Andrew L. Beers

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https://github.com/AndrewBeers, https://github.com/QTIM-Lab, Google Scholar

Education

Brown University, 3.76 GPA, Magna Cum Laude
- Concentration: Environmental Studies. *Best Research Project 2015*, Institute at Brown for Environment and Society. *Library Innovation Prize 2015*, Brown University. *Explore Grant 2013*, Social Innovation Initiative (SII) at Brown University. GRE Verbal: 170, Math: 168, Writing: 5.

Research

Quantitative Tumor Imaging Lab, Center for Machine Learning @ the MGH/HST Martinos Center for Biomedical Imaging - Boston, MA, Research Assistant (2016-2017), Programmer (2017-Present)
- Design deep learning models for 3D image segmentation, synthesis, classification, regression, denoising, sequence generation, and superresolution of medical imaging data using Tensorflow and Keras.
- Develop open-source software packages and in-house machine learning pipelines for diagnosis, prognosis, and treatment planning for brain tumors. Facilitate the usage of this pipeline by clinicians testing new treatments in ongoing clinical trials. Lead courses in deep learning and medical imaging.

MedGIFT, University of Applied Science in Western Switzerland (HES-SO) - Sierre, Switzerland, Summer Intern (Summer 2018)
- Developed algorithms to generate high-resolution synthetic pathology images for prostate cancer data as part of a summer exchange program with our lab in MGH.

Cedar Creek Ecosystem Science Reserve - East Bethel, MN, Research Intern (2015)
- Formalized and enacted a protocol for surveying diseased trees in Cedar Creek's forests, in support of a larger project on oak wilt epidemiology.

Brown University Center for Environmental Studies - Providence, RI, Research Assistant (2014-15)
- Made a website to visualize 134 years of iceberg data using Javascript, and d3.js. Modeled iceberg observer behavior to determine unrecorded changes in observers in the historical record.

American Civil Liberties Union - Boston, MA, Researcher (2014)
- Contributed to a rebuttal for an expert witness in an upcoming state-level reproductive justice case, and critiqued statistical methods in the opposition's supporting epidemiological literature.

Employment

American Civil Liberties Union - New York, NY, Online Production Assistant (2015-16)
- Ran statistical analysis on ACLU's email fundraising campaign, and coded responsive donation pages in CSS.

Ceres - Boston, MA, Insurance Intern (2014)
- Created a tool with VBA and Bloomberg to track eco-friendly "green bonds" in the global market.

Planned Parenthood Federation of America - Washington, DC, Digital Fundraising Intern (2013)
- Created a tool in R to evaluate and rank the effectiveness of PPFA's national fundraising campaigns.

TIC - Washington, DC, Programming Counselor (Summers 2011/2012)
- Created and taught a programming curriculum using LOGO for game creation aimed at children aged 6-14.

Technical Skills

Programming: Experienced with Python (Tensorflow / Keras / Packaging utils), R (Shiny), Matlab, Javascript (d3.js, tensorflow.js), C++. Comfortable with CUDA, Linux, Docker, GPU Programming, ArcGIS, LaTeX, SPSS, Adobe Suite, and VBA. Extensive knowledge of softwares and data formats used in medical image analysis.

Teaching

Introduction to Deep Learning and Medical Imaging – Two series of classes teaching deep learning with Python as applied to medical imaging. The first iteration was aimed towards .NET programmers with an MGH industry partner, and the second towards more experienced Python programmers among the clinicians, professors, and researchers of MGH and Harvard Medical School. Some class lectures found at https://bit.ly/2xTXDXd.

Guest Lecture, MIT IAP Program – Gave a pair of classes on deep learning and hand-crafted features in computer vision for course open to students, researchers, and clinicians during MIT's winter term.

Open-Source Software

DeepNeuro - https://github.com/QTIM-Lab/DeepNeuro
DeepZine - https://github.com/AndrewBeers/DeepZine
The Russian Ad Explorer - https://github.com/russian-ad-explorer/russian-ad-explorer.github.io
Segmentation Wizard (3D Slicer) - https://github.com/QTIM-Lab/SlicerSegmentationWizard
glue-viz :: medical (contributor) - https://github.com/glue-viz/glue-medical
qtim_preprocessor - https://github.com/QTIM-Lab/qtim_PreProcessor

Talks / Conferences

IEEE International Symposium on Biomedical Imaging 2018 – Session Chair, "Lung Nodule Malignancy Prediction Based on Sequential CT Scans". Gave two talks, one explicating our previous work on multi-interval lung nodule segmentation, and one reviewing the results of a competition on lung nodule segmentation.

BrainHack Boston 2018 – Talk, "Deep Learning @ BrainHack". Reviewed advances in deep learning in neuroscience.

Journal Publications

Automated Diagnosis of Plus Disease in Retinopathy of Prematurity Using Deep Convolutional Neural Networks. James M. Brown; J. Peter Campbell; Andrew Beers; Ken Chang; Susan Ostmo; R. V. Paul Chan; Jennifer Dy; Deniz Erdogmus; Stratis Ioannidis; Jayashree Kalpathy-Cramer; Michael F. Chiang. JAMA Ophthalmology (2018). https://goo.gl/9pyj9U

Semi-Automated Pulmonary Nodule Interval Segmentation using the NLST data. Yoganand Balagurunathan, Andrew Beers, Jayashree Kalpathy-Cramer, Michael McNitt-Gray, Lubomir Hadjiiski, Bensheng Zhao, Jiangguo Zhu, Hao Yang, Stephen S.F. Yip, Hugo J.W.L. Aerts, Sandy Napel, Dimitry Cherenov, Kenny Cha, Heang-Ping Chan, Carlos Flores, Alberto Garcia, Robert Gillies, Dimitry Goldgof. Medical Physics (2018). https://goo.gl/Ujq43n

Distributed deep learning networks among institutions for medical imaging. Chang, Ken, Niranjan Balachandar, Carson K. Lam, Darvin Yi, James M. Brown, Andrew Beers, Bruce R. Rosen, Daniel L. Rubin, and Jayashree Kalpathy-Cramer. Journal of the American Medical Informatics Association (2018). https://goo.gl/ewMKn7

Residual Convolutional Neural Network for Determination of IDH Status in Low- and High-grade Gliomas from MR Imaging. Chang Ken, Harrison X Bai, Hao Zhou, Chang Su, Wenya Linda Bi , Ena Agbodza, Vasileios K. Kavouridis, Joeky T. Senders, Alessandro Boaro, Andrew L. Beers, [...], Elizabeth Gerstner, Paul J. Zhang, Bruce Rosen, Li Yang, Raymond Y Huang. Clinical Cancer Research (2017). https://goo.gl/yLu4dX

A Multi-Institutional Comparison of Dynamic Contrast-Enhanced Magnetic Resonance Imaging Parameter Calculations. Ger, Rachel B., Abdallah SR Mohamed, Musaddiq J. Awan, Yao Ding, Kimberly Li, Xenia J. Fave, Andrew L. Beers, [...], John D. Hazle, Laurence E. Court, Jayashree Kalpathy-Cramer & Clifton D. Fuller. Nature Scientific Reports (2017). https://goo.gl/1my75U

Selected Conference Papers, Abstracts, arXiv, Datasets

DeepNeuro: an open-source deep learning toolbox for neuroimaging. Andrew Beers, James Brown, Ken Chang, Katharina Hoebel, Elizabeth Gerstner, Bruce Rosen, Jayashree Kalpathy-Cramer. arxiv (2018). Submitted to *Neuroinformatics.* https://arxiv.org/pdf/1808.04589.pdf

High-resolution medical image synthesis using progressively grown generative adversarial networks. Andrew Beers, James Brown, Ken Chang, J. Peter Campbell, Susan Ostmo, Michael F. Chiang, and Jayashree Kalpathy-Cramer. arxiv (2018). https://arxiv.org/pdf/1805.03144.pdf

Sequential neural networks for biologically-informed glioma segmentation. Andrew Beers, Ken Chang, James Brown, Emmett Sartor, C. P. Mammen, Elizabeth Gerstner, Bruce Rosen, and Jayashree Kalpathy-Cramer. SPIE 2018. https://arxiv.org/abs/1709.02967.

Semi-Supervised Deep Learning for Abnormality Classification in Retinal Images. Bruno Lecouat, Ken Chang, Chuan-Sheng Foo, Balagopal Unnikrishnan, James Brown, Houssam Zenati, Andrew Beers, Vijay Chandrasekhar, Pavitra Krishnaswamy and Jayashree Kalpathy-Cramer. Poster, NeurIPS ML4H Workshop (2018).

Anatomical DCE-MRI phantoms generated from glioma patient data. Andrew Beers, Ken Chang, James Brown, Xia Zhu, Dipanjan Sengupta, Theodore Willke, Elizabeth Gerstner, Bruce Rosen, and Jayashree Kalpathy-Cramer. SPIE 2018. https://goo.gl/NCM8mj

Repeatability of ktrans derived from DCE-MRI in newly diagnosed glioblastoma across multiple baseline images and processing methods. Andrew Beers, Yi-Fen Yen, Kyrre Eeg Emblem, Elizabeth R Gerstner, Bruce Rosen, and Jayashree Kalpathy-Cramer. ISMRM 2017. https://goo.gl/9C1gzP

Making sense of large data sets without annotations: analyzing age-related correlations from lung CT scans. Yashin Dicente Cid; Artem Mamonov; Andrew Beers; Armin Thomas; Vassili Kovalev; Jayashree Kalpathy-Cramer; Henning Müller. SPIE 2017. https://goo.gl/B7WC7t

The Grand Banks Iceberg Mapper. Andrew Beers. Brown Digital Repository. (2015). doi:10.7301/Z0HT2M7B

Press

"AI Beats Experts At Diagnosing Childhood Disease"
- https://www.opb.org/news/article/artificial-intelligence-ai-childhood-eye-disease/

"A story in time: Icebergs & Climate Change": Rhode Island NSF Epscor
- http://web.uri.edu/rinsfepscor/2015/06/15/a-story-in-time-icebergs-climate-change/.

"At Loyola HS: 'Empathy boxes' to raise awareness of autism": Angelus News
- https://angelusnews.com/content/at-loyola-hs-empathy-boxes-to-raise-awareness-of-autism

Advocacy

Lucy Parsons Center – Organizing Collective Member (2016-2018)
- Promoted events and organized finances for a radical community center and bookstore in Jamaica Plain.

Bluestockings Magazine – Art Director (2014-15), Designer (2013-14)
- Designed three 100-page print issues, illustrated 1-3 articles per week, and managed a staff of 10 illustrators for the feminist magazine's website, which reached 10,000+ hits on featured pieces.

Brown/RISD Design for America Chapter – Project Lead (2013-14), Project Member (2012-13)
- Developed the Empathy Box Project, which sought to spread the stories of those with autism via stories shared on social media. Applied for and won grant funding ($1400+).

Brown University Social Action Housing Group – President (2013-14), Head of Publicity (2012-13)
- Organized events and interviewed prospective members in a 45-person residential housing group for those doing social justice work.

The Brown Conversation - Facilitator (2011-2015)
- Facilitated public discussions about the meaning of an undergraduate education, alternate models for Brown's curriculum, equality in education, and ways to guide one's own educational experience.