brandon amos. vitæ.

Phone. (540) 947–1238 **Email.** bdamos@vt.edu

http://bamos.github.io

Compiler, mobile, or security research or development in Linux. Interests

Seeking a PhD fellowship starting May 2014 or internship from May-August 2014.

Virginia Polytechnic Institute and State University Blacksburg, Virginia **EDUCATION**

> August 2011 - May 2014 B.S. Computer Science

> • Overall GPA: 3.98/4.00 Major GPA: 4.00/4.00

Virginia Tech Computer Science Department Research EXPERIENCE

Blacksburg, Virginia January 2013 - Present Undergraduate Research Assistant, Advisor - Dr. Layne Watson

• Optimization algorithm in Fortran 95 resulting in primary authorship on a conference publication.

Systems Software Research Group

Blacksburg, Virginia

Undergraduate Research Assistant, Advisor - Dr. Binoy Ravindran

November 2012 - Present

• Work supported with NSF and NEEC REU grants.

• Automatic OpenMP to CUDA translation using C++ and the ROSE compiler framework.

• Scala and Bash development in Linux.

Magnum Research Group

Blacksburg, Virginia

Undergraduate Research Assistant, Advisor - Dr. Jules White

May 2012 - Present

• Work supported with ARO REU grant.

• Android malware detection research resulting in primary authorship on a conference publication.

• Created a distributed **Actor** system using **Scala** for **machine learning** classification of APKs.

• Developed VC# programs for a pilot study on manufacturing cyber-physical security.

• Assisted C++ and Make development in Linux for a deployment optimization framework. Specific libraries used include **TCLAP** and **rapidxml**.

• Modified the **Android source** to provide non-standard logging information for dynamic malware analysis.

Industry EXPERIENCE Qualcomm, Inc.

San Diego, California

Source Integrity Team Software Intern

May 2013 - August 2013

• Developed a web application to modify an XML-based grammar for fuzz vector generation. Implemented with client-side HTML and js, using D3 for graphics and Handlebars for templating.

• Developed an XML-based grammar translator in C++ with the Xerces XML parser in Linux. Reimplemented in Python using the ElementTree XML API for better analysis and tree transformation.

Phoenix Integration, Inc.

Blacksburg, Virginia

Software Engineer Intern

May 2012 – August 2012

• Integrated a new licensing mode into CenterLink, a grid computing application, using FLEXIm and Java.

• Assisted development of industry software in VC++, VC#, Java, and Tomcat.

• Improved the testing (JUnit and NUnit) and installation (Ant, InstallShield, and Make) frameworks.

Sunapsys, Inc. Vinton, Virginia

Network Administrator Intern

Undergraduate Teaching Assistant

January 2011 – August 2011

• Linux server configuration and Bash development.

Virginia Tech Computer Science Department Teaching

Blacksburg, Virginia January 2013 - May 2013

Assisted students in a software design and data structures class using Java and Android.

Publications

EXPERIENCE

Conference • "Applying machine learning classifiers to dynamic Android malware detection at scale."

Brandon Amos, Hamilton Turner, Jules White. IWCMC'13 Security, Trust, and Privacy Symposium. Cagliari, Italy, July 2013.

• "Fortran 95 implementation of QNSTOP for global and stochastic optimization." Brandon Amos, David Easterling, Layne Watson, Brent Castle, Michael Trosset, William Thacker. Submitted.

MAGAZINE

• "Bad Parts: Are Our Manufacturing Systems At Risk of Silent Cyber-attacks?"

PUBLICATIONS Hamilton Turner, Brandon Amos, Jules White, Jaime Camelio, Chris Williams, Robert Parker. Submitted.

SKILLS

Environments: Eclipse**, NetBeans*, vim/gdb***, Visual Studio**

Frameworks: Drupal*, .NET*, ZK*

Languages: Bash**, C/C++**, C#*, Fortran**, HTML/CSS*, LATEX**, Java**, JavaScript**,

Mathematica**, PHP*, Python***, R*, Scala**

Software: i3wm**, Make**, Ratpoison**, Samba**, Tomcat*, Zimbra*

Systems: Android**, Linux***

Version Control/Review: Gerrit*, Git***, Subversion**

Rankings: $1/10^* - 3/10^{**} - 5/10^{***} - 7/10^{****}$

PROJECTS

Personal Blog and Website - http://bamos.github.io

July 2012 - Present

• Hosted on GitHub Pages. Uses Markdown for posts and Jekyll for static HTML generation.

• 27 posts across the following tags, listed by highest frequency.

Python, LaTeX, Bash, Linux, Scala, Android, Mathematica, Fortran, CUDA, C++

GitHub Portfolio – http://github.com/bamos

April 2011 – Present

- Hosts code samples, original source code, and patches for open source projects.
- 18 original repositories.
 - o bamos.github.io, dotfiles, ical-availability, latex-templates, list-github-repos, mew, parsec-benchmark, reading-list, scala-sorting, simple-fortran-routines, simple-python-scripts, simple-shell-scripts
 - **AES** An educational Java implementation of AES-128. Includes polynomial inverses in AES' Galois finite field via Euler's extended GCD algorithm and prints the state after each step.
 - o cpp-expression-parser Expression parsing in C++ with Dijkstra's Shunting-yard algorithm.
 - latex-resume-cv My LaTeX resume and CV. Uses Make and produces PDFS and (rough) text versions of my resume and CV from the same LaTeX files.
 - mbox-convos Export all emails in an mbox mailbox to or from somebody to a PDF.
 - o mutt-mass-mailer M3 parses a flat file and uses mutt to email many people different messages.
 - safegit Wraps git to detect sensitive data before commits by using fuzzy Rabin fingerprints.
- 5 forked repositories.
 - o antimalware Dynamic malware analysis for the Android platform
 - BigOCheatSheet Space and time complexities of popular algorithms and data structures.
 - o gv-app Google Voice command line client
 - o mirror-android-repo Instructions and files to set up a server mirroring the entire Android project.
 - $\circ\,$ schale A subprocess interface for Scala

Honors & Awards

- Qualstar Award, Qualcomm, 2013
- Benjamin F. Bock Scholarship, Virginia Tech Engineering, 2013
- Sophomore Scholar Award, Virginia Tech Computer Science, 2013
 - Given to the sophomore in Computer Science with the most outstanding academic record.
- University Honors, Virginia Tech, 2012–2013
- Intelligence Community Center of Academic Excellence Scholar, Virginia Tech, 2012–2013
 - Merit-based scholarship that provides a security-based research fellowship.
- Dean's List with Distinction, Virginia Tech, 2011–2013
- Engineering Scholarship, Roanoke County Public Schools Education Foundation, 2011
 - $\circ\,$ Merit-based scholarship presented annually to one student in the graduating Engineering class.
- Papa John's Scholarship, 2011
- Gay B. Shober Memorial Scholarship, Roanoke County Federal Credit Union, 2011
- Pamplin Leader Scholarship, Virginia Polytechnic Institute and State University, 2011
 - Merit-based scholarship presented to one student from each public high school in Virginia.
- I. Luck Gravett Memorial Scholarship, Scottish Rite of Freemasonry, 2011
- Salem–Roanoke County Chamber of Commerce Scholarship, 2011
- Virginia Aerospace Science and Technology Scholar, National Space Grant Foundation, 2010
 - Selected as an attendee of a summer academy at NASA Langley Research Center.

ACTIVITIES

- Honors Residential College, Virginia Tech, 2013
- Hokies Pep Band, Virginia Tech, 2012–2013
- Computer Science Community Service, Virginia Tech, 2012
- Symphony Band, Virginia Tech, 2011–2012
- Linux and Unix Users Group, Virginia Tech, 2011–2012
- Galileo Living-Learning Community, Virginia Tech, 2011–2012
- Trumpet Section Leader, Marching Band, Northside High School, 2010–2011
- Tennis Team, Northside High School, 2008–2011