Adrian Vasile Dalca

Curriculum Vitae

Medical Vision Group
Computer Science and Artificial Intelligence Lab
Electrical Engineering and Computer Science
Massachusetts Institute of Technology

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Research Interests

- Medical image analysis
- Joint modeling of clinical, genetic and imaging modalities
- Healthcare entrepreneurship
- Computer vision and photography

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: Mert Sabuncu (HMS/MGH), Natalia Rost (HMS/MGH), John Guttag (MIT)
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

Experience

Research Assistant, Massachusetts Institute of Technology, Cambridge, MA

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

Teaching Assistant, Massachusetts Institute of Technology, Cambridge, MA

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

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

Computational Biology Lab. Advisor: Prof. Michael Brudno 2006 – 2009

Geophysics. Advisor: Prof. Jerry Mitrovica 2007 – 2008

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

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

Publications

Adrian V. Dalca. "Genetic, Clinical and Population Priors for Brain Images". Ph.D. Thesis. Cambridge, MA: Massachussets Institute of Techonology, Sept. 2016.

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

Nematollah K Batmanghelich, **Adrian V. Dalca**, Gerald Quon, Mert R Sabuncu, and Polina Golland. "Probabilistic Modeling of Imaging, Genetics and Diagnosis". In: *IEEE 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". In: *Proc. MICCAI: International Conference on Medical Image Computing and Computer Assisted Intervention, LNCS* 9351 (2015), pp. 519–526.

Danielle Pace, **Adrian V. Dalca**, Tal Geva, Andrew J. Powell, Mehdi H. Moghari, and Polina Golland. "Interactive Whole-Heart Segmentation in Congenital Heart Disease". In: *Proc. MICCAI: International Conference on Medical Image Computing and Computer Assisted Intervention, LNCS* 9351 (2015), pp. 80–88.

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". In: *Proc. MICCAI: International Conference on Medical Image Computing and Computer Assisted Intervention, LNCS* 8674 (2014), pp. 773–780.

Adrian V. Dalca, Ramesh Sridharan, Natalia S. Rost, and Polina Golland. "tipiX: Rapid Visualization of Large Image Collections". In: *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". In: *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". In: *Proc. MICCAI International Workshop on Multimodal Brain Image Analysis (MBIA), LNCS* 8159 (2013), 18–30. **(‡) equal contribution**.

Kayhan N. Batmanghelich, **Adrian V. Dalca**, Mert R. Sabuncu, and Polina Golland. "Joint generative modeling of imaging and genetics". In: *Proc. IPMI: International Conference on Information Processing and Medical Imaging, LNCS* 7917 (2013), pp. 766–777.

Adrian V. Dalca, Ken L. Ferrier, Jerry X. Mitrovica, J. Taylor Perron, Glen A. Milne, and Jessica R. Creveling. "On post-glacial sea-level - III: incorporating sediment redistribution". In: *Geophysical Journal International* (2013).

Adrian V. Dalca. "Segmentation of nerve bundles and ganglia in spine MRI using particle filters". S.M. Thesis. Cambridge, MA: Massachussets Institute of Techonology, June 2012.

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

Adrian V. Dalca, Stephen M. Rumble, Samuel Levy, and Michael Brudno. "VARiD: A variation detection framework for color-space and letter-space platforms". In: *Bioinformatics* 26.12 (2010), pp. i343–i349.

Adrian V. Dalca and Michael Brudno. "Genome variation discovery with high-throughput sequencing data". In: *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". In: *PLoS computational biology* 5.5 (2009).

Adrian V. Dalca and Michael Brudno. "FRESCO: Flexible alignment with rectangle scoring schemes". In: *Pacific Symposium on Biocomputing* 13 (2008), pp. 3–14.

Selected Presentations

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*. Visiting 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 Talk Series*. 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.

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, *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. 2008.

Graduate Awards

Whitaker Health Sciences Fund Fellowship (MIT)	2015 – 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

Service

Organizing Committee

MICGen: MICCAI Workshop on Imaging Genetics	2014 (Founding) - 2105
MICCAI Educational Challenge	2014 (Founding) - 2015

Technical Reviewer or Scientific Committee

Medical Image Computing and Computer Assisted Intervention (MICCAI)	2014-2016
Nature Scientific Reports	2016
Workshop on Biomedical Image Registration	2016
Research in Computational Molecular Biology (RECOMB)	2009

Leadership and Entrepreneurship

EECS Start6 Program

First Prize, Start 6 Entrepreneurship Competition	2014

MIT MGH SITECOR Program

MGH Surgeon Shadowing Program for MIT Engineers	2014

MICCAI Student Board (MSB)

President	2014 - current
Executive Assistant	2013

SciEx Initiative

Co-Founder	2014 - current

Involvement

MICCAI 2014

Student Liaison	2014

MIT Eastgate Executive Committee

Information Officer, in charge of web development and technical queries	2010-2012

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