

Brandon Amos

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I am a third-year Computer Science Ph.D. student at Carnegie Mellon University. I work with [Zico Kolter](#) on machine learning and optimization and am supported by an NSF graduate research fellowship. I am particularly interested in improving our understanding of important modeling problems in computer vision, language, and reinforcement learning through the use of deep learning, optimization (sometimes convex), theory, and statistics.

I strongly believe in open science and reproducible research and actively publish code on [my Github profile](#). I am also the author of [OpenFace](#), which is an open source face recognition project that uses deep learning.

Education

- Ph.D. in Computer Science, Carnegie Mellon University Aug 2014 – Present
- M.S. in Computer Science, Carnegie Mellon University Aug 2014 – May 2016
- B.S. in Computer Science, Virginia Tech (3.99/4.00) Aug 2011 – May 2014
- Northside High School (Roanoke, Virginia) May 2011

Research Experience

- Carnegie Mellon University, Prof. Zico Kolter Apr 2016 – Present
 - Machine learning and optimization
- Carnegie Mellon University, Prof. Mahadev Satyanarayanan Aug 2014 – Apr 2016
 - Machine learning and mobile computing
- Virginia Tech, Prof. Jules White May 2012 – May 2014
 - Mobile computing, cyber-physical systems, and security
- Virginia Tech, Prof. Layne Watson Jan 2013 – May 2014
 - Scientific computing, global/stochastic optimization, and bioinformatics
- Virginia Tech, Prof. Binoy Ravindran Nov 2012 – Mar 2014
 - Heterogeneous compilers

Selected Publications

- [1] **B. Amos**, L. Xu, J. Z. Kolter, "Input convex neural networks," *ArXiv preprint arXiv:1609.07152*, 2016. [Online]. Available: <http://arxiv.org/abs/1609.07152>.
- [2] H. Zhao, T. Adel, G. Gordon, **B. Amos**, "Collapsed Variational Inference for Sum-Product Networks," in *ICML*, 2016. [Online]. Available: <http://www.cs.cmu.edu/~hzhao1/papers/ICML2016/BL-SPN-main.pdf>.
- [3] **B. Amos**, B. Ludwiczuk, M. Satyanarayanan, "Openface: A general-purpose face recognition library with mobile applications," Technical Report CMU-CS-16-118, CMU School of Computer Science, Tech. Rep., 2016. [Online]. Available: <http://reports-archive.adm.cs.cmu.edu/anon/anon/2016/CMU-CS-16-118.pdf>.
- [4] **B. Amos**, D. Easterling, L. Watson, W. Thacker, B. Castle, M. Trosset, "QNSTOP-QuasiNewton Algorithm for Stochastic Optimization," 2014. [Online]. Available: <https://vtechworks.lib.vt.edu/bitstream/handle/10919/49672/qnTOMS14.pdf>.

Teaching Experience

- Distributed Systems (CMU 15-440/640), TA S2016
- Software Design and Data Structures (VT CS 2114), TA S2013

Industry Experience

- Data Scientist Intern, Adobe Research May 2014 – Aug 2014
- Software Engineer Intern, Snowplow Analytics Dec 2013 – Jan 2014
- Software Engineer Intern, Qualcomm May 2013 – Aug 2013
- Software Engineer Intern, Phoenix Integration May 2012 – Aug 2012
- Network Administrator Intern, Sunapsys Jan 2011 – Aug 2011

CMU Graduate Coursework

- Advanced Machine Learning (10-715, Au), B. Póczos F2016
- Intermediate Statistics (10-705, Au), L. Wasserman F2016
- Topics in Deep Learning (10-807), R. Salakhutdinov F2016
- Machine Learning (10-701, Au), T. Mitchell S2016
- Computer Vision (16-720, Au), D. Ramanan S2016
- Convex Optimization (10-725), R. J. Tibshirani F2015
- Algorithms in the Real World (15-853), G. Blelloch and A. Gupta F2015
- Semantics of Programming Languages (15-812), A. Platzer S2015
- Optimizing Compilers for Modern Architecture (15-745), T. Mowry S2015
- Advanced Operating and Distributed Systems (15-712), D. Andersen F2014
- Mobile and Pervasive Computing (15-812), M. Satyanarayanan and D. Siewiorek F2014

Honors & Awards

- NSF Graduate Research Fellowship 2016 – 2019
- 1st Place Undergraduate Senior Capstone Award, Virginia Tech Computer Science 2014
- David Heilman Research Award, Virginia Tech Computer Science 2014
- Senior Scholar Award, Virginia Tech Computer Science 2014
- Honorable Mention, CRA Outstanding Undergraduate Researcher Award 2014
- Awarded eight undergraduate merit scholarships 2011 – 2014

Skills

Languages	Bash, C, C++, CSS, Fortran, Haskell, HTML, Java, JavaScript, \LaTeX , Lua, Make, <i>Mathematica</i> , Python, R, Scala
Frameworks	Akka, Android SDK/NDK, Caffe, Node.js, NumPy, TensorFlow, Torch7, Pandas, SciPy, scikit-learn, Spark, Spray
Systems	Linux, OSX