DANIEL HAEHN

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I am a biomedical imaging and visualization researcher who investigates how the study of brain connectivity and machine perception can help advance the understanding of biologically inspired artificial intelligence.

Education

2013–present	**PhD Candidate in Computer Science, Harvard University**	Cambridge, MA

Analyzing Brain Connectivity and Computing Machine Perception, expected graduation May 2019
Advisor: Hanspeter Pfister
Committee: Steven Gortler, Finale Doshi-Velez, Scott Kuindersma, Jeff W. Lichtman

2010	**Diplom (MSc) in Medical Computer Science, University of Heidelberg**	Germany

Signal- and Image Processing
Thesis: Coronary Artery Centerline Extraction
Advisors: Hartmut Dickhaus, Ron Kikinis

2007	**Vordiplom (BSc) in Medical Computer Science, University of Heidelberg**	Germany

with Honors, rank #1 of class, all study fees waived

Experience

Summer 2017	**Apple, Inc.**	Cupertino, CA

Research Intern in Data Science

Summer 2014	**Mental Canvas**	New York City, NY

Research Intern in Computer Graphics

2011–2013	**Boston Children's Hospital**	Boston, MA

Research Software Developer III, Fetal Neonatal Neuroimaging and Developmental Science Center
Advisors: Rudolph Pienaar, P. Ellen Grant

2010–2011	**University of Pennsylvania**	Philadelphia, PA

Research Scholar, Section for Biomedical Image Analysis
Advisor: Kilian Pohl

2009	**German Cancer Research Center (DKFZ) and BioQuant Center**	Heidelberg, Germany

Research Assistant, Biomedical Computer Vision and Experimental Radiology Research Groups
Advisors: Stefan Wörz, Hendrik von Tengg-Kobligk

2008–2009	**Brigham and Women's Hospital**	Boston, MA

Fellow, Department of Radiology and the Surgical Planning Laboratory
Advisors: Ron Kikinis, Steve Pieper, Luca Antiga

Publications

2018   Daniel Haehn, James Tompkin, and Hanspeter Pfister. **Evaluating 'Graphical Perception' with CNNs.** *IEEE Transactions on Visualization and Computer Graphics (IEEE VIS).*

2018   Daniel Haehn, Verena Kaynig, James Tompkin, Jeff W. Lichtman, and Hanspeter Pfister. **Guided Proofreading of Automatic Segmentations for Connectomics**. *IEEE Computer Vision and Pattern Recognition (CVPR).*

2017   Daniel Haehn, John Hoffer, Brian Matejek, Adi Suissa-Peleg, Ali K. Al-Awami, Lee Kamentsky, Felix Gonda, Eagon Meng, William Zhang, Richard Schalek, Alyssa Wilson, Toufiq Parag, Johanna Beyer, Verena Kaynig, Thouis R. Jones, James Tompkin, Markus Hadwiger, Jeff W. Lichtman, and Hanspeter Pfister. **Scalable Interactive Visualization for Connectomics**. *MDPI Informatics.*

2017   Brian Matejek, Daniel Haehn, Fritz Lekschas, Michael Mitzenmacher, and Hanspeter Pfister. **Compresso: Efficient Compression of Segmentation Data For Connectomics**. *Medical Image Computing and Computer-Assisted Intervention (MICCAI).*

2017   Felix Gonda, Verena Kaynig, Thouis R. Jones, Daniel Haehn, Jeff W. Lichtman, Toufiq Parag, and Hanspeter Pfister. **ICON: An Interactive Approach to train Deep Neural Networks for Segmentation of Neuronal Structures**. *IEEE International Symposium on Biomedical Imaging (ISBI).*

2017   Rudolph Pienaar, Ata Turk, Jorge Bernal-Rusiel, Nicolas Rannou, Daniel Haehn, P. Ellen Grant, and Orran Krieger. **CHIPS--A Service for Collecting, Organizing, Processing, and Sharing Medical Image Data in the Cloud**. *VLDB Workshop on Data Management and Analytics for Medicine and Healthcare.*

2016   Adi Suissa-Peleg, Daniel Haehn, Seymour Knowles-Barley, Verena Kaynig, Thouis R. Jones, Alyssa Wilson, Richard Schalek, Jeff W. Lichtman, and Hanspeter Pfister. **Automatic Neural Reconstruction from Petavoxel of Electron Microscopy Data.** *Microscopy and Microanalysis.*

2016   Ali K. Al-Awami, Johanna Beyer, Daniel Haehn, Narayanan Kasthuri, Jeff W. Lichtman, Hanspeter Pfister, and Markus Hadwiger. **NeuroBlocks--Visual Tracking of Segmentation and Proofreading for Large Connectomics Projects.** *IEEE Transactions on Visualization and Computer Graphics (IEEE VIS).*

2016   Richard Schalek, Dong Lee, Narayanan Kasthuri, Adi Peleg, Thouis R. Jones, Verena Kaynig, Daniel Haehn, Hanspeter Pfister, David Cox, and Jeff W. Lichtman. **Imaging a 1 mm^3 Volume of Rat Cortex using a MultiBeam SEM.** *Microscopy and Microanalysis.*

2015   Kiho Im, Banu Ahtam, Daniel Haehn, Jurriaan M. Peters, Simon K. Warfield, Mustafa Sahin, and P. Ellen Grant. **Altered Structural Brain Networks in Tuberous Sclerosis Complex.** *Cerebral Cortex.*

2015   Rudolph Pienaar, Nicolas Rannou, Jorge Bernal, Daniel Haehn, and P. Ellen Grant. **ChRIS--A web-based Neuroimaging and Informatics System for Collecting, Organizing, Processing, Visualizing and Sharing of Medical Data**. *IEEE Engineering in Medicine and Biology Society (EMBC).*

2014   Daniel Haehn, Seymour Knowles-Barley, Mike Roberts, Johanna Beyer, Narayanan Kasthuri, Jeff W. Lichtman, and Hanspeter Pfister. **Design and Evaluation of Interactive Proofreading Tools for Connectomics.** *IEEE Transactions on Visualization and Computer Graphics (IEEE VIS).*

Publications (continued)

2013   <u>Daniel Haehn</u>, Nicolas Rannou, P. Ellen Grant, and Rudolph Pienaar. **Slice:Drop -- Collaborative Medical Imaging in the Browser**. *ACM SIGGRAPH Computer Animation Festival*.

2012   <u>Daniel Haehn</u>, Nicolas Rannou, Banu Ahtam, P. Ellen Grant, and Rudolph Pienaar. **Neuroimaging in the Browser using the X Toolkit.** *Frontiers in Neuroinformatics*.

2012   Myong-sun Choe, Silvia Ortiz-Mantilla, Nikos Makris, Matt Gregas, Janine Bacic, <u>Daniel Haehn</u>, David Kennedy, Rudolph Pienaar, Verne S. Caviness Jr, April A. Benasich, and P. Ellen Grant. **Regional Infant Brain Development: an MRI-based Morphometric Analysis in 3 to 13 month olds**. *Cerebral Cortex*.

2012   Arno Klein, Forrest S. Bao, Yrjö Häme, Eliezer Stavsky, Joachim Giard, <u>Daniel Haehn</u>, Nolan Nichols, and Satrajit S. Ghosh. **Mindboggle: Automated Human Brain MRI Feature Extraction, Labeling, Morphometry, and Online Visualization.** *Frontiers in Neuroinformatics*.

2012   Arno Klein, Nolan Nichols, and <u>Daniel Haehn</u>. **Mindboggle 2 interface: Online Visualization of Extracted Brain Features with XTK.** *Frontiers in Neuroinformatics*.

Mentoring

2018–present   Vincent Casser, Graduate student (MSc) at Harvard University
2018–present   Ian Svetkey, Pre-College student at Harvard University
2016   Eagon Meng, Undergraduate student at Harvard University
2015–2017   John Hoffer, Undergraduate student at Harvard University
2016   Omar Shaikh, Intern at Harvard University
2015   William Zhang, Intern at Harvard University
2013   Jay Andrew Robinson, Intern at Boston Children's Hospital (co-mentored)
2013   Emily Seibring, Intern at Boston Children's Hospital (co-mentored)
2010-2011   Suares Tamekue, Intern at Brigham and Women's Hospital (co-mentored)

Teaching

2018–present   TEALS Volunteer for AP Computer Science at Cambridge Rindge and Latin School
2016   Technical Assistant for the Deep Learning mini-course at the Harvard IACS Compute Fest
2015   Teaching Fellow for the Harvard CS171 Visualization course
2008   Workshop for Advanced Microcontroller Programming, University of Bratislava, Slovakia
2008   Workshop for Microcontroller Programming at the University of Tbilisi, Georgia (Europe)
2004–2008   Teaching Assistant for the Microcontrollers in EXperiment and LEarning (MEXLE) educational platform, Heilbronn University, Germany

Awards

2015–2019	Winkler Scholarship
2013–2019	Harvard University Fellowship
2013	Real-Time Live! presentation of Slice:Drop at SIGGRAPH
2012	INCF Neuroinformatics Spotlight Award for XTK
2012	Mozilla Hacks WebGL Dev Derby Runner-up for Slice:Drop
2012	Visualizing.org VisWeek Challenge Winner with Slice:Drop
2010	1st Prize for End User Tutorial at the National Alliance of Medical Image Computing (NA-MIC)
2008–2009	Karl Steinbuch Foundation Scholarship
2007–2009	Thomas Gessmann Foundation Scholarship

Presentations

2018	Paper presentation at **IEEE Visualization**: *Evaluating 'Graphical Perception' with CNNs*
2018	**Harvard Visual Computing Group** meeting presentation: *The 7 Levels of Open Science*
2018	Invited speaker at **Brown CS**: *Analyzing Brain Connectivity and Computing Machine Perception*
2018	Invited speaker at **IBM Research** (AI Systems Day): *Evaluating 'Graphical Perception' with CNNs*
2017	**Harvard Visual Computing Group** meeting presentation: *Guided Proofreading of Automatic Segmentations for Connectomics*
2016	Invited speaker at the **IEEE Visualization Doctoral Colloquium**: *Proofreading for Connectomics*
2015	**Harvard Lichtman Lab** meeting presentation: *Interactive Proofreading Tools for Connectomics*
2014	Paper presentation at **IEEE Visualization**: *Design and Evaluation of Interactive Proofreading Tools for Connectomics*
2014	**Harvard Visual Computing Group** meeting presentation: *Proofreading Tools for Connectomics*
2014	Invited speaker at the **MIT Computer Graphics Group**: *Web-based Visualization of Scientific Data*
2014	**Harvard Visual Computing Group** meeting presentation: *Interactive Proofreading with Dojo*
2014	**Harvard Lichtman Lab** meeting presentation: *Web-based Visualization and Proofreading for Connectomics*
2013	**Harvard Visual Computing Group** meeting presentation: *Web-based Scientific Visualization*
2013	Invited speaker at **Visualizing Biological Data (VIZBI)**: *Physiology & Function*
2012	Spotlight presentation at **INCF Neuroinfomatics**: *Neuroimaging in the Browser using the X Toolkit*
2012	Invited speaker at **WebGL Camp Orlando**: *WebGL for Baby Brains*

Service and Outreach

2019–present	Voluntary Advisor for the AP Data Science Curriculum in Cambridge Public Schools
2018–present	Head Coach for Cambridge Youth Soccer
2018	Volunteer+Presentation Facilitator at the Cambridge 8th Grade Science & Engineering Showcase
2013–present	Social Media Coordinator at the Harvard Visual Computing Group

Service and Outreach (continued)

2018–present   Reviewer for *Manning Publications*

2016–present   Reviewer for *Frontiers in Neuroinformatics*, *ISMRM*, *Neuroinformatics*, *Frontiers in Neural Circuits*, *ACM SIGCHI*, *IEEE CVPR*

2013   Technical Reviewer for *Matsuda and Lea: WebGL Programming Guide*, *Addison-Wesley*

2014–present   Principal Investigator for multiple IRB approved research studies by the Harvard Human Research Protection Program

2007–2010   President of the Student Computer Club at Heilbronn University, StuWoNet e.V.

2007–2009   Voluntary Project Lead of RANDI2, a randomization software for clinical trials at the German Cancer Research Center (DKFZ), coordinating 15+ developers

1997–1999   Vice-President of The German Computer Freaks, a National Cyber Security Club

My Erdős Number is 3.