Brandon Amos

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I am a third-year Computer Science Ph.D. student at Carnegie Mellon University and am supported by an NSF graduate research fellowship. I spent the first two years of my Ph.D. working between mobile computing and machine learning and I now work with Zico Kolter on machine learning and optimization 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. Poczos — 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, *Mathematica*, Python, R, Scala
Frameworks	Akka, Android SDK/NDK, Caffe, Node.js, NumPy, TensorFlow, Torch7, Pandas, SciPy, scikit-learn, Spark, Spray
Systems	Linux, OSX