Psychology*
2020 - 2021	**Research Assistant Professor** *University of Washington Department of Psychology*
2015-2020	**Senior Data Scientist** *University of Washington eScience Institute*
2011-2015	**Postdoctoral Researcher** *Stanford University*
2010-2011	**Postdoctoral Researcher** *University of California, Berkeley*
2002-2003	**Research Student** *Humboldt-Universität zu Berlin*

Additional institutional affiliations

2024 - present	**Affiliate faculty** *University of Washington Center Statistics and the Social Sciences*
2021 - present	**Co-Director** *University of Washington Center for Human Neuroscience*
2021 - present	**Adjunct Associate Professor** *Paul Allen School of Computer Science & Engineering*
2021 - present	**Senior Data Science Fellow** *University of Washington eScience Institute*
2016 - 2021	**Data Science Fellow** *University of Washington eScience Institute*
2018 - present	**Affiliate faculty** *University of Washington Center for Studies in Demography and Ecology*
2016 - present	**Affiliate faculty** *University of Washington Computational Neuroscience Center*

Peer-reviewed journal publications

Google Scholar, total citations: 9,128, h-index: 44
*** indicates equal contribution**

84. Roy, E., Harriott, E. M., Nguyen, T. Q., Richie-Halford, A., **Rokem, A**, Cutting, L. E., and Yeatman, J. D. (2025). Development of the arcuate fasciculus is linked to learning gains in reading. *Imaging Neuroscience*, 3

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82. Jiang, Y., Swain, T., Gim, N., Blazes, M., Donald, C. M., **Rokem, A**, Owen, J. P., Balu, N., Clark, M. E., Goerdt, L., McGwin, G., Hunt, D., Curcio, C. A., Levendovszky, S. R., Trittschuh, E. H., Owsley, C., and Lee, C. S. (2024). Outer retinal thinning is associated with brain atrophy in early age-related macular degeneration. *American Journal of Ophthalmology*, 269:457–465

81. **Rokem, A.** (2024). Ten simple rules for scientific code review. *PLoS Computational Biology*, 20:e1012375

80. Corrigan, N., **Rokem, A.**, and Kuhl, P. (2024). COVID-19 lockdown effects on adolescent brain structure suggest accelerated maturation that is more pronounced in females than in males. *Proceedings of the National Academy of Sciences*, 121:e2403200121

79. Kruper, J., Hagen, M., Rheault, F., Crane, I., Gilmore, A., Narayan, M., Motwani, K., Lila, E., Rorden, C., Yeatman, J., and **Rokem, A.** (2024a). Tractometry of the Human Connectome Project: Resources and insights. *Frontiers in Neuroscience*, 18:1389680

78. Takemura, H., Kruper, J., Miyata, T., and **Rokem, A** (2024). Tractometry of human visual white matter pathways in health and disease. *Magentic Resonance in Medical Science*, 23(3):316–340

77. **Rokem, A*** and Benson, N. C.* (2024). Hands-on neuroinformatics education at the crossroads of online and in-person: Lessons learned from NeuroHackademy. *Neuroinformatics*, 22(4):647–655

76. Roy, E., Van Rinsveld, A., Nedelec, P., Richie-Halford, A., Rauschecker, A. M., Sugrue, L. P., **Rokem, A**, McCandliss, B. D., and Yeatman, J. D. (2024b). Educational environment and white matter development in early adolescence. *Developmental Cognitive Neuroscience*, 67:101386

75. Kruper, J., Richie-Halford, A., Benson, N. C., Caffarra, S., Owen, J., Wu, Y., Egan, C., Lee, A. Y., Lee, C. S., Yeatman, J. D., **Rokem, A**, and UK Biobank Eye and Vision Consortium (2024b). Convolutional neural network-based classification of glaucoma using optic radiation tissue properties. *Communications Medicine*, 4(1):72

74. Pogoncheff, G., Hu, Z., **Rokem, A**, and Beyeler, M. (2024). Explainable machine learning predictions of perceptual sensitivity for retinal prostheses. *Journal of Neural Engineering*, 21:026009

73. Poldrack, R. A., Markiewicz, C. J., Appelhoff, S., Ashar, Y. K., Auer, T., Baillet, S., Bansal, S., Beltrachini, L., Benar, C. G., Bertazzoli, G., Bhogawar, S., Blair, R. W., Bortoletto, M., Boudreau, M., Brooks, T. L., Calhoun, V. D., Castelli, F. M., Clement, P., Cohen, A. L., Cohen-Adad, J., D'Ambrosio, S., de Hollander, G., de la Iglesia-Vayá, M., de la Vega, A., Delorme, A., Devinsky, O., Draschkow, D., Duff, E. P., DuPre, E., Earl, E., Esteban, O., Feingold, F. W., Flandin, G., Galassi, A., Gallitto, G., Ganz, M., Gau, R., Gholam, J., Ghosh, S. S., Giacomel, A., Gillman, A. G., Gleeson, P.,

Gramfort, A., Guay, S., Guidali, G., Halchenko, Y. O., Handwerker, D. A., Hardcastle, N., Herholz, P., Hermes, D., Honey, C. J., Innis, R. B., Ioanas, H.-I., Jahn, A., Karakuzu, A., Keator, D. B., Kiar, G., Kincses, B., Laird, A. R., Lau, J. C., Lazari, A., Legarreta, J. H., Li, A., Li, X., Love, B. C., Lu, H., Maumet, C., Mazzamuto, G., Meisler, S. L., Mikkelsen, M., Mutsaerts, H., Nichols, T. E., Nikolaidis, A., Nilsonne, G., Niso, G., Norgaard, M., Okell, T. W., Oostenveld, R., Ort, E., Park, P. J., Pawlik, M., Pernet, C. R., Pestilli, F., Petr, J., Phillips, C., Poline, J.-B., Pollonini, L., Raamana, P. R., Ritter, P., Rizzo, G., Robbins, K. A., Rockhill, A. P., Rogers, C., **Rokem, A**, Rorden, C., Routier, A., Saborit-Torres, J. M., Salo, T., Schirner, M., Smith, R. E., Spisak, T., Sprenger, J., Swann, N. C., Szinte, M., Takerkart, S., Thirion, B., Thomas, A. G., Torabian, S., Varoquaux, G., Voytek, B., Welzel, J., Wilson, M., Yarkoni, T., and Gorgolewski, K. J. (2024). The past, present, and future of the brain imaging data structure (BIDS). *Imaging Neuroscience*, 2:1–19

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69. Ferré, J., **Rokem, A**, Buffalo, E. A., Kutz, N., and Fairhall, A. (2023). Non-stationary dynamical mode decomposition. *IEEE Access*, 11:117159–117176

68. Grotheer, M., Bloom, D., Kruper, J., Richie-Halford, A., Zika, S., Aguilera Gonzàlez, V. A., Yeatman, J. D., Grill-Spector, K., and **Rokem, A** (2023). Human white matter myelinates faster in utero than ex utero. *Proceedings of the National Academy of Sciences*, 120:e2303491120

67. Kruper, J., Benson, N. C., Caffarra, S., Owen, J., Wu, Y., Lee, A. Y., Lee, C. S., Yeatman, J. D., and **Rokem, A** (2023). Optic radiations representing different eccentricities age differently. *Human Brain Mapping*, 44:3123–3135

66. Richie-Halford, A., Cieslak, M., Ai, L., Caffarra, S., Covitz, S., Franco, A. R., Karipidis, I. I., Kruper, J., Milham, M., Avelar-Pereira, B., Roy, E., Sydnor, V. J., Yeatman, J. D., Satterthwaite, T.D.*, and **Rokem, A*** (2022). An analysis-ready and quality controlled resource for pediatric brain white-matter research. *Scientific Data*, 9(1):1–27

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63. Fadnavis, S., Endres, S., Wen, Q., Wu, Y.-C., Cheng, H., Koudoro, S., Rane, S., **Rokem, A**, and Garyfallidis, E. (2021). Bifurcated topological optimization for IVIM. *Frontiers in Neuroscience*, 15

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57. Kruper, J., Yeatman, J. D., Richie-Halford, A., Bloom, D., Grotheer, M., Caffarra, S., Kiar, G., Karipidis, I. I., Roy, E., Chandio, B. Q., Garyfallidis, E., and **Rokem, A** (2021). Evaluating the reliability of human brain white matter tractometry. *Aperture*, 1:1–25

56. Henriques, R., Correia, M., Maralle, M., Huber, E., Kruper, J., Koudoro, S., Yeatman, J. D., Garyfallidis, E., and **Rokem, A.** (2021). Diffusion Kurtosis Imaging in the Diffusion Imaging in Python project. *Frontiers in Human Neuroscience*, 15

55. Richie-Halford, A., Yeatman, J. D., Simon, N., and **Rokem, A.** (2021). Multidimensional analysis and detection of informative features in human brain white matter. *PLoS Computational Biology*, 17(6):1–24. PMC5838108[pmc]

54. Cieslak, M., Cook, P. A., He, X., Yeh, F.-C., Dhollander, T., Adebimpe, A., Aguirre, G. K., Bassett, D. S., Betzel, R. F., Bourque, J., Cabral, L. M., Davatzikos, C., Detre, J. A., Earl, E., Elliott, M. A., Fadnavis, S., Fair, D. A., Foran, W., Fotiadis, P., Garyfallidis, E., Giesbrecht, B., Gur, R. C., Gur, R. E., Kelz, M. B., Keshavan, A., Larsen, B. S., Luna, B., Mackey, A. P., Milham, M. P., Oathes,

D. J., Perrone, A., Pines, A. R., Roalf, D. R., Richie-Halford, A., **Rokem, A**, Sydnor, V. J., Tapera, T. M., Tooley, U. A., Vettel, J. M., Yeatman, J. D., Grafton, S. T., and Satterthwaite, T. D. (2021). Qsiprep: an integrative platform for preprocessing and reconstructing diffusion MRI data. *Nature Methods*, 18(7):775–778

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52. Mehta, P., Petersen, C. A., Wen, J. C., Bannit, M. R., Chen, P. P., Bojikian, K. D., Egan, C., Lee, S.-I., Balazinska, M., Lee, A.Y.*, and **Rokem, A*** (2021). Automated detection of glaucoma with interpretable machine learning using clinical data and multi-modal retinal images. *American Journal of Ophthalmology*, 231:154–169

51. Richie Halford, A., Narayan, M., Simon, N., Yeatman, J., and **Rokem A.** (2021). Groupyr: Sparse Group Lasso in Python. *Journal of Open Source Software*, 6(58):3024

50. **Rokem, A** and Kay, K. (2020). Fractional ridge regression: a fast, interpretable reparameterization of ridge regression. *GigaScience*, 9(12)

49. Chandio, B. Q., Risacher, S. L., Pestilli, F., Bullock, D., Yeh, F.-C., Koudoro, S., **Rokem, A**, Harezlak, J., and Garyfallidis, E. (2020). Bundle analytics, a computational framework for investigating the shapes and profiles of brain pathways across populations. *Scientific Reports*, 10(1):17149

48. Bressler, D., **Rokem, A.**, and Silver, M. A. (2020). Slow endogenous fluctuations in cortical fMRI signals correlate with reduced performance in a visual detection task and are suppressed by spatial attention. *Journal of Cognitive Neuroscience*, 32:85–99

47. Bain, J., Yeatman, J., Schurr, R., **Rokem, A.**, and Mezer, A. (2019). Laterality of the arcuate fasciculus depends on choice of tractography. *Human Brain Mapping*, 40(13):3695–3711

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44. Keshavan, A., Yeatman, J. D., and **Rokem, A.** (2019). Combining citizen science and deep learning to amplify expertise in neuroimaging. *Frontiers in Neuroinformatics*, 13:29

43. Curtis, C., **Rokem, A.**, and Nance, E. (2019). diff_classifier: Parallelization of multi-particle tracking video analyses. *Journal of Open Source Software*, 4(36):989

42. Huber, E., Henriques, R. N., Owen, J. P., **Rokem, A.**, and Yeatman, J. D. (2019). Applying microstructural models to understand the role of white matter in cognitive development. *Developmental Cognitive Neuroscience*, 36:100624

41. Tian, Q., Yang, G., Leuze, C., **Rokem, A.**, Edlow, B. L., and McNab, J. A. (2019). Generalized diffusion spectrum magnetic resonance imaging (GDSI) for model-free reconstruction of the ensemble average propagator. *NeuroImage*, 189:497–515

40. Smith, A. M., Niemeyer, K. E., Katz, D. S., Barba, L. A., Githinji, G., Gymrek, M., Huff, K. D., Madan, C. R., Mayes, A. C., Moerman, K. M., Prins, P., Ram, K., **Rokem, A**, Teal, T. K., Guimera, R. V., and Vanderplas, J. T. (2018). Journal of open source software (JOSS): design and first-year review. *PeerJ Comput. Sci.*, 4:e147

39. Huppenkothen, D., Arendt, A., Hogg, D. W., Ram, K., VanderPlas, J. T., and **Rokem, A** (2018). Hack weeks as a model for data science education and collaboration. *Proceedings of the National Academy of Sciences*, 115(36):8872–8877

38. Huber, E., Donnelly, P. M., **Rokem, A** , and Yeatman, J. D. (2018). Rapid and widespread white matter plasticity during an intensive reading intervention. *Nat. Commun.*, 9(1):2260

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34. Polimis, K., **Rokem, A.**, and Hazelton, B. (2017). Confidence intervals for random forests in python. *The Journal of Open Source Software*, 2(19)

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32. Beyeler, M., **Rokem, A.**, Boynton, G. M., and Fine, I. (2017b). Learning to see again: Biological constraints on cortical plasticity and the implications for sight restoration technologies. *Journal of neural engineering*, 14(5):051003

31. Henriques, R., **Rokem, A.**, Garyfallidis, E., St-Jean, S., Peterson, E., and Correia, M. (2017). [re] Optimization of a free water elimination two-compartment model for diffusion tensor imaging. *ReScience*, 3

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28. DeSimone, K., **Rokem, A.**, and Schneider, K. (2016). Popeye: a population receptive field estimation tool. *The Journal of Open Source Software*, 1(8)

27. Craddock, R., Margulies, D., Bellec, P., Nichols, B., Alcauter, S., Barrios, F., Burnod, Y., Cannistraci, C., Cohen-Adad, J., De Leener, B., Dery, S., Downar, J., Dunlop, K., Franco, A., Froehlich, C. S., Gerber, A., Ghosh, S., Grabowski, T., Hill, S., Heinsfeld, A., Hutchison, R. M., Kundu, P., Laird, A., Liew, S.-L., Lurie, D., McLaren, D., Meneguzzi, F., Mennes, M., Mesmoudi, S., O'Connor, D., Pasaye, E., Peltier, S., Poline, J.-B., Prasad, G., , Pereira, R., Quirion, P.-O., **Rokem, A.**, Saad, Z., Shi, Y., Strother, S., Toro, R., Uddin, L., Van Horn, J., Van Meter, J., Welsh, R., and Xu, T. (2016). Brainhack: a collaborative workshop for the open neuroscience community. *Gigascience*, 5:16

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17. McDevitt, E. A., **Rokem, A.**, Silver, M. A., and Mednick, S. C. (2014). Sex differences in sleep-dependent perceptual learning. *Vision Res.*, 99:172–179

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4. **Rokem, A.** and Silver, M. A. (2009). A model of encoding and decoding in V1 and MT accounts for motion perception anisotropies in the human visual system. *Brain Res.*, 1299:3–16

3. **Rokem, A.** and Ahissar, M. (2009). Interactions of cognitive and auditory abilities in congenitally blind individuals. *Neuropsychologia*, 47(3):843–848

2. Eyherabide, H. G., **Rokem, A.**, Herz, A. V., and Samengo, I. (2008). Burst firing is a neural code in an insect auditory system. *Front Comput Neurosci*, 2:3

1. **Rokem, A.**, Watzl, S., Gollisch, T., Stemmler, M., Herz, A. V., and Samengo, I. (2006). Spike-timing precision underlies the coding efficiency of auditory receptor neurons. *J. Neurophysiol.*, 95(4):2541–2552

Peer-reviewed conference proceedings

12. Liu, F., Sankaranarayanan, V., Villanueva-Meyer, J., Hervey-Jumper, S., Hawkins, J., Damasceno, P., Bisson, M., Romero, J., Kurth, T., Fatica, M., Garyfallidis, E., **Rokem A**, Crane, J. C., and Majumdar,

S. (2023). Clinical validation of rapid GPU-enabled DTI tractography of the brain. *Electronic Imaging*, 35(11):237–1–237–1

11. Chang, K., Burke, L., LaPiana, N., Howlett, B., Hunt, D., Dezelar, M., Andre, J. B., Ralston, J., **Rokem, A***, and Mac Donald, C* (2023). Advanced diffusion MRI modeling sheds light on FLAIR white matter hyperintensities in an aging cohort. *Proceedings of the MICCAI Workshop on Computational Diffusion MRI, 2023*

10. Kruper, J. and **Rokem, A** (2023). Automatic fast and reliable recognition of a small brain white matter bundle. *Proceedings of the MICCAI Workshop on Computational Diffusion MRI, 2023*

9. Hayot-Sasson, V., Glatard, T., and **Rokem, A** (2021). The benefits of prefetching for large-scale cloud-based neuroimaging analysis workflows. In *2021 IEEE Workshop on Workflows in Support of Large-Scale Science (WORKS)*, pages 42–49

8. Beyeler, M., Boynton, G. M., Fine, I., and **Rokem, A.** (2019a). Model-based recommendations for optimal surgical placement of epiretinal implants. *The 22nd International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI 2019), Shenzhen, China, Oct. 13-17, 2019.*

7. Richie-Halford, A. and **Rokem, A.** (2018). Cloudknot: A Python Library to Run your Existing Code on AWS Batch. In Fatih Akici, David Lippa, Dillon Niederhut, and Pacer, M., editors, *Proceedings of the 17th Python in Science Conference (SciPy)*

6. Beyeler, M., Boynton, G., Fine, I., and **Rokem, A.** (2017a). pulse2percept: A Python-based simulation framework for bionic vision. In *Proceedings of the 15th Python in Science Conference (SciPy)*

5. Mehta, P., Dorkenwald, S., Zhao, D., Kaftan, T., Cheung, A., Balazinska, M., **Rokem, A.**, Connolly, A., Vanderplas, J., and AlSayyad, Y. (2017). Comparative evaluation of big-data systems on scientific image analytics workloads. *Proceedings of the VLDB Endowment*, 10(11):1226–1237

4. Holdgraf, C., Culich, A., **Rokem, A.**, Deniz, F., Alegro, M., and Ushizima, D. (2017). Portable learning environments for hands-on computational instruction: Using container-and cloud-based technology to teach data science. In *Practice and Experience in Advanced Research Computing, 2017*

3. **Rokem, A.**, Aragon, C., Arendt, A., Fiore-Gartland, B., Hazelton, B., Hellerstein, J., Herman, B., Howe, B., Lazowska, E., Parker, M., Staneva, V., Stone, S., Tanweer, A., and Vanderplas, J. (2015a). Building an urban data science summer program at the University of Washington eScience Institute. In *The Bloomberg Data Science 4 Good Exchange*

2. Zheng, C. Y., Pestilli, F., and **Rokem, A.** (2014). Deconvolution of High Dimensional Mixtures via Boosting, with Application to Diffusion-Weighted MRI of Human Brain. *Adv Neural Inf Process Syst*, 27:2699–2707

1. **Rokem, A.**, Trumpis, M., and Pèrez, F. (2009). Nitime: time-series analysis for neuroimaging data. In Varoquaux, G., van der Walt, S., and Millman, J., editors, *Proceedings of the 8th Python in Science Conference (SciPy)*

Books and book chapters

4. **Rokem, A** and Yarkoni, T. (2023). *Neuroimaging and Data Science: An Introduction*. Princeton University Press, Princeton, NJ. http://neuroimaging-data-science.org/

3. **Rokem, A.** (2018). Reproducibility in human neuroimaging research: A practical example from the analysis of diffusion mri. In Kitzes, J., Turek, D., and Deniz, F., editors, *The Practice of Reproducible Research: Case Studies and Lessons from the Data-Intensive Sciences*. University of California Press, Oakland, CA

2. **Rokem, A.** and Chirigati, F. (2018). Glossary of reproducible research. In Kitzes, J., Turek, D., and Deniz, F., editors, *The Practice of Reproducible Research: Case Studies and Lessons from the Data-Intensive Sciences*. University of California Press, Oakland, CA

1. **Rokem, A.**, Marwick, B., and Staneva, V. (2018). Assessing reproducibility. In Kitzes, J., Turek, D., and Deniz, F., editors, *The Practice of Reproducible Research: Case Studies and Lessons from the Data-Intensive Sciences*. University of California Press, Oakland, CA

Work in progress, preprints, white papers and commentary

1. Gilmore, A., Eshun, A. E., Wu, Y., Lee, A., and **Rokem, A** (2025). Vessels hiding in plain sight: quantifying brain vascular morphology in anatomical MR images using deep learning

2. Kruper, J., Richie-Halford, A., Qiao, J., Gilmore, A., Chang, K., Grotheer, M., Roy, E., Caffara, S., Gomez, T., Chou, S., Cieslak, M., Koudoro, S., Garyfallidis, E., Satterthwaite, T., Yeatman, J., and **Rokem, A** (2025). A software ecosystem for brain tractometry processing, analysis, and insight

3. Luo, A. C., Meisler, S. L., Sydnor, V. J., Alexander-Bloch, A., Bagautdinova, J., Barch, D. M., Bassett, D. S., Davatzikos, C., Franco, A. R., Goldsmith, J., Gur, R. E., Gur, R. C., Hu, F., Jaskir, M., Kiar, G., Keller, A. S., Larsen, B., Mackey, A. P., Milham, M. P., Roalf, D. R., Shafiei, G., Shinohara, R. T., Somerville, L. H., Weinstein, S. M., Yeatman, J. D., Cieslak, M., **Rokem, A**, and Satterthwaite, T. D. (2025). Two axes of white matter development. https://www.biorxiv.org/content/early/2025/03/20/2025.03.19.644049

4. Legarreta Gorroño, J. H., Savary, E., Markiewicz, C. J., **Rokem, A**, Norgaard, M., and Esteban, O. (2025). eddymotion: An open implementation of FSL's eddy with volume-to-volume artifact estimation for neuroimaging beyond diffusion MRI. https://osf.io/gfny9_v2

5. Shafiei, G., Esper, N. B., Hoffmann, M. S., Ai, L., Chen, A. A., Cluce, J., Covitz, S., Giavasis, S., Lane, C., Mehta, K., Moore, T. M., Salo, T., Tapera, T. M., Calkins, M. E., Colcombe, S., Davatzikos, C., Gur, R. E., Gur, R. C., Pan, P. M., Jackowski, A. P., **Rokem, A**, Rohde, L. A., Shinohara, R. T., Tottenham, N., Zuo, X.-N., Cieslak, M., Franco, A. R., Kiar, G., Salum, G. A., Milham, M. P., and Satterthwaite, T. D. (2025). Reproducible brain charts: An open data resource for mapping brain development and its associations with mental health. https://www.biorxiv.org/content/10.1101/2025.02.24.639850v1

6. Chang, K. H., Burke, L., LaPiana, N., Howlett, B., Hunt, D., Dezelar, M., Andre, J. B., Curl, P., Ralston, J. D., **Rokem, A***, and MacDonald, CL* (2024). Free water elimination tractometry for aging brains. https://www.biorxiv.org/content/10.1101/2024.11.10.622861v1

7. Hagen, M. P., Provins, C., MacNicol, E., Li, J., Gomez, T., Garcia, M., Seeley, S., Haitz Legarreta, J., Norgaard, M., Bissett, P. G., Poldrack, R. A., **Rokem, A**, and Esteban, O. (2024). Quality assessment and control of unprocessed anatomical, functional, and diffusion MRI of the human brain using MRIQC. https://www.biorxiv.org/content/10.1101/2024.10.21.619532v1

8. **Rokem, A**, Qiao, J., Yeatman, J. D., and Richie-Halford, A. (2023). Incremental improvements in tractometry-based brain-age modeling with deep learning. https://www.biorxiv.org/content/10.1101/2023.03.02.530885v1

9. **Rokem, A**, Mandava, V., Cristea, N., Tambay, A., and Connolly, A. J. (2024). Towards an open-source model for data and metadata standards. https://osf.io/br6u2

10. **Rokem, A** (2021). News & views: Detect-ing brain anomalies with autoencoders. *Nature Computational Science*, 1(9):569–570

11. **Rokem, A**, Dichter, B., Holdgraf, C., and Ghosh, S. S. (2021). Pan-neuro: interactive computing at scale with BRAIN datasets. https://osf.io/mwh2b/

12. Barba, L. A., Bazán, J., Brown, J., Guimera, R. V., Gymrek, M., Hanna, A., Heagy, L. J., Huff, K. D., Katz, D. S., Madan, C. R., Moerman, K. M., Niemeyer, K. E., Poulson, J. L., Prins, P., Ram, K., **Rokem,** , Smith, A. M., Thiruvathukal, G. K., Thyng, K. M., Uieda, L., Wilson, B. E., and Yehudi, Y. (2019). Giving software its due through community-driven review and publication. https://osf.io/f4vx6

Online courses

1. Rokem, A. (2018). DataCamp course: Convolutional neural networks for image processing. https://www.datacamp.com/courses/convolutional-neural-networks-for-image-processing

2. Rokem, A. (2019). DataCamp course: Introduction to Matplotlib. https://www.datacamp.com/courses/introduction-to-matplotlib

Honors and awards

2024	Organization for Human Brain Mapping Education in Neuroimaging Award ($2,500).
2023	McGill University Neuro / Irv and Helga Cooper Foundation Open Science Prize for international projects, received as a member of the Brain Imaging Data Structure steering group ($ 80,000 CAD).
2022 – 2024	Elected member of the Brain Imaging Data Structure (BIDS) steering group.
2012 – 2015	NIH Postdoctoral National Research Service Award.
2009 – 2010	NIH Predoctoral National Research Service Award.

Open-source software contributions

As major contributor

2009 –	*Nitime*: Time-series analysis for neuroscience data	https://nitime.org/
2011 –	*DIPY*: Diffusion Imaging in Python	https://dipy.org/
2015 –	*pyAFQ*: Automated Fiber Quantification in Python	https://tratcometry.org/pyAFQ/
2016 –	*Pulse2percept*: Models for Sight Restoration	https://pulse2percept.readthedocs.io/en/stable/
2016 –	Confidence intervals for scikit-learn forest algorithms	http://contrib.scikit-learn.org/forest-confidence-interval/
2017 –	*AFQ-Browser*: Web-based tractometry visualization	https://tractometry.org/AFQ-Browser
2017 –	*Cloudknot*: a Pythonic interface to AWS Batch Services	https://nrdg.github.io/cloudknot
2021 –	*AFQ-Insight*: Machine learning for tractometry	https://tractometry.org/AFQ-Insight
2024 –	*Tractable*: Statistical analysis for tractometry	https://tractometry.org/tractable

As minor contributor

Minor contributions across many open source software libraries in the Python scientific eco system, including *Matplotlib*, *Scikit Learn*, *Scikit Image*, *Jupyter* and *IPython*, as well as many neuroscience-specific software libraries, including *Nibabel*, *Nipype*, *Nipy*, *Vistasoft* and *Popeye*.

Current funded research

All $ amounts specified for total cost

As Principal Investigator

2017-2027	NIH/National Institute for Mental Health, R25: Summer Institute in Neuroimaging and Data Science, $2,003,598
2025	NSF NAIRR Pilot: A volumetric foundation model for brain imaging $50,023

As co-PI or senior personnel

2018-2027	NIH R01: Community-supported open-source software for computational neuroanatomy (role: subcontract PI, PI: Eleftherios Garyfallidis), $ 2,726,578
2021-2026	NIH U19: Adult Changes in Thought (ACT) Research Program (role: Senior Personnel, PI: Eric Larson and Paul Crane), $44,589,170
2019-2029	NIH R01: Aging eyes and aging brains in studying Alzheimer's disease: modern ophthalmic data collection in the Adult Changes in Thought (ACT) study (role: Senior Personnel; PI: Cecilia Lee). $24,930,816

Completed funded research

As Principal Investigator

2023-2024	NSF Workshop: Towards an Open Source Model for Data and Metadata Standards (role: PI) $ 99,953
2021-2024	NIH R01 NIPreps: integrating neuroimaging preprocessing workflows across modalities, populations, and species (role: multi-PI) $1,630,690
2019-2024	NIH BRAIN Initiative RF1: A data science toolbox for analysis of Human Connectome Project diffusion MRI (role: PI), $707,444.
2021-2022	UW Azure Cloud Computing Credits (role: PI), $43,000
2021	Google Cloud Research Credits (role: PI), $5,000
2021	Amazon Web Services Cloud Computing Credits (role: PI), $5,000
2020	Google Cloud Research Credits (role: PI), $5,000
2021	UW Azure Cloud Computing Credits (role: PI), $20,000
2020	Google Cloud Research Credits (role: PI), $5,000
2019	Google TensorFlow Research Cloud credits (role: PI), 100 TPU hours
2017	XSEDE: Educational allocation for a one-day course in neuroscience and data science (role: PI), 10,000 core hours.
2016	Amazon Web Services cloud computing credits for research (role: PI), $30,000.
2012-2015	NIH/National Eye Institute, National Research Service Award (F32): The Anatomical Basis of Texture Perception in Central and Peripheral Visual Field (role: PI), $155,346.
2009-2010	NIH/National Institute for Aging, National Research Service Award (F31): Neural Mechanisms of Perceptual Learning (role: PI), $22,253.

As co-PI or senior personnel

2022-2024	Chan Zuckerberg Initiative Essential Open Source Software: Diffusion Imaging in Python (role: co-Investigator; PI: Serge Koudoro), $165,407
2021-2024	NIH R01 A community-driven development of the brain imaging data standard (BIDS) to describe macroscopic brain connections (role: Senior Personnel; PI: Franco Pestilli) $352,342.
2019-2023	NSF BDHUBS: Collaborative Proposal: West: Accelerating the Big Data Innovation Ecosystem (role: Senior Personnel, PI: Ed Lazowska), $201,822.
019-2023	NSF HDR: I-DIRSE-FW: Accelerating the Engineering Design and Manufacturing Life-Cycle with Data Science (role: co-PI; PI: Magda Balazinska), $2,320,979.
2017-2023	The Bill & Melinda Gates Foundation: Advance Data Analytic Support for Strategic PNW Partners by eScience Institute (role: co-PI, PI: Bill Howe), $754,601.
2021-2022	NSF AccelNet Exchange Grant through the International Network for Biologically-Inspired Computing $10,000.
2018-2022	NIH BRAIN Initiative U19: Computational and Circuit Mechanisms Underlying Rapid Learning. (role: Data Science Core Senior Personnel, PI: Beth Buffalo), $14,439,172.
2018 - 2021	NSF TRIPODS + X EDU: Foundational training in neuroscience and geoscience via hack weeks (role: co-PI, PI: Maryam Fazel), $ 185,058.
2017-2020	NSF SI2-SSE: An ecosystem of reusable image analytics pipelines (role: co-PI, PI: Andy Connoly), $500,000.
2017-2018	The Bill & Melinda Gates Foundation: The King County Analytics Project (role: co-PI, PI: Bryna Hazelton), $320,000.
2017-2018	NSF ACI SI2-S2I2: Conceptualization: Conceptualizing a US Research Software Sustainability Institute (URSSI) (role: senior Personnel, PI: Daniel Katz), $ 499,999.
2015-2018	NSF BDHUBS: A Big Data Innovation Hub for the Western United States (role: co-PI, PI: Ed Lazowska), $201,822.
2015-2016	The Bill & Melinda Gates Foundation: Increasing Data-Driven Decision Making through Data Modeling Techniques and Best Practices (role: co-PI, PI: Bryna Hazelton), $140,995.

Invited talks (last five years)

4/2025	Redwood Center for Theoretical Neuroscience, University of California, Berkeley
11/2024	NIH Generalist Repository Ecosystem Initiative Council of Councils Working Group
7/2024	National Institute for Physiological Sciences, Okazaki, Japan
7/2024	Yonsei University, Seoul, Korea
6/2024	Department of Psychology, University of Marburg, Germany
11/2023	Tanenbaum Open Science Institute Leaders Council. McGill University, Canada
11/2023	Quantitative Life Sciences and Medicine seminar series. McGill University, Canada
4/2023	Academic Data Science Alliance. "Careers in neuroscience and data science" panel.
11/2022	Society for Neuroscience Professional Development Workshop: "Brain Data Science: A World of New Neuroscience Career Opportunities".
7/2022	Pacific Northwest National Lab MARS Seminar (online).
8/2021	Research Running on Cloud Compute & Emerging Technologies (RRoCCET) 2021 (online).
6/2021	Oregon State University (Corvalis) and Nanyang Technical University (Singapore) CN Yang Scholars program (online)
10/2020	Open Data Science Conference West, San Francisco, CA (and online).
9/2020	Amazon Web Services Education: Research Seminar Series (online)

Selected Conference presentation (last five years)

1. Advanced diffusion modeling classifies FLAIR white matter hyperintensity types in an aging cohort. Kelly Chang, Luke Burke, Nina LaPiana, Bradley Howlett, David Hunt, Margaret Dezelar, Jalal B. Andre, James Ralston, **Ariel Rokem ***, Christine Mac Donald* . Organization for Human Brain Mapping, 2024. (* indicates equal contribution). KC was awarded an OHBM merit award for this abstract.

2. Early life adversity and white matter development. Adam Richie-Halford, Ethan Roy, John Kruper, Jason Yeatman, **Ariel Rokem**. Annual Meeting of the Society for Neuroscience, 2022.

3. Deep learning for analysis of diffusion-MRI based white matter tractometry. Joanna Qiao, Jason Yeatman, **Ariel Rokem**, Adam Richie-Halford (2022). Annual Meeting of the Society for Neuroscience, 2022.

4. Francois Rheault, Valérie Hayot-Sasson, Robert E. Smith, Christopher Rorden, Jacques-Donald Tournier, Eleftherios Garyfallidis, Fang-Cheng Yeh, Christopher J. Markiewicz, Matthew Brett, Ben Jeurissen, Paul A. Taylor, D. Baran Aydogan, Derek A. Pisner, Serge Koudoro, Soichi Hayashi, Daniel Haehn, Steve Pieper, Daniel Bullock, Emanuele Olivetti, Jean-Christophe Houde, Marc-Alexandre Côté, Flavio Dell'Acqua, Alexander Leemans, Maxime Descoteaux, Bennett Landman, Franco Pestilli, and **Ariel Rokem** (2002). TRX: A community-oriented tractography file format. Annual Meeting of the Organization for Human Brain Mapping, 2022.

5. Adam Richie-Halford, Matthew Cieslak, Azeez Adebimpe, Sydney Covitz, McKenzie Paige Hagen, John Kruper, Mengjia Lyu, Oscar Miranda-Dominguez, Audrey Houghton, Damien Fair, Jason D. Yeatman, Theodore D. Satterthwaite, **Ariel Rokem**. (2022) NIRV: The NeuroImaging Report Viewer. Annual Meeting of the Organization for Human Brain Mapping, 2022.

6. Mareike Grotheer, David Bloom, John Kruper, Manjari Narayan, Adam Richie-Halford, Vicente A. Aguilera González, Jason D. Yeatman, Kalanit Grill-Spector, and **Ariel Rokem** (2022) Spatiotemporal differences in development of preterm infants white matter bundles are explained by faster *in utero* compared to *ex utero* myelination. Annual Meeting of the Organization for Human Brain Mapping, 2022.

7. Manjari Narayan, Noah Simon, Adam Richie-Halford, Jason Yeatman, **Ariel Rokem** (2021). Non-parametric causal analysis of brain and cognition, applied to developmental neuroimaging. Annual Meeting of the Organization for Human Brain Mapping 2021.

8. John Kruper, Jason D. Yeatman, Adam Richie-Halford,David Bloom, Mareike Grotheer, Sendy Caffarra, Gregory Kiar, Iliana I. Karipidis, Ethan Roy, **Ariel Rokem** (2021). Evaluating the reliability of diffusion-MRI based tractometry. Annual Meeting of the Organization for Human Brain Mapping 2021.

9. Adam Richie-Halford, Matthew Cieslak, Alexandre R. Franco, Valerie J. Sydnor, Jason Yeatman, Lei Ai, Michael Milham, Theodore D. Satterthwaite, **Ariel Rokem** (2021). A preprocessed open diffusion derivatives dataset from the Healthy Brain Network. Annual Meeting of the Organization for Human Brain Mapping 2021. Received *Merit Abstract Award*.

10. Mauro Bisson, Josh Romero, Thorsten Kurth, Massimiliano Fatica, Pablo F. Damasceno, Xihe Xie, Adam Richie-Halford, Serge Koudoro, Eleftherios Garyfallidis, **Ariel Rokem** (2021). GPU-accelerated diffusion MRI tractography in DIPY. International Society for Magnetic Resonance in Medicine 2021

11. Rafael Neto Henriques, Marta Correia, Maurizio Marrale, Elizabeth Huber, John Kruper, Serge Koudoro, Jason Yeatman, Eleftherios Garyfallidis, **Ariel Rokem** (2021). Diffusional Kurtosis Imaging in the Diffusion Imaging in Python Project. Inernational Society for Magnetic Resonance in Medicine 2021

12. A. Richie-Halford, J. Yeatman, N. Simon, and **A. Rokem** (2021). Multidimensional analysis and detection of informative features in diffusion MRI measurements of human white matter. Inernational Society for Magnetic Resonance in Medicine 2021. Received the *Magna Cum Laude* award based on reviewer scores.

13. A. Keshavan, J. Yeatman, **A. Rokem** (2019). Swipes for science: An open-source gamified citizen science framework for scalable data annotation. Organization for Human Brain Mapping, 2019.

14. A. Richie-Halford J. Yeatman, **A. Rokem**, A. Keshavan (2019). DMRIprep: a Robust, Scalable Preprocessing Pipeline for diffusion MRI. Organization for Human Brain Mapping 2019.

15. S. Xiao, Y. Wu, A. Y. Lee, **A. Rokem** (2019). MRI2MRI: deep learning neural networks infer brain diffusion properties from T1-weighted MRI. Organization for Human Brain Mapping 2019.

16. A. Richie-Halford, Jason Yeatman, Noah Simon, and **A. Rokem** (2018, 2019). Multidimensional analysis and detection of informative features in diffusion MRI measurements of human white matter. Society for Neuroscience, 2018. Organization for Human Brain Mapping 2019.

Teaching

Classes

As principal instructor

Spring 2024	Informatics for Psychology, Graduate Seminar, UW Department of Psychology. Website: https://uw-psych.github.io/2024-psych532.

As guest instructor

5/2021	Image Analysis for Data Scientists, UW Department of Chemical Engineering (Instructor: Chad Curtis)
2017 - 2018	Data Science and Society, UW Department of Sociology (Instructor: Afra Mashhadi)
4/2014	MA capstone class, Department of Statistics, University of California, Berkeley (Instructor: Victoria Stodden).
10/2013	MRI methods, Department of Psychology, Stanford University (Instructor: Brian Wandell).

Software and Data Carpentry

2015 – 2020	University of Washington eScience Institute: led instruction of 20 workshops, >1,000 participants from >30 UW departments.
2015 – 2020	University of Washington eScience Institute: led 3 Carpentries instructor training workshops. Trained >40 Carpentries instructors.
2018 – 2021	Annual Instructor Training, The West Big Data Innovation Hub. Seattle, WA. Trained more than >50 Carpentries Instructors.

Other workshops

2021 – 2024	Co-organizer (with Catherine Lebel, François Rheault): "Tractometry : peering into the white matter", educational course at the annual meeting of the Organization for Human Brain Mapping
2023 –	Faculty: African Brain Data Science Academy https://africanbraindatanetwork.com/abds-academy/.
1/2022	Organizer and lead instructor: Workshop on data science training and collaboration in Hispanic-Serving Institutions (West Big Data Hub and HSI STEM Hub; https://uwescience.github.io/dstc-20220118/).
6/2021	Organizer and lead instructor: Workshop on data science training and collaboration in Hispanic-Serving Institutions (West Big Data Hub and HSI STEM Hub; https://uwescience.github.io/dstc-2021/).
9/2019	Organizer and lead instructor: workshop on data science training and collaboration in Hispanic-Serving Institutions (West Big Data Hub and HSI STEM Hub; https://uwescience.github.io/2019-09-16-dstc-workshop/).
2019 & 2020	Co-organizer (with Andrew Doyle): "Deep Learning in Human Brain Mapping", educational course at the annual meeting of the Organization for Human Brain Mapping

Mentorship

Postdocs

2023 –	Kelly Chang
2022 – 2023	Woon Ju Park (as secondary mentor on K99, with Ione Fine as primary), Currently Assistant Professor at Georgia Tech.
2020 – 2022	Adam Richie-Halford. Currently Research and Development Scientist at Stanford.
2020 – 2021	Manjari Narayan (co-mentored with Jason Yeatman). Currently Machine Learning Scientist at Dyno Therapeutics.
2016 – 2019	Michael Beyeler (co-mentored with Ione Fine). Currently Assistant Professor at the University of California, Santa-Barbara.
2017 – 2018	Anisha Keshavan (co-mentored with Jason Yeatman). Currently Senior Data Scientist at Stratagen Bio.
2016 – 2017	Dongfang Zhao (co-mentored with Magda Balazinska). Currently Assistant Professor at the University of Washington.

PhD students

As principal advisor

2022 –	John Kruper (NSF Graduate Research Fellowship recipient)
2021 –	McKenzie Hagen (DOE Computational Science Graduate Fellowship recipient)

As secondary advisor

2017 – 2023	Ezgi Yücel (with Ione Fine)
2022 –	Vaishnavi Mohan (with Ione Fine)

PhD committee membership

At the UW

2021 – 2023	Shervin Sahba, UW Physics
2022	Kelly Chang, UW Department of Psychology
2019 – 2020	Parmita Mehta, UW Computer Science and Engineering
2017 – 2020	Chad Curtis, UW Department of Chemical Engineering
2017	Kivan Polimis, UW Department of Sociology

At other institutions

2023	Melaniè Garcia, Trinity College, Dublin, Ireland
2024 – 2025	Audrey Luo, University of Pennsylvania
2024 –	Stephanie Zika, University of Marburg, Germany
2025 –	Howard Chiu, Stanford University

Post-baccalaureate students

2022 – 2024	Teresa Gomez (NIH research fellowship)
2020 – 2022	John Kruper (UW Institute of Neuroengineering post-baccalaureate fellowship recipient).
2020 – 2021	David Bloom

Google Summer of Code Open Source Software Interns

Summer 2016	Shahnawaz Ahmed (DIPY)
Summer 2015	Rafael Neto-Henriques (DIPY)

Research interns and undergraduate students

2024 –	Sam Chou (CSE undergraduate student)
2023 –	Asa Gilmore (Biology undergraduate student)
2023	Qiqi Liang (Biology undergraduate student), Isaac Crane (Highschool student intern)
2022	Joanna Qiao (Psychology independent study)
2021	Leqi Teng (Psychology Honors Student), Cecilia Barnes (HCDE independent study)

Additional mentorship

2022	Academic Data Science Alliance individual mentorship: Emily Grabowski
2023 –	African Brain Data Science Network mentorship: Fidelis Bayor (Ghana), Ibeachu Chinagorom (Nigeria), Safiya Hanwa (Nigeria), Anita Eshun (Ghana)

Public Outreach

2023 –	Lectures about early life brain development to small groups of parents through the Program for Early Parent Support (PEPS) Seattle

Service

At the University of Washington

2020 –	Department of Psychology, Graduate Training Committee
2020 –	Department of Psychology, Graduate Admissions Committee
2020 –	Department of Psychology, Data Science Liaison
2022 –	Department of Psychology, Data-intensive Research Committee
2022 –	Department of Psychology, Mentor, Faculty Mentoring Program
2024 –	Research Royalty Fund reviewer
2024 –	Mentor, Biological Mechanisms of Healthy Aging Training Program T32 program
2023 –	Mary Gates Fellowship reviewer
2023 –	Mentor, Training in theoretical and computational approaches to neural circuits of cognition T32 program
2023	Chair, organizing committee for the eScience 15-year anniversary symposium
2016 –	Course Director, Summer Institute in Neuroimaging and Data Science (https://neurohackademy.org)
2015 – 2024	University of Washington eScience Institute Data Science for Social Good fellowship program admissions committee
2015 – 2024	University of Washington eScience Institute Data Science incubator review committee
2024 –	University of Washington eScience Institute AI and Data Science accelerator review committee

At national and international organizations

2024 –	Member, Aperture Neuro Oversight Committee (Organization for Human Brain Mapping)
2024 –	Member, Scientific Committee, International Society for Tractography
2021 –	Member, Advisory Committee for USC-based Reproducible Rehabilitation (ReproRehab) research education program https://www.reprorehab.usc.edu/
2022 – 2024	Member, Brain Imaging Data Structure (BIDS) steering group
2020 – 2024	Chair, International Neuroinformatics Coordinating Facility Training and Education Committee
2021	Chair, "Data Science and Neuroinformatics" symposium at the International Neuroinformatics Coordination Facility Assembly
2016 – 2022	Software Carpentry Instructor Trainer: training and certifying instructors for Software Carpentry
2018 – 2022	Member, Organization for Human Brain Mapping Education Committee
2020 – 2022	Deputy Chair, International Neuroinformatics Coordinating Facility Training and Education Committee
2017 – 2024	Member of the International Neuroinformatics Coordinating Facility Training and Education Committee
2016 – 2019	Co-PI of the Western Big Data Innovation Hub

Editorial board member, *Scientific Data* (2021 -), *Journal of Open Source Software* (2016 - 2022);

Reviewer for *Annals of Applied Statistics*, *PLoS One*, *Human Brain Mapping*, *Journal of Cognitive Neuroscience*, *Frontiers in Human Neuroscience*, *Frontiers in Abnormal Psychology*, *Journal of Open Research Software*, *Neuroimage*, *Journal of Vision*, *F1000 Research*, *Journal of Neuroimaging*, *Current Opinion in Neuroscience*, *Psychophysiology*, *Scientific Data*, *Proceedings of the National Academy of Science, USA*, *Neuroinformatics*, *PLoS Computational Biology*, *eLife*, *IOVS*, *Nature Communications*, *Biological Psychi-*

atry, *Imaging Neuroscience*, *Ophthalmology Science*, *Aperture Neuro*. Program committee member for *Pattern Recognition in Neuroimaging* (2015, 2016), *Scientific Computing in Python* (2016, 2017).

Grant reviewer for *NIH*, *NSF*, *Academic Data Science Alliance*, *Chan Zuckerberg Initiative*, *U.S.-Israel Binational Science Foundation (BSF)*.

Last updated: April 30, 2025