Adrian Vasile Dalca

Curriculum Vitae

Massachusetts General Hospital,
Harvard Medical School, and
Computer Science and Artificial Intelligence Lab,
Massachusetts Institute of Technology

adalca@mit.edu
http://adalca.mit.edu

Research Experience

Assistant Professor, Radiology, MGH, Harvard Medical School, Charlestown, MA

Laboratory for Computational Neuroscience. 2020 – Present

Research Scientist, CSAIL, MIT, Cambridge, MA

Data Driven Inference Group. 2020 – Aug 2026

Instructor (Junior Faculty), Radiology, MGH, Harvard Medical School, Charlestown, MA

Laboratory for Computational Neuroscience. Apr-Dec 2019

Postdoctoral Fellow, MGH, Harvard Medical School, Charlestown, MA

Biomedical Data Analysis Group. Advisor: Prof. Mert Sabuncu 2017 – 2019

Research Assistant, Massachusetts Institute of Technology, Cambridge, MA

Medical Vision Group. Advisor: Prof. Polina Golland 2010 – 2016
Computational Biology Lab. Advisor: Prof. Manolis Kellis Fall 2009

Research Assistant, University of Toronto, Toronto, ON, Canada

Computational Biology Lab. Advisor: Prof. Michael Brudno 2006 – 2009
Geophysics Lab. Advisor: Prof. Jerry Mitrovica 2007 – 2008

Education

Ph.D. Massachusetts Institute of Technology 2016

Electrical Engineering and Computer Science
Thesis: Genetic, Clinical and Population Priors for Brain Images
Minor: Healthcare Ventures
Advisor: Prof. Polina Golland
Thesis Readers: John Guttag (MIT), Mert Sabuncu (HMS/MGH), Natalia Rost (HMS/MGH)
GPA: 5.00/5.00

S.M. Massachusetts Institute of Technology 2012

Electrical Engineering and Computer Science
Thesis: Segmentation of Nerve Bundles and Ganglia in Spine MRI using Particle Filters
Advisor: Prof. Polina Golland
GPA: 5.00/5.00

M.Sc. University of Toronto 2010

Department of Computer Science
Thesis: VARiD: A Variation Detection Framework for Color-Space and Letter-Space Platforms
Advisor: Prof. Michael Brudno
GPA: 4.00/4.00

Hon. B.Sc. University of Toronto, with High Distinction 2008

Department of Computer Science
Advisor: Prof. Michael Brudno
GPA: 3.97/4.00

Teaching and Mentorship

Research Supervision and Mentorship 2014–Current

Mentored or co-advised 16 graduate students, including visiting students 2017–Current
Resulted in several publications, including ones for which I am senior author

Served on 5 doctoral thesis committees and 1 doctoral examination committee
Served on 2 master's thesis committees

Provided research supervision or mentoring to 8 research fellows and junior faculty
Mentored 1 additional research engineer

Mentored five MIT undergraduate students 2014–2017
Students successfully contributed to code and publications, including a best-paper award

Teaching Assistant, Massachusetts Institute of Technology, Cambridge, MA

6.815/865: Computational Photography. Prof. Fredo Durand 2015

Teaching Assistant, University of Toronto, Toronto, ON, Canada

CSC120: Computer Science for the Sciences 2009
CSC207: Software Design 2008

Publications

(‡) equal contribution; (*) senior role.

Journals and Conference Proceedings

Korbinian Eckstein, Anthony Androulakis, Thuy T. Dao, Chris Drake, Taylor Hanayik, Christian O'Reilly, Cosima Prahm, Zhengjia Wang, Paul Wighton, **Adrian V. Dalca**, Steffen Bollmann, and Chris Rorden
"Seamless neuroimaging visualization: The NiiVue wrapper ecosystem"
Aperture Neuro 6 (2026). DOI: 10.52294/001c.167815.

M. Rakic, A. Hoopes, M. Abulnaga, M. Sabuncu, J. Guttag, and **Adrian V. Dalca**
"AtlasMorph: Learning conditional deformable templates for brain MRI"
MedIA: Medical Image Analysis 110 (2026), p. 103893.

A. Kazi, J. Mora, B. Fischl, **Adrian V. Dalca**, and I. Aganj
"Structural Connectome Analysis using a Graph-based Deep Model for Prediction of Non-Imaging Variables"
Frontiers in Neuroscience (2026). In press.

C. Maschke, P. Hadar, Y. Zhang, J. Li, G. Ganjoo, A. Hoopes, A. Guazzo, A. Gupta, M. Ghanta, B. Nearing, C. Silvers, B. Gunapati, R. Thomas, J. Kim, S. Mukerji, **Adrian V. Dalca**, S. Zafar, A. Lam, E. Mignot, and M. Westover
"The Brain Imaging and Neurophysiology Dataset of large-scale multimodal neural data"
Nature Scientific Data (2026). In press.

M. Hoffmann, L.‡ Zollei, and **Adrian V. Dalca‡**
"Deep infant brain segmentation from multi-contrast MRI"
Proc of IEEE Asilomar Conference on Signals, Systems, and Computers (2026), pp. 974–981.

M. Abulnaga, A. Hoopes, M. Hoffmann, R. Magnet, M. Ovsjanikov, L. Zollei, J. Guttag, B.‡ Fischl, and **Adrian V. Dalca‡**
"Unified Brain Surface and Volume Registration"
Proc ICLR: International Conference on Learning Representations (2026). Accepted.

D. Sens, L. Shilova, **Adrian V. Dalca**, J. Schnabel, and F. P. Casale
"GEMCONT: Genetics-based Multimodal Contrastive Learning for Disease-Focused Imaging Genetics"
Proc. MIDL: Medical Imaging with Deep Learning (2026). Accepted.

A. Q. Wang, R. Saluja, H. Kim, X. He, **Adrian V. Dalca**, and M. R. Sabuncu
"BrainMorph: A Foundational Keypoint Model for Robust and Flexible Brain MRI Registration"
MELBA: Machine Learning for Biomedical Imaging 3 (2025), pp. 181–203.

M. Rakic, S. Gai, E. Chollet, J. Guttag, and **Adrian V. Dalca**
"Pancakes: Consistent Multi-Protocol Image Segmentation Across Biomedical Domains"
Proc. NeurIPS: Advances in Neural Information Processing Systems (2025). In press.

H. Wong, J. J. G. Ortiz, J. Guttag, and **Adrian V. Dalca**
"MultiverSeg: Scalable Interactive Segmentation of Biomedical Imaging Datasets with In-Context Guidance"
Proc. ICCV: International Conference on Computer Vision (2025), pp. 20966–20980. In press.

M. Abulnaga, A. Hoopes, N. Dey, M. Hoffmann, B. Fischl, J. Guttag, and **Adrian V. Dalca**
"MultiMorph: On-demand Atlas Construction"
Proc. CVPR: Computer Vision and Pattern Recognition (2025), pp. 30906–30917.

N. Dey, B. Billot, H. E. Wong, C. J. Wang, M. Ren, P. E. Grant, **Adrian V. Dalca**, and P. Golland
"Learning General-purpose Biomedical Volume Representations using Randomized Synthesis"
Proc. ICLR: International Conference on Learning Representations (2025), pp. 1–32.

J. Fu, **Adrian V. Dalca**, B. Fischl, R. Moreno, and M. Hoffmann
"Learning Accurate Rigid Registration for Longitudinal Brain MRI From Synthetic Data"
IEEE ISBI: International Symposium on Biomedical Imaging (2025).

M. Hoffmann, A. Hoopes, D. N. Greve, B.‡ Fischl, and **Adrian V. Dalca‡**
"Anatomy-aware and acquisition-agnostic joint registration with SynthMorph"
Imaging Neuroscience 2 (2024), pp. 1–33.

J. Li, G. Tuckute, E. Fedorenko, B. L. Edlow, **Adrian V. Dalca‡**, and B.‡ Fischl
"JOSA: Joint surface-based registration and atlas construction of brain geometry and function"
MedIA: Medical Image Analysis 98 (2024), p. 103292.

K. Gopinath, A. Hoopes, D. C. Alexander, S. E. Arnold, Y. Balbastre, B. Billot, A. Casamitjana, Y. Cheng, R. Y. Z. Chua, B. L. Edlow, B. Fischl, H. Gazula, M. Hoffmann, C. D. Keene, S. Kim, W. T. Kimberly, S. Laguna, K. E. Larson, K. V. Leemput, O. Puonti, L. M. Rodrigues, M. S. Rosen, H. F. J. Tregidgo, D. Varadarajan, S. I. Young, **Adrian V. Dalca‡**, and J. E.‡ Iglesias
"Synthetic data in generalizable, learning-based neuroimaging"
Imaging Neuroscience 2 (2024), pp. 1–22.

Z. Wu, T. Yin, Y. Sun, S. Frost, A. Kouwe, **Adrian V. Dalca**, and K. Bouman
"Learning Task-Specific Strategies for Accelerated MRI"
IEEE TCI: Transactions on Computational Imaging 10 (2024), pp. 1040–1054.

A. Bourached, A. K. Bonkhoff, M. D. Schirmer, R. W. Regenhardt, M. Bretzner, S. Hong, **Adrian V. Dalca**, A. K. Giese, S. Winzeck, C. Jern, A. G. Lindgren, J. Maguire, O. Wu, J. Rhee, E. Y. Kimchi, and N. S. Rost
"Scaling behaviors of deep learning and linear algorithms for the prediction of stroke severity"
Brain Communications 6.1 (2024), fcae007.

H. Gazula, H. Tregidgo, B. Billot, Y. Balbastre, J. Williams-Ramirez, R. Herisse, L. Deden-Binder, A. Casamitjana, E. Melief, C. Latimer, M. Kilgore, M. Montine, E. Robinson, E. Blackburn, M. Marshall, T. Connors, D. Oakley, M. Frosch, S. Young, K. Leemput, **Adrian V. Dalca**, B. Fischl, C. MacDonald, C. Keene, B. Hyman, and J. E. Iglesias
"Machine learning of dissection photographs and surface scanning for quantitative 3D neuropathology"
eLife 12 (2024), RP91398.

H. Wong, M. Rakic, J. Guttag, and **Adrian V. Dalca**
"ScribblePrompt: Fast and Flexible Interactive Segmentation for Any Medical Image"
Proc. ECCV: European Conference on Computer Vision. LNCS 15098 (2024), pp. 207–229.

M. Rakic, H. E. Wong, J. J. G. Ortiz, B. Cimini, J. Guttag, and **Adrian V. Dalca**
"Tyche: Stochastic In-Context Learning for Medical Image Segmentation"
Proc. CVPR: Computer Vision and Pattern Recognition (2024), pp. 11159–11173.

J. J. G. Ortiz, J. Guttag, and **Adrian V. Dalca**
"Magnitude Invariant Parametrizations Improve Hypernetwork Learning"
Proc. ICLR: International Conference on Learning Representations (2024), pp. 1–20.

W. Kelley, N. Ngo, **Adrian V. Dalca**, B. Fischl, L. Zollei, and M. Hoffmann
"Boosting skull-stripping performance for pediatric brain images"
IEEE ISBI: International Symposium on Biomedical Imaging (2024).

A. Q. Wang, E. M. Yu, **Adrian V. Dalca**, and M. R. Sabuncu
"A robust and interpretable deep learning framework for multi-modal registration via keypoints"
MedIA: Medical Image Analysis (2023), p. 102962.

A. Hering, L. Hansen, T. C. W. Mok, A. C. S. Chung, H. Siebert, S. Häger, A. Lange, S. Kuckertz, S. Heldmann, W. Shao, S. Vesal, M. Rusu, G. Sonn, T. Estienne, M. Vakalopoulou, L. Han, Y. Huang, P. T. Yap, M. Brudfors, Y. Balbastre, S. Joutard, M. Modat, G. Lifshitz, D. Raviv, J. Lv, Q. Li, V. Jaouen, D. Visvikis, C. Fourcade, M. Rubeaux, W. Pan, Z. Xu, B. Jian, F. De Benetti, M. Wodzinski, N. Gunnarsson, J. Sjölund, D. Grzech, H. Qiu, Z. Li, A. Thorley, J. Duan, C. Großbröhmer, A. Hoopes, I. Reinertsen, Y. Xiao, B. Landman, Y. Huo, K. Murphy, N. Lessmann, B. van Ginneken, **Adrian V. Dalca**, and M. P. Heinrich
"Learn2Reg: comprehensive multi-task medical image registration challenge, dataset and evaluation in the era of deep learning"
IEEE Transactions on Medical Imaging 42.3 (2023), pp. 697–712.

I. Costantini, L. Morgan, J. Yang, Y. Balbastre, D. Varadarajan, L. Pesce, M. Scardigli, G. Mazzamuto, V. Gavryusev, F. Castelli, M. Roffilli, L. Silvestri, J. Laffey, S. Raia, M. Varghese, B. Wicinski, S. Chang, I. Chen, H. Wang, D. Cordero, M. Vera, J. Nolan, K. Nestor, J. Mora, J. E. Iglesias, E. G. Pallares, K. Evancic, J. C. Augustinack, M. Fogarty, **Adrian V. Dalca**, M. P. Frosch, C. Magnain, R. Frost, A. Kouwe, S. Chen, D. A. Boas, F. S. Pavone, B. Fischl, and P. R. Hof
"A cellular resolution atlas of Broca's area"
AAAS Scientific Advances 3844 (2023), pp. 1–14.

J. J. G. Ortiz, J. Guttag, and **Adrian V. Dalca**
"Scale-Space Hypernetworks for Efficient Biomedical Image Analysis"
Proc. NeurIPS: Advances in Neural Information Processing Systems 36 (2023), pp. 12760–12773.

Victor Ion Butoi, Jose Javier Gonzalez Ortiz, Tianyu Ma, Mert R Sabuncu, John Guttag, and **Adrian V. Dalca**
"Universeg: Universal medical image segmentation"
Proceedings of the IEEE/CVF International Conference on Computer Vision (2023).

Steffen Czolbe and **Adrian V. Dalca**
"Neuralizer: General Neuroimage Analysis without Re-Training"
Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition. 2023, pp. 6217–6230.

Jian Li, Greta Tuckute, Evelina Fedorenko, Brian L Edlow, Bruce‡ Fischl, and **Adrian V. Dalca‡**
"Joint cortical registration of geometry and function using semi-supervised learning"
Proceedings of MIDL: Medical Imaging with Deep Learning (2023), pp. 1–15.

Malte Hoffmann, Andrew Hoopes, Bruce Fischl, and **Adrian V. Dalca**
"Anatomy-specific acquisition-agnostic affine registration learned from fictitious images"
Medical Imaging 2023: Image Processing. Vol. 12464. SPIE. 2023, p. 1246402.

R. Su, P. van der Sluijs, S. Cornelissen, W. van Zwam, A. van der Lugt, W. Niessen, D. Ruijters, T. van Walsum, and **Adrian V. Dalca**
"AngioMoCo: Learning-based Motion Correction in Digital Subtraction Angiography"
Proceedings of International Conference on Medical Image Computing and Computer-Assisted Intervention. 2023.

Benjamin Billot, Douglas N Greve, Oula Puonti, Axel Thielscher, Koen Van Leemput, Bruce Fischl, **Adrian V. Dalca**, Juan Eugenio Iglesias, et al.
"SynthSeg: Segmentation of brain MRI scans of any contrast and resolution without retraining"
Medical Image Analysis (2023), p. 102789.

Tianyu Ma, Alan Q Wang, **Adrian V. Dalca**, and Mert R Sabuncu
"Hyper-convolutions via implicit kernels for medical image analysis"
Medical Image Analysis 86 (2023), p. 102796.

Nalini M Singh, Neel Dey, Malte Hoffmann, Bruce Fischl, Elfar Adalsteinsson, Robert Frost, **Adrian V. Dalca**, and Polina Golland
"Data Consistent Deep Rigid MRI Motion Correction"
Proceedings of MIDL: Medical Imaging with Deep Learning (2023), pp. 1–14.

Sean I Young, **Adrian V. Dalca**, Enzo Ferrante, Polina Golland, Christopher A Metzler, Bruce Fischl, and Juan Eugenio Iglesias
"Supervision by Denoising"
IEEE Transactions on Pattern Analysis and Machine Intelligence (2023).

Neel Dey, S Mazdak Abulnaga, Benjamin Billot, Esra Abaci Turk, P Ellen Grant, **Adrian V. Dalca**, and Polina Golland
"AnyStar: Domain randomized universal star-convex 3D instance segmentation"
Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (2023).

Anna K Bonkhoff, Markus D Schirmer, Martin Bretzner, Sungmin Hong, Robert W Regenhardt, Kathleen L Donahue, Marco J Nardin, **Adrian V. Dalca**, Anne-Katrin Giese, Mark R Etherton, et al.
"The relevance of rich club regions for functional outcome post-stroke is enhanced in women"
Human brain mapping 44.4 (2023), pp. 1579–1592.

Martin Bretzner, Anna K Bonkhoff, Markus D Schirmer, Sungmin Hong, Adrian Dalca, Kathleen Donahue, Anne-Katrin Giese, Mark R Etherton, Pamela M Rist, Marco Nardin, et al.
"Radiomics-Derived Brain Age Predicts Functional Outcome After Acute Ischemic Stroke"
Neurology 100.8 (2023), e822–e833.

Andrew Hoopes, Malte Hoffmann, Douglas N Greve, Bruce Fischl, John Guttag, and **Adrian V. Dalca***
"Learning the Effect of Registration Hyperparameters with HyperMorph"
MELBA: Journal of Machine Learning for Biomedical Imaging (2022).

Andrew Hoopes, Juan E. Iglesias, Bruce Fischl, Douglas Greve‡, and **Adrian V. Dalca‡***
"TopoFit: Rapid Reconstruction of Topologically-Correct Cortical Surfaces"
MIDL: Medical Imaging with Deep Learning (2022).

M Yu Evan, Alan Q Wang, **Adrian V. Dalca‡**, and Mert R Sabuncu‡
"KeyMorph: Robust Multi-modal Affine Registration via Unsupervised Keypoint Detection"
MIDL: Medical Imaging with Deep Learning (2022).

Malte Hoffmann, Benjamin Billot, Douglas N. Greve, Juan E. Iglesias, Bruce Fischl, and **Adrian V. Dalca***
"SynthMorph: Learning Contrast-Invariant Registration Without Acquired Images"
IEEE Transactions on Medical Imaging 41.3 (2022), pp. 543–558. DOI: 10.1109/TMI.2021.3116879.

Emily Mu, Sarah Jabbour, **Adrian V. Dalca**, John Guttag, Jenna Wiens, and Michael W Sjoding
"Augmenting existing deterioration indices with chest radiographs to predict clinical deterioration"
Plos one 17.2 (2022), e0263922.

Nalini M Singh, Juan Eugenio Iglesias, Elfar Adalsteinsson, **Adrian V. Dalca**, Polina Golland, et al.
"Joint Frequency and Image Space Learning for MRI Reconstruction and Analysis"
Machine Learning for Biomedical Imaging (2022).

Danielle F Pace, **Adrian V. Dalca**, Tom Brosch, Tal Geva, Andrew J Powell, Jürgen Weese, Mehdi H Moghari, and Polina Golland
"Learned iterative segmentation of highly variable anatomy from limited data: Applications to whole heart segmentation for congenital heart disease"
Medical Image Analysis (2022), p. 102469.

Tianyu Ma, **Adrian V. Dalca**, and Mert R Sabuncu
"Hyper-convolution networks for biomedical image segmentation"
Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision. 2022, pp. 1933–1942.

Andrew Hoopes, Jocelyn S Mora, **Adrian V. Dalca**, Bruce Fischl, and Malte Hoffmann
"SynthStrip: Skull-Stripping for Any Brain Image"
NeuroImage (2022).

P Frid, H Xu, BD Mitchell, M Drake, J Wasselius, B Gaynor, K Ryan, AK Giese, M Schirmer, KL Donahue, et al.
"Migraine-associated common genetic variants confer greater risk of posterior vs. anterior circulation ischemic stroke"
Journal of Stroke and Cerebrovascular Diseases 31.8 (2022), p. 106546.

Anna K Bonkhoff, Sungmin Hong, Martin Bretzner, Markus D Schirmer, Robert W Regenhardt, E Murat Arsava, Kathleen Donahue, Marco Nardin, **Adrian V. Dalca**, Anne-Katrin Giese, et al.
"Association of stroke lesion pattern and white matter hyperintensity burden with stroke severity and outcome"
Neurology (2022).

Nalini M Singh, Jordan B Harrod, Sandya Subramanian, Mitchell Robinson, Ken Chang, Suheyla Cetin-Karayumak, **Adrian V. Dalca**, Simon Eickhoff, Michael Fox, Loraine Franke, et al.
"How Machine Learning is Powering Neuroimaging to Improve Brain Health"
Neuroinformatics (2022), pp. 1–22.

Martin Bretzner, Anna Bonkhoff, Markus Schirmer, Sungmin Hong, **Adrian V. Dalca**, Kathleen Donahue, Anne-Katrin Giese, Mark Etherton, Pamela Rist, Marco Nardin, et al.
"L'âge cérébral radiomique prédit le pronostic fonctionnel après un avc ischémique."
Journal of Neuroradiology 49.2 (2022), pp. 110–111.

Anna K Bonkhoff, Martin Bretzner, Sungmin Hong, Markus D Schirmer, Alexander Cohen, Robert W Regenhardt, Kathleen L Donahue, Marco J Nardin, **Adrian V. Dalca**, Anne-Katrin Giese, et al.
"Sex-specific lesion pattern of functional outcomes after stroke"
Brain communications 4.2 (2022), fcac020.

Andrew Hoopes, Malte Hoffmann, Bruce Fischl, John Guttag, and **Adrian V. Dalca***
"HyperMorph: Amortized Hyperparameter Learning for Image Registration"
IPMI: Information Processing and Medical Imaging (2021).

Malte Hoffmann, Benjamine Billot, Juan E. Iglesias, Bruce Fischl, and **Adrian V. Dalca***
"Learning MRI contrast-agnostic registration"
ISBI: International Symposium on Biomedical Imaging (2021).

Aniruddh Raghu, Katherine Young, Eugene Pomerantsev, John Guttag, **Adrian V. Dalca**, and Collin M. Stultz
"Learning MRI contrast-agnostic registration"
ACM CHIL: Conference on Healthcare, Inference, and Learning (2021).

Benjamin Billot, Stefano Cerri, Koen van Leemput, **Adrian V. Dalca**, and Juan E. Iglesias
"Joint segmentation of Multiple Sclerosis lesions and brain anatomy in MRI scans of any contrast and resolution with CNNs"
ISBI: International Symposium on Biomedical Imaging (2021).

Neel Dey, Mengwei Ren, **Adrian V. Dalca**, and Guido Gerig
"Generative adversarial registration for improved conditional deformable templates"
Proceedings of the IEEE/CVF International Conference on Computer Vision. 2021, pp. 3929–3941.

Jian Li, William H Curley, Bastien Guerin, Darin D Dougherty, **Adrian V. Dalca**, Bruce Fischl, Andreas Horn, and Brian L Edlow
"Mapping the subcortical connectivity of the human default mode network"
Neuroimage 245 (2021), p. 118758.

Douglas N Greve, Benjamin Billot, Devani Cordero, Andrew Hoopes, Malte Hoffmann, **Adrian V. Dalca**, Bruce Fischl, Juan Eugenio Iglesias, and Jean C Augustinack
"A deep learning toolbox for automatic segmentation of subcortical limbic structures from MRI images"
Neuroimage 244 (2021), p. 118610.

Tianwei Yin, Zihui Wu, He Sun, **Adrian V. Dalca**, Yisong Yue, and Katherine L Bouman
"End-to-end sequential sampling and reconstruction for MRI"
Machine Learning for Health. PMLR. 2021, pp. 261–281.

Donatas Sederevičius, Didac Vidal-Piñeiro, Øystein Sørensen, Koen van Leemput, Juan Eugenio Iglesias, **Adrian V. Dalca**, Douglas N Greve, Bruce Fischl, Atle Bjørnerud, Kristine B Walhovd, et al.
"Reliability and sensitivity of two whole-brain segmentation approaches included in FreeSurfer–ASEG and SAMSEG"
NeuroImage 237 (2021), p. 118113.

Sungmin Hong, Anne-Katrin Giese, Markus D Schirmer, Anna K Bonkhoff, Martin Bretzner, Pamela Rist, **Adrian V. Dalca**, Robert W Regenhardt, Mark R Etherton, Kathleen L Donahue, et al.
"Excessive white matter hyperintensity increases susceptibility to poor functional outcomes after acute ischemic stroke"
Frontiers in neurology 12 (2021), p. 700616.

Martin Bretzner, Anna K Bonkhoff, Markus D Schirmer, Sungmin Hong, **Adrian V. Dalca**, Kathleen L Donahue, Anne-Katrin Giese, Mark R Etherton, Pamela M Rist, Marco Nardin, et al.
"MRI radiomic signature of white matter hyperintensities is associated with clinical phenotypes"
Frontiers in neuroscience 15 (2021), p. 691244.

Anna K Bonkhoff, Markus D Schirmer, Martin Bretzner, Sungmin Hong, Robert W Regenhardt, Mikael Brudfors, Kathleen L Donahue, Marco J Nardin, **Adrian V. Dalca**, Anne-Katrin Giese, et al.
"Outcome after acute ischemic stroke is linked to sex-specific lesion patterns"
Nature communications 12.1 (2021), pp. 1–14.

Aniruddh Raghu, John Guttag, Katherine Young, Eugene Pomerantsev, **Adrian V. Dalca**, and Collin M Stultz
"Learning to predict with supporting evidence: Applications to clinical risk prediction"
Proceedings of the Conference on Health, Inference, and Learning. 2021, pp. 95–104.

Alan Q. Wang, **Adrian V. Dalca**., and Mert R. Sabuncu
"Computing Multiple Image Reconstructions with a Single Hypernetwork"
Machine Learning for Biomedical Imaging 1 (June 2022 issue 2022). ISSN: 2766-905X. URL: `https://melba-journal.org/papers/2022:017.html`.

A. K. Giese, M. D. Schirmer, **Adrian V. Dalca**, R. Sridharan, K. L. Donahue, M. Nardin, R. Irie, E. C. McIntosh, S. J. T. Mocking, H. Xu, J. W. Cole, E. Giralt-Steinhauer, J. Jimenez-Conde, C. Jern, D. O. Kleindorfer, R. Lemmens, J. Wasselius, A. Lindgren, T. Rundek, R. L. Sacco, R. Schmidt, P. Sharma, A. Slowik, V. Thijs, B. B. Worrall, D. Woo, S. J. Kittner, P. F. McArdle, B. D. Mitchell, J. Rosand, J. F. Meschia, O. Wu, P. Golland, and N. S. Rost
"White matter hyperintensity burden in acute stroke patients differs by ischemic stroke subtype"
Neurology 95.1 (2020), e79–e88.

M. Drake, P. Frid, B. M. Hansen, O. Wu, A. K. Giese, M. D. Schirmer, K. Donahue, L. Cloonan, R. E. Irie, S. J. T. Mocking, **Adrian V. Dalca**, R. Sridharan, H. Xu, E. Giralt-Steinhauer, L. Holmegaard, K. Jood, J. Roquer, J. W. Cole, P. McArdle, J. P. Broderick, J. Jimenez-Conde, C. Jern, B. M. Kissela, D. O. Kleindorfer, R. Lemmens, J. Meschia, T. Rundek, R. L. Sacco, R. Schmidt, P. Sharma, A. Slowik, V. Thijs, D. Woo, B. B. Worrall, S. J. Kittner, B. D. Mitchell, J. Rosand, P. Golland, A. G. Lindgren, N. S. Rost, and J. Wasselius
"Diffusion Weighted Imaging, MR Angiography and Baseline Data in a Systematic Multi-Center Analysis of 3301 MRI Scans of Ischemic Stroke Patients - Neuroradiological review within the MRI-GENIE study"
Frontiers in Neurology 11 (2020), p. 577.

Benjamin Billot, Douglas Greve, Koen Van Leemput, Bruce Fischl, Juan E Iglesias, and **Adrian V. Dalca***
"A Learning Strategy for Contrast-agnostic MRI Segmentation"
MIDL: Medical Imaging with Deep Learning (2020).

Amy Zhao, Guha Balakrishnan, Kathleen M Lewis, Frédo Durand, John V Guttag, and **Adrian V. Dalca***
"Painting Many Pasts: Synthesizing Time Lapse Videos of Paintings"
CVPR: Computer Vision and Pattern Recognition (2020).

Kathleen Lewis, Natalia S Rost, John Guttag, and **Adrian V. Dalca***
"Fast learning-based registration of sparse 3D clinical images"
Proceedings of the ACM Conference on Health, Inference, and Learning (2020), pp. 90–98.

He Sun, **Adrian V. Dalca**, and Katherine L Bouman
"Learning a probabilistic strategy for computational imaging sensor selection"
ICCP: International Conference on Computational Photography (2020).

Cagla D Bahadir, Alan Q Wang, **Adrian V. Dalca** V, and Mert R Sabuncu
"Deep-learning-based optimization of the under-sampling pattern in MRI"
IEEE Transactions on Computational Imaging 6 (2020), pp. 1139–1152.

Jieyu Cheng, **Adrian V. Dalca**, Bruce Fischl, and Lilla Zollei
"Cortical surface registration using unsupervised learning"
NeuroImage (2020).

Benjamin Billot, Eleanor D Robinson, **Adrian V. Dalca** V, and Juan Eugenio Iglesias
"Partial Volume Segmentation of Brain MRI Scans of any Resolution and Contrast"
International Conference on Medical Image Computing and Computer-Assisted Intervention (2020).

Henry FJ Tregidgo, Adria Casamitjana, Caitlin S Latimer, Mitchell D Kilgore, Eleanor Robinson, Emily Blackburn, Koen Van Leemput, Bruce Fischl, **Adrian V. Dalca** V, Christine L Mac Donald, Dirk Keene, and Juan Eugenio Iglesias
"3D Reconstruction and Segmentation of Dissection Photographs for MRI-Free Neuropathology"
International Conference on Medical Image Computing and Computer-Assisted Intervention. Springer. 2020, pp. 204–214.

Benjamin Billot, Martina Bocchetta, Emily Todd, **Adrian V. Dalca** V, Jonathan D Rohrer, and Juan Eugenio Iglesias
"Automated segmentation of the hypothalamus and associated subunits in brain MRI"
NeuroImage 223 (2020), p. 117287.

Evan M Yu, Juan Eugenio Iglesias, **Adrian V. Dalca**, and Mert R Sabuncu
"An Auto-Encoder Strategy for Adaptive Image Segmentation"
MIDL: Medical Imaging with Deep Learning (2020).

Florian Dubost, Marleen de Bruijne, Marco Nardin, **Adrian V. Dalca**, Kathleen L Donahue, Anne-Katrin Giese, Mark R Etherton, Ona Wu, Marius de Groot, Wiro Niessen, et al.
"Multi-atlas image registration of clinical data with automated quality assessment using ventricle segmentation"
Medical Image Analysis (2020), p. 101698.

Markus D Schirmer, Kathleen L Donahue, Marco J Nardin, **Adrian V. Dalca**, Anne-Katrin Giese, Mark R Etherton, Steven JT Mocking, Elissa C McIntosh, John W Cole, Lukas Holmegaard, et al.
"Brain Volume: An Important Determinant of Functional Outcome After Acute Ischemic Stroke"
Mayo Clinic Proceedings 95.5 (2020), pp. 955–965.

Petrea Frid, Mattias Drake, AK Giese, J Wasselius, MD Schirmer, KL Donahue, L Cloonan, R Irie, MJRJ Bouts, EC McIntosh, SJT Mocking, **Adrian V. Dalca**, et al.
"Detailed phenotyping of posterior vs. anterior circulation ischemic stroke: a multi-center MRI study"
Journal of neurology 267.3 (2020), pp. 649–658.

Adrian V Dalca, Marianne Rakic, John Guttag, and Mert R Sabuncu
"Learning Conditional Deformable Templates with Convolutional Networks"
NeurIPS: Neural Information Processing Systems (2019), 804–816, [Acc. rate: 21%].

Adrian V. Dalca, Guha Balakrishnan, John Guttag, and Mert R Sabuncu
"Unsupervised Learning of Probabilistic Diffeomorphic Registration for Images and Surfaces"
MedIA: Medical Image Analysis 57 (2019), pp. 226–236.

Adrian V. Dalca, Evan Yu, Polina Golland, Bruce Fischl, Mert R Sabuncu, and Juan Eugenio Iglesias
"Unsupervised deep learning for Bayesian brain MRI segmentation"
MICCAI: Medical Image Computing and Computer Assisted Intervention, LNCS (2019), Accepted, [Acc. rate: 30%].

Amy Zhao, Guha Balakrishnan, Fredo Durand, John Guttag, and **Adrian V. Dalca***
"Data augmentation using learned transforms for one-shot medical image segmentation"
CVPR: Computer Vision and Pattern Recognition (2019), Accepted, [Acc. rate: 25.2%].

Guha Balakrishnan, Amy Zhao, Mert Sabuncu, John Guttag, and **Adrian V. Dalca***
"VoxelMorph: A Learning Framework for Deformable Medical Image Registration"
IEEE TMI: Transactions on Medical Imaging 38.8 (2019), pp. 1788–1800.

Adrian V. Dalca, Katherine Bouman, William Freeman, Mert Sabuncu, Natalia Rost, and Polina Golland
"Medical Image Imputation from Image Collections"
IEEE TMI: Transactions on Medical Imaging 38.2 (2019), pp. 504–514.

Cagla Bahadir, **Adrian V. Dalca**, and Mert Sabuncu
"Learning-based Optimization of the Under-sampling Pattern in MRI"
IPMI: Information Processing and Medical Imaging (2019), Accepted.

Guha Balakrishnan, **Adrian V. Dalca**, Amy Zhao, John Guttag, Fredo Durand, and William T. Freeman
"Visual Deprojection: Probabilistic Recovery of Collapsed Dimensions in Images and Videos"
ICCV: International Conference in Computer Vision (2019), Accepted.

Markus D Schirmer, **Adrian V. Dalca**, Ramesh Sridharan, Anne-Katrin Giese, Kathleen L Donahue, Marco J Nardin, Steven JT Mocking, Elissa C McIntosh, Petrea Frid, Johan Wasselius, et al.
"White Matter Hyperintensity Quantification in Large-Scale Clinical Acute Ischemic Stroke Cohorts–The MRI-GENIE Study"
NeuroImage: Clinical (2019).

Brett Beaulieu-Jones, Samuel G Finlayson, Corey Chivers, Irene Chen, Matthew McDermott, Jaz Kandola, **Adrian V Dalca**, Andrew Beam, Madalina Fiterau, and Tristan Naumann
"Trends and Focus of Machine Learning Applications for Health Research"
JAMA network open 2.10 (2019), e1914051–e1914051.

Adrian V. Dalca, Guha Balakrishnan, John Guttag, and Mert Sabuncu
"Unsupervised Learning for Fast Probabilistic Diffeomorphic Registration"
MICCAI: Medical Image Computing and Computer Assisted Intervention, LNCS 11070 (2018), 729–738.
[Acc. rate: 35%]. **Finalist for Best Paper (Young Scientist) award.**

Adrian V. Dalca, John Guttag, and Mert Sabuncu
"Anatomical Priors in Convolutional Networks for Unsupervised Biomedical Segmentation"
CVPR: Computer Vision and Pattern Recognition (2018), [Acc. rate: 29%].

Guha Balakrishnan, Amy Zhao, Mert Sabuncu, John Guttag, and **Adrian V. Dalca***
"An Unsupervised Learning Model for Deformable Medical Image Registration"
CVPR: Computer Vision and Pattern Recognition (2018), [Acc. rate: 29%].

Francesco P. Casale, **Adrian V. Dalca**, Luca Saglietti, Nicolo Fusi, and Jennifer Listgarten
"Gaussian Process Prior Variational Autoencoders"
NeurIPS: Neural Information Processing Systems (2018), [Acc. rate: 21%].

Guha Balakrishnan, Amy Zhao, **Adrian V. Dalca**, Fredo Durand, and John Guttag
"Synthesizing Images of Humans in Unseen Poses"
CVPR: Computer Vision and Pattern Recognition (2018), [Acc. rate: 29%].

Katherine L. Bouman, Michael D. Johnson, **Adrian V. Dalca**, Andrew A. Chael, Freek Roelofs, Sheperd S. Doeleman, and William T. Freeman
"Reconstructing Video of Time-Varying Sources from Radio Interferometric Measurements"
IEEE TCI: Transactions on Computational Imaging 4.4 (2018), pp. 512–527.

Adrian V. Dalca, Katherine Bouman, William Freeman, Mert Sabuncu, Natalia Rost, and Polina Golland
"Population Based Image Imputation"
IPMI: Information Processing in Medical Imaging 10265 (2017), 659–671. [Acc. rate: 36%].
Best poster award.

Miaomiao Zhang, Ruizhi Liao, **Adrian V. Dalca**, Ellen Grant, and Polina Golland
"Frequency Diffeomorphisms for Efficient Image Registration"
IPMI: Information Processing and Medical Imaging 10265 (2017), 559–570. [Acc. rate: 36%].

Anne-Katrin Giese et al. (41 authors)
"Design and Rationale for Examining Neuroimaging Genetics in Ischemic Stroke: the MRI-GENIE Study"
Neurology Genetics 3.5 (2017), e180.

Nematollah K. Batmanghelich, **Adrian V. Dalca**, Gerald Quon, Mert R. Sabuncu, and Polina Golland
"Probabilistic Modeling of Imaging, Genetics and Diagnosis"
IEEE TMI: Transactions on Medical Imaging 35.7 (2016), pp. 1765–79.

Adrian V. Dalca, Ramesh Sridharan, Mert Sabuncu, and Polina Golland
"Predictive Modeling of Anatomy with Genetic and Clinical Data"
MICCAI: Medical Image Computing and Computer Assisted Intervention, LNCS 9351 (2015), 519–526.
[Acc. rate: 32%].

Danielle Pace, **Adrian V. Dalca**, Tal Geva, Andrew J. Powell, Mehdi H. Moghari, and Polina Golland
"Interactive Whole-Heart Segmentation in Congenital Heart Disease"
MICCAI: Medical Image Computing and Computer Assisted Intervention, LNCS 9351 (2015), 80–88.
[Acc. rate: 32%].

Adrian V. Dalca, Ramesh Sridharan, Lisa Cloonan, Kaitlin M. Fitzpatrick, Allison Kanakis, Karen L. Furie, Jonathan Rosand, Ona Wu, Mert Sabuncu, Natalia S. Rost, and Polina Golland
"Segmentation of Cerebrovascular Pathologies in Stroke Patients with Spatial and Shape Priors"
MICCAI: Medical Image Computing and Computer Assisted Intervention, LNCS 8674 (2014), 773–780. [Acc. rate: 29%].

Kayhan N. Batmanghelich, **Adrian V. Dalca**, Mert R. Sabuncu, and Polina Golland
"Joint generative modeling of imaging and genetics"
IPMI: Information Processing and Medical Imaging, LNCS 7917 (2013), 766–777. [Acc. rate:32].

Adrian V. Dalca, Ken Ferrier, Jerry X. Mitrovica, J. Taylor Perron, Glen Milne, and Jessica Creveling
"On post-glacial sea-level - III: incorporating sediment redistribution"
GJI: Geophysical Journal International (2013), pp. 45–60.

Adrian V. Dalca, Giovanna Danagoulian, Ron Kikinis, Ehud Schmidt, and Polina Golland
"Segmentation of nerve bundles and ganglia in spine MRI using particle filters"
MICCAI: Medical Image Computing and Computer-Assisted Intervention, LNCS (2011), 537–545. [Acc. rate: 30%].

Adrian V. Dalca, Stephen M. Rumble, Samuel Levy, and Michael Brudno
"VARiD: A variation detection framework for color-space and letter-space platforms"
Bioinformatics 26.12 (2010), i343–i349. [Acc. rate: 20%].

Adrian V. Dalca and Michael Brudno
"Genome variation discovery with high-throughput sequencing data"
Briefings in Bioinformatics 11.1 (2010), pp. 3–14.

Stephen M. Rumble, Phil Lacroute, **Adrian V. Dalca**, Marc Fiume, Arend Sidow, and Michael Brudno
"SHRiMP: Accurate mapping of short color-space reads"
PLoS computational biology 5.5 (2009).

Adrian V. Dalca and Michael Brudno
"FRESCO: Flexible alignment with rectangle scoring schemes"
PSB: Pacific Symposium on Biocomputing 13 (2008), 3–14. [Acc. rate: 36%].

Peer Reviewed Workshops

Heejong Kim, Victor Ion Butoi, **Adrian V. Dalca**, and Mert R Sabuncu
"Empirical Analysis of a Segmentation Foundation Model in Prostate Imaging"
Proceedings of MICCAI MedAGI: International Workshop on Foundation Models for General Medical AI (2023).

Alan Q Wang, **Adrian V. Dalca**, and Mert R Sabuncu
"Hyperrecon: Regularization-agnostic cs-mri reconstruction with hypernetworks"
International Workshop on Machine Learning for Medical Image Reconstruction. Springer. 2021, pp. 3–13.

Sungmin Hong, Razvan Marinescu, **Adrian V. Dalca**, Anna K Bonkhoff, Martin Bretzner, Natalia S Rost, and Polina Golland
"3d-stylegan: A style-based generative adversarial network for generative modeling of three-dimensional medical images"
Deep Generative Models, and Data Augmentation, Labelling, and Imperfections. Springer, 2021, pp. 24–34.

Malte Hoffmann, Benjamine Billot, Juan E. Iglesias, Bruce Fischl, and **Adrian V. Dalca***
"Learning MRI contrast-agnostic registration"
MedNeurIPS: Medical Imaging meets NeurIPS (2020).

Marianne Rakic, John Guttag, and **Adrian V. Dalca***
"Anatomical Predictions using Subject-Specific Medical Data"
MIDL: Medical Imaging with Deep Learning (2020).

Alan Q Wang, **Adrian V. Dalca**, and Mert R Sabuncu
"Neural Network-based Reconstruction in Compressed Sensing MRI Without Fully-sampled Training Data"
International Workshop on Machine Learning for Medical Image Reconstruction. Springer. 2020, pp. 27–37.

M Yu Evan, **Adrian V. Dalca**, and Mert R Sabuncu
"Learning Conditional Deformable Shape Templates for Brain Anatomy"
MICCAI MLMI: International Workshop on Machine Learning in Medical Imaging. Springer. 2020, pp. 353–362.

Jieyu Cheng, **Adrian V. Dalca**, and Lilla Zöllei
"Unbiased Atlas Construction for Neonatal Cortical Surfaces via Unsupervised Learning"
MICCAI PIPPI: Medical Ultrasound, and Preterm, Perinatal and Paediatric Image Analysis. Springer, 2020, pp. 334–342.

Aniruddh Raghu, Katherine Young, Eugene Pomerantsev, John Guttag, **Adrian V. Dalca**, and Collin M. Stultz
"Learning to Predict and Support for Clinical Risk Stratification"
NeurIPS ML4H: Machine Learning for Health (2020).

Hyeon Woo Lee, Mert R Sabuncu, and **Adrian V Dalca***
"Few labeled atlases are necessary for deep-learning-based segmentation"
NeurIPS ML4H: Machine Learning for Health (2019).

Adrian V. Dalca, John Guttag, and Mert Sabuncu
"Unsupervised Medical Image Imputation via Variational Inference of Deep Subspaces"
NIPS ML4H: Machine Learning for Health (2018).

Adrian V. Dalca, Guha Balakrishnan, John Guttag, and Mert Sabuncu
"Atlas Construction and Improved Registration of Medical Images with CNN Frameworks "
NIPS ML4H: Machine Learning for Health (2018).

Adrian V. Dalca, Guha Balakrishnan, John Guttag, and Mert Sabuncu
"Improved Probabilistic Diffeomorphic Registration with CNNs"
MED NIPS: Medical Imaging Meets NIPS (2018).

Kathleen Lewis, Guha Balakrishnan, Natalia Rost, John Guttag, and **Adrian V. Dalca***
"Fast Learning-based Registration of Sparse Clinical Images"
NIPS ML4H: Machine Learning for Health (2018),
Spotlight.

Francesco P. Casale, **Adrian V. Dalca**, Nicolo Fusi, and Jennifer Listgarten
"Generative models for clinical imaging genetic analysis"
NIPS ML4H: Machine Learning for Health (2018).

Danielle Pace, **Adrian V. Dalca**, Tom Brosch, Tal Geva, Andrew J. Powell, Jurgen Weese, Mehdi H. Moghari, and Polina Golland
"Iterative Segmentation from Limited Training Data: Applications to Congenital Heart Disease"
MICCAI DLMIA: Deep Learning in Medical Image Analysis, LNCS (2018).

Adrian V. Dalca, John Guttag, and Mert Sabuncu
"Spatial Anatomical Priors in Convolutional Networks for Unsupervised Biomedical Segmentation"
NIPS ML4H: Machine Learning for Health (2017),
Spotlight.

Adrian V. Dalca, Andreea Bobu, Natalia S Rost, and Polina Golland
"Patch-Based Discrete Registration of Clinical Brain Images"
MICCAI PATCHMI: Patch-based Techniques in Medical Imaging, LNCS 9993 (2016), 60–67.
Best paper award.

Adrian V. Dalca, Ramesh Sridharan, Natalia S. Rost, and Polina Golland
"tipiX: Rapid Visualization of Large Image Collections"
MICCAI IMIC: Interactive Medical Image Computing Workshop (2014),
Best paper award for impact and usability.

Ramesh Sridharan, **Adrian V. Dalca**, and Polina Golland
"An interactive visualization tool for Nipype medical imaging pipelines"
MICCAI IMIC: Interactive Medical Image Computing Workshop (2014).

Ramesh Sridharan‡, **Adrian V. Dalca**‡, Kaitlin M. Fitzpatrick, Lisa Cloonan, Allison Kanakis, Ona Wu, Karen L. Furie, Jonathan Rosand, Natalia S. Rost, and Polina Golland
"Quantification and Analysis of Large Multimodal Clinical Image Studies: Application to Stroke"
MICCAI MBIA: Multimodal Brain Image Analysis, LNCS 8159 (2013), pp. 18–30.

Theses

Adrian V. Dalca
"Genetic, Clinical and Population Priors for Brain Images"
Ph.D. Thesis. Cambridge, MA: Massachusetts Institute of Technology, July 2016.

Adrian V. Dalca
"Segmentation of nerve bundles and ganglia in spine MRI using particle filters"
S.M. Thesis. Cambridge, MA: Massachusetts Institute of Technology, June 2012,
Morris Joseph Levin Award.

Books and Proceedings

C. H. Sudre, R. Licandro, C. F. Baumgartner, A. Melbourne, **Adrian V. Dalca**, J. Hutter, R. Tanno, E. A. Turk, K. Van Leemput, J. Torrents Barrena, W. M. Wells, and C. Macgowan, eds.
Uncertainty for Safe Utilization of Machine Learning in Medical Imaging, and Perinatal Imaging, Placental and Preterm Image Analysis
Springer LNCS, 2021.

Adrian V Dalca, Matthew BA McDermott, Emily Alsentzer, Samuel G Finlayson, Michael Oberst, et al.
"Machine Learning for Health (ML4H) 2019: What Makes Machine Learning in Medicine Different?"
PMLR (2020).

Carole H Sudre, Hamid Fehri, Tal Arbel, Christian F Baumgartner, **Adrian V Dalca**, et al.
"UNSURE: Uncertainty for Safe Utilization of Machine Learning in Medical Imaging, and GRAIL: Graphs in Biomedical Image Analysis, Proceedings"
Springer 12443 (2020).

Hayit Greenspan, Ryutaro Tanno, Marius Erdt, Tal Arbel, Christian Baumgartner, **Adrian V. Dalca**, et al (Editors).
Uncertainty for Safe Utilization of Machine Learning in Medical Imaging and Clinical Image-Based Procedures
Springer. (2019).

Danail Stoyanov, Zeike Taylor, Enzo Ferrante, **Adrian V. Dalca**, et al (Editors).
Graphs in Biomedical Image Analysis and Integrating Medical Imaging and Non-Imaging Modalities.
Springer. (2018).

Adrian V. Dalca, Nematollah K. Batmanghelich, Mert Sabuncu, Li Shen (Editors).
Imaging Genetics.
Elsevier. (2017).

Jorge Cardoso, Tal Arbel, Enzo Ferrante, Xavier Pennec, **Adrian V. Dalca**, et al (Editors).
Graphs in Biomedical Image Analysis, Computational Anatomy and Imaging Genetics.
Springer. (2017).

Jorge Cardoso, Tal Arbel, Fei Gao, Bernhard Kainz, Theo van Walsum, Kuangyu Shi, Kanwal K. Bhatia, Roman Peter, Tom Vercauteren, Mauricio Reyes, **Adrian V. Dalca**, et al (Editors)

Molecular Imaging, Reconstruction and Analysis of Moving Body Organs, and Stroke Imaging and Treatment. *Springer*. (2017).

Conference Abstracts and Posters

Wighton P, Dao T, Hanayik T, Drake C, Rorden C, Fischl B, **Adrian V. Dalca**.
FreeBrowse: A Browser-Based Neuroimaging Viewer
OHBM: Organization for Human Brain Mapping. 2026.

Singh N, Hoffmann M, Adalsteinsson E, Fischl B, Golland P‡, **Adrian V. Dalca**‡, Frost R‡.
Motion-Aware Neural Networks Improve Rigid Motion Correction of Accelerated Segmented Multislice MRI
ISMRM: International Society for Magnetic Resonance in Medicine. 2023.

Hoffmann M, Singh N, **Adrian V. Dalca**, Fischl B, Frost R.
Can we predict motion artifacts in clinical MRI before the scan completes?
ISMRM: International Society for Magnetic Resonance in Medicine. 2023.

Presentations

AI Vision Agents for Radiology Analysis.
Hampton-Abrams Symposium, MGB/Harvard. Invited Talk.
Boston, MA. 2026.

Universal AI models for Medical Image Analysis.
Next-Generation Medical Imaging Initiative, MIT. Invited Talk.
Cambridge, MA. 2026.

VoxelPrompt: A Vision-Language Agent for Grounded Medical Image Analysis.
Neurology Grand Rounds, MGH. Invited Talk.
Boston, MA. 2025.

VoxelPrompt: A Vision-Language Agent for Grounded Medical Image Analysis.
MGB Collaborative Clinical and Research Program – Radiomics and Beyond. Invited Talk.
Boston, MA. 2025.

VoxelPrompt: A Vision-Language Agent for Grounded Medical Image Analysis.
MLMC Munich Symposium, Harvard. Invited Talk.
Boston, MA. 2025.

VoxelPrompt: A Vision Agent for Grounded NeuroImage Analysis.
BWH Neurology. Invited Talk.
Boston, MA. 2025.

Adaptable AI Frameworks for Biomedical Image Analysis.
Stanford University. Invited Talk.
Stanford, CA. 2025.

Adaptable AI Frameworks for Biomedical Image Analysis.
University of Pennsylvania. Invited Talk.
Philadelphia, PA. 2025.

Adaptable AI in Neuroimaging.
ILAE School on Neuroimaging. Invited Keynote.
Potsdam, Germany. 2025.

Adaptable AI Frameworks for Biomedical Image Analysis.
DeepHealth/ICL. Invited Talk.
London, UK. 2025.

HST.018: Artificial Intelligence in Healthcare II.
HST, Harvard-MIT. 1.5-hour lecture.
2025.

Modern AI for Medical Image Analysis.
Mass General Research Institute and Chen Institute Joint Symposium. Invited Talk.
Boston, MA. 2024.

Universal Models for Medical Image Analysis.
ENG EC500: Medical Imaging with AI, Boston University. Invited Talk.
Boston, MA. 2024.

Universal AI Tools for Image Analysis.
MGH Hamton Symposium. Short Talk and Poster Presentation.
Boston, MA. 2023.

Universal AI Tools for Image Analysis.
MIT NoBrainer Meeting. Invited Talk.
Cambridge, MA. 2023.

Learning Broadly for Image Registration.
RnR-ExM: Robust Non-rigid Registration Challenge for Expansion Microscopy Volumes. Invited Keynote.
Cartagena, Colombia. 2023.

Universal Models for Medical Image Analysis.
Prime MICCAI: Predictive Intelligence in Medicine. Invited Keynote.
Vancouver, Canada. 2023.

Women in Science Summer School Lecture on Deep Learning.
LCN, MGH. 1-hour tutorial session.
2022.

Introduction to Deep Learning.
LCN, MGH. Five 1-hour tutorial lectures.
2021.

Augmentation and Synthesis for Learning Domain Invariances in Medical Image Analysis.
MICCAI-DALI Workshop on Data Augmentation, Labeling, and Imperfections. Invited Keynote.
Strasbourg, France. 2021.

Unsupervised Learning of Image Correspondences in Neuroimaging.
MICCAI-MLCN The 4th Workshop on Machine Learning in Clinical Neuroimaging. Invited Keynote.
Strasbourg, France. 2021.

Unsupervised Learning of Image Correspondences in Medical Imaging Analysis.
6.874 Computational Systems Biology: Deep Learning in the Life Sciences, EECS, MIT. Invited Talk.
Cambridge, MA, USA. 2021

HyperMorph: Amortized Hyperparameter Learning for Image Registration.
CS 523: Research Seminar in Computer Vision and Healthcare, Stanford University. Invited Talk.
Stanford, CA, USA. 2021.

Amortized Hyperparameter Learning
Biomedical Image Computing Student Conference. Invited Talk.
Online. 2021.

AI in Image Registration Hands on/Interactive session
MRI Together. Global workshop on open science and reproducible MR research. Invited Talk.
European Society for Magnetic Resonance in Medicine and Biology (ESMRMB). 2021

Unsupervised Learning of Image Correspondences in Medical Image Analysis
Fetal-Neonatal Neuroimaging Development Science Center (FNNDSC), Boston Children's Hospital. Invited Talk.
Boston, MA, US. 2021

Unsupervised Learning of Image Correspondences in Medical Image Analysis
Medtronic. Invited Talk.
Littleton, MA, US. 2021

Unsupervised Learning of Image Correspondences in Medical Image Analysis
Oxford. Invited Talk.
Oxford, UK. 2021

Unsupervised Learning of Image Correspondences in Medical Image Analysis
UCL Centre for Medical Image Computing (CMIC) and Wellcome/EPSRC Centre for Interventional and Surgical Sciences (WEISS). Invited Talk.
London, UK, 2021

Unsupervised Learning of Image Correspondences.
University of Erlangen-Nuremberg. Invited Talk.
Erlangen, Germany. 2021

Learning Medical Image Correspondences: Fundamentals, Invariances, and Hypernets.
California Institute of Technology. Invited Talk.
Pasadena, CA, USA. 2021

Unsupervised Learning of Image Correspondences in Medical Image Analysis
BioMedIA: Biomedical Image Analysis Group, Imperial College London. Invited Talk.
London, UK, 2020

Unsupervised Learning of Image Correspondences in Neuroimaging Analysis
Master of Science in Neuroimaging and Informatics, University of southern California. Invited Talk.
Los Angeles, CA, USA, 2020

Machine Learning for Medical Image Analysis and Imaging Genetics.
6.874 Computational Systems Biology: Deep Learning in the Life Sciences, EECS, MIT. Invited Talk.
Cambridge, MA, USA. 2020

Deep Learning for Registration and Segmentation of Multi-Modal Clinical Images
WHISR: White Matter Hyperintensity Imaging Stroke Research. Invited Talk.
Cambridge, MA, USA, 2020

Unsupervised Learning of Image Correspondences in Medical Image Analysis
Hospital for Sick Children. Invited Talk.
Toronto, ON, Canada. 2019

Unsupervised Learning of Image Correspondences in Medical Image Analysis
Brown University. Invited Talk.
Providence, RI, USA. 2019

Machine Learning in Medical Image Analysis
Advances in Imaging and Machine Learning. Invited Talk.
Boston, MA, USA. 2019

Learning-based Registration with CNNs.
BWH Forum for Advanced Biomedical Computation. Invited Talk.
Boston, MA, USA. 2019

Unsupervised Learning of Image Correspondences in Medical Image Analysis.
California Institute of Technology. Invited Talk.
Pasadena, CA, USA. 2019

Machine Learning for Medical Image Analysis.
6.874 Computational Systems Biology: Deep Learning in the Life Sciences, EECS, MIT. Invited Talk.
Cambridge, MA, USA. 2019

Machine Learning for Medical Image Analysis.
CSC2541HS: Topics in Machine Learning: ML for Health. DCS, University of Toronto. Invited Talk.
Toronto, ON, Canada. 2019

Improved Probabilistic Diffeomorphic Registration with CNNs.
Medical Imaging meets NeurIPS. Oral Presentation.
Montreal, QC, Canada. 2018

Improved Probabilistic Diffeomorphic Registration with CNNs.
Medical Imaging meets NeurIPS. Oral Presentation.
Montreal, QC, Canada. 2018

Unsupervised Learning for Large Scale Medical Image Analysis.
Brown University. Invited Talk.
Providence, RI, USA. 2018

VoxelMorph: Unsupervised Learning for Fast Deformable Medical Image Registration.
Philips Research North America. Invited Talk.
Cambridge, MA, USA. 2018

Unsupervised Learning for Fast Probabilistic Diffeomorphic Registration.
Medical Image Computing and Computer Assisted Intervention. Oral presentation.
Granada, Spain, 2018. **Finalist Best Paper Award**.

VoxelMorph: A Probabilistic Learning Framework for Fast Diffeomorphic Medical Image Registration.
Bridging the Divide: Machine Learning in Medicine. Poster presentation.
Ithaca, NY, USA. 2018. **Best Poster Award**.

VoxelMorph: Unsupervised Learning for Deformable Medical Image Registration.
NeuroNex Technology Conference. Poster presentation.
Ithaca, NY, USA. 2018.

An Unsupervised Learning Model for Fast Deformable Medical Image Registration.
Biomedical Imaging and Analysis Seminar. Invited Talk.
Cambridge, MA, USA. 2018.

Spatial Anatomical Priors in Convolutional Networks for Unsupervised Biomedical Segmentation.
NIPS ML4H: Machine Learning for Health. Poster Presentation.
Long Beach, CA, USA. 2017.

Population Based Medical Image Imputation,
Information Processing in Medical Imaging. Poster Presentation.
Boone, NC, USA. 2017. **Best Poster Award**.

Population Based Medical Image Imputation,
Computer Vision Research Seminar, CSAIL, MIT. Oral Presentation.
Cambridge, MA, USA. 2017.

Population Based Image Imputation.
Institute for Medical Engineering and Science Research Social, MIT. Oral Presentation.
Cambridge, MA, USA. 2017.

Genetic and Clinical Priors for Brain Images.
6.874 Computational and Systems Biology, EECS, MIT. Invited Talk.
Boston, MA, USA. 2017.

Patch-Based Discrete Registration of Clinical Brain Images.
International Workshop on Patch-based Techniques in Medical Imaging. Oral Presentation.
Athens, Greece. 2016.

Population, Clinical, and Genetic Priors for Medical Images.
Laboratory of Neuro Imaging. Invited Talk.
Los Angeles, CA, USA. 2016.

Genetic, Clinical, and Population Priors for Medical Images.
Computer Science and Artificial Intelligence Lab. Ph.D. Defense.
Cambridge, MA, USA. 2016.

Characterization of Cerebrovascular Pathologies from Brain Images.
WHISR: White Matter Hyperintensity Imaging Stroke Research. Invited Talk.
Cambridge, MA, USA. 2016

Predictive Modeling of Anatomy with Genetic and Clinical Data,
Medical Image Computing and Computer Assisted Intervention. Poster.
Munich, Germany. 2015.

Medical Image Analysis for the OR.
SITECOR Program, MGH. Invited Talk.
2014.

tipiX: Rapid Visualization of Large Image Collections.
LCN, MGH. Invited Talk.
2014.

Segmentation of Cerebrovascular Pathologies in Stroke Patients with Spatial and Shape Priors.
Medical Image Computing and Computer Assisted Intervention. Poster.
Cambridge, MA, USA. 2014.

tipiX: Rapid Visualization of Large Image Collections.
MICCAI-IMIC Interactive Medical Image Computing Workshop. Oral Presentation.
Cambridge, MA, USA. 2014.

Quantification and Analysis of Large Multimodal Clinical Image Studies: Application to Stroke.
MICCAI International Workshop on Multimodal Brain Image Analysis. Oral Presentation.
Nagoya, Japan. 2013.

A Bayesian Framework for Imaging Genetics.
International Imaging Genetics Conference. Poster.
Irvine, CA, USA. 2013.

Segmentation of Nerve Bundles and Ganglia in Spine MRI Using Particle Filter.
EECS Masterworks. Poster.
Cambridge, MA, USA. 2012. **Morris Joseph Levin Award**

Segmentation of Nerve Bundles and Ganglia in Spine MRI Using Particle Filter.
Medical Image Computing and Computer Assisted Intervention. Poster.
Toronto, Canada. 2011.

VARiD: A Variation Detection Framework for Color-Space and Letter-Space Platforms.
Intelligent Systems for Molecular Biology. Oral Presentation.
Stockholm, Sweden. 2010.

FRESCO: Flexible Alignment with Rectangle Scoring Schemes.
Pacific Symposium on Bioinformatics. Oral Presentation.
The Big Island, HI, USA. 2008.

Graduate Awards

Finalist: Young Scientist Publication Impact Award	2022 and 2023
Whitaker Health Sciences Fund Fellowship (MIT)	2015 – 2016
MICCAI-PATCHMI Best paper award	2016
MICCAI-IMIC Best paper award for impact and usability	2014
Advanced Multimodal Neuroimaging Training Program (NIH)	2014 – 2015
Hewlett Packard Full Fellowship (EECS)	2013 – 2014
Morris Joseph Levin Thesis Presentation Award	2012
NSERC (Alexander Graham Bell) Canada Graduate Scholarship (CGS-D)	2012 – 2014
Barbara J. Weedon Full Fellowship	2012 – 2013
Harvard EPS Pierce Scholarship Admission Scholarship, (Declined in favor of MIT)	2009
NSERC (Alexander Graham Bell) Canada Graduate Scholarship (CGS-M)	2008 – 2010
Ontario Graduate Scholarship, (Declined in favour of NSERC CGS-M)	2008
Halen Sawyer Hogg Graduate Admission Award	2008

Academic Service

Organizing Committee

UNSURE: Uncertainty for Safe Utilization of Machine Learning in Medical Imaging — 2018-2022
Organizing committee

Learn2reg: Challenge on Deep Learning in Medical Image Registration 2020-2021
Organizing committee

Learn2reg: Tutorial on Deep Learning in Medical Image Registration 2018-2019
Organizing committee and tutor

ACM CHIL: ACM Conference on Health, Inference, and Learning 2018-2019
Program committee

NIPS ML4H: Machine Learning for Health 2018-2019
Active participation in several aspects of organizing committee

BeyondMIC: integrating imaging and non-imaging modalities 2018 (Founding)
Founded and led the organization

SWITCH: Stroke Workshop on Imaging and Treatment CHallenges 2017 (Founding) - 2018
Active participant of founding and organizing committee

MICGen: MICCAI Workshop on Imaging Genetics 2014 (Founding), 2015, 2017
Founded and led the organization of the first Imaging Genetics workshop in the MICCAI community

MICCAI Educational Initiative 2014 (Founding), 2015
Founded and led initiative to facilitate online availability of educational material, leading to creation of 20 educational videos and two professional courses made available online

Area Chair or Associate Editor

MELBA: The Journal of Machine Learning for Biomedical Imaging 2020-2022
MICCAI: Medical Image Computing and Computer Assisted Intervention 2021-2022
MIDL: International Conference on Medical Imaging with Deep Learning 2020-2022
MLHC: Machine Learning for Healthcare 2020
IJCAI-PRICAI: International Joint Conference on Artificial Intelligence 2020

Technical Reviewer or Scientific Committee

ICLR: International Conference on Learning Representations (Highlighted Reviewer) 2022
IEEE TMI: Transactions on Medical Imaging (Distinguished Reviewer) 2018-2021
IPMI: Information Processing in Medical Imaging 2019-2021
MELBA: The Journal of Machine Learning for Biomedical Imaging 2021-2022
MICCAI: Medical Image Computing and Computer Assisted Intervention (outstanding reviewer award 2020) 2014-2020
ICML: International Conference on Machine Learning 2020
CVPR: Computer Vision and Pattern Recognition (outstanding reviewer award 2019, 2020) 2019-2020
NSF/FDA Scholar-In-Residence at FDA Grant Proposals 2019
Nature Scientific Reports 2016, 2020
ECCV: European Conference on Computer Vision 2020
HBM: Human Brain Mapping 2020
WBIR: International Workshop on Biomedical Image Registration 2018-2019
IEEE TGRS: Transactions on Geoscience and Remote Sensing 2020
CMPB: Computer Methods and Programs in Biomedicine 2020
IEEE TPAMI: Transactions on Pattern Analysis and Machine Intelligence 2018-2020
IEEE ASE: Transactions on Automation Science and Engineering 2020
NSF/FDA Scholar-in-Residence at FDA (SIR). Grant Reviewer. 2019
AAAI: Association for the Advancement of Artificial Intelligence Conference 2019
NeurIPS: Conference on Neural Information Processing Systems (top reviewer 2019, 2020) 2019-2020
Computer Methods and Programs in Biomedicine 2019
MLHC: Machine Learning in Healthcare 2019

MIDL: Medical Imaging with Deep Learning	2019
ICCV: International Conference on Computer Vision	2019
NeuroImage (Elsevier)	2017-2019
MICCAI-PRIME: Predictive Intelligence in Medicine	2019
MedNIPS: Medical Imaging Meets NIPS	2018-2019
IJCV: International Journal of Computer Vision	2018
NIPS ML4H: Machine Learning for Health	2017-2019
Medical Image Analysis (Elsevier)	2017, 2019
Workshop on Biomedical Image Registration	2016, 2018
BrainLes: MICCAI Brain Lesion Workshop	2018
SWITCH: Stroke Workshop on Imaging and Treatment CHallenges	2018
Beyond MIC: integrating imaging and non-imaging modalities for healthcare challenges	2018
ISBI: International Symposium on Biomedical Imaging	2017-2018
SWITCH: Stroke Workshop on Imaging and Treatment CHallenges	2017-2018
MICGen: MICCAI Workshop on Imaging Genetics	2014, 2017
ICASSP: International Conference on Acoustics, Speech and Signal Processing	2017
RECOMB: Research in Computational Molecular Biology	2009

Leadership and Entrepreneurship

Entrepreneurship

First Prize, EECS Start6 Entrepreneurship Competition, $10,000 — 2015
Created business plan to commercialize software for spinal nerve segmentation in clinical trial MRIs.

First Prize, Hacking Medicine Ultrasound Grand Prize, $1,500 — 2015
Developed method to guide sonographers towards ideal positioning of ultrasound probe.

MICCAI Student Board (MSB)

President — 2014, 2015
Led student group in organizing social and professional activities, and growing student network.

MIT SciEx Initiative

Co-founded video competition to showcase exciting science to broad audience. — 2014 (Founding), 2015

MIT - Massachusetts General Hospital SITECOR Program

Paticipated in inaugural MGH Surgeon Shadowing Program for MIT Engineers. — 2014

MICCAI 2014

Student Liaison — 2014
Interfaced with MICCAI 2014 organizing committee to advocate for student interests.

MIT Eastgate Executive Committee

Information Officer — 2010-2012
Developed web interface and organized community events.

University of Toronto

Peer Mentor - First Year Learning Communities	2007-2008
Department of Computer Science Ambassador	2007-2009
Romanian Students' Club President, Webmaster	2004-2007