brandon amos. vitæ.

Phone. (540) 947–1238 **Email.** bdamos@vt.edu
http://bamos.github.io

Interests

Compilers, mobile computing, networking, parallel computing, security, and systems.

Education

Virginia Polytechnic Institute and State University — Blacksburg, Virginia
B.S. Computer Science — **August 2011 – May 2014**
- **Overall GPA:** 3.98/4.00 — **Major GPA:** 4.00/4.00
- **Courses:** Software Design, Data Structures, Numerical Methods, Cryptography, Computer Organization
- **Course Projects:** AES-128 (**Java**), MIPS assembler (**C**), PR Quadtree (**Java**)

Research Experience

Virginia Tech Computer Science Department — Blacksburg, Virginia
Undergraduate Research Assistant — **January 2013 – Present**
- Implement quasi-Newton stochastic optimization algorithm in **Fortran 95**.
  Specific libraries used include **BLAS** and **LAPACK**.

Systems Software Research Group — Blacksburg, Virginia
Undergraduate Research Assistant — **November 2012 – Present**
- Work supported with NSF and NEEC REU grants.
- Source-to-source compiler research on OpenMP to CUDA translation. Specifically, developed a compiler in **C++** with the **ROSE** compiler framework for automatic OpenMP to CUDA translation.
- Assisted development with runtime execution prediction. Created **Scala** scripts to parse raw data for feature vectors to be used by **WEKA**'s machine learning algorithms.
- Developed **Bash** scripts to automate benchmarking on heterogeneous hardware.

Magnum Research Group — Blacksburg, Virginia
Undergraduate Research Assistant — **May 2012 – Present**
- Work supported with Northrup Grumman REU grant.
- Dynamic Android malware research resulting in primary authorship on a conference publication.
- Implemented a framework with **Bash** scripts to dynamically profile APKs and analyze popular machine learning algorithms with **WEKA**. Reimplemented framework in **Scala**.
- Assisted **C++** and **Make** development for a deployment optimization framework.
  Specific libraries used include **TCLAP** and **rapidxml**.
- Corresponded with another research group and modified the **Android source** to provide non-standard logging information for dynamic malware analysis.
- Configured a Gerrit server to host code review for the custom Android source.

Industry Experience

Qualcomm, Inc. — San Diego, California
Source Integrity Team Software Intern — **May 2013 – August 2013**
- Developed an XML-based grammar translator in **C++** with the **Xerces** XML parser.
- Developed a visual interface in **Javascript** and **HTML** using the **D3** library to modify an XML-based grammar for fuzz vector generation.

Phoenix Integration, Inc. — Blacksburg, Virginia
Software Engineer Intern — **May 2012 – August 2012**
- Migrated the web server of CenterLink, a grid computing application, from Tomcat 5 to Tomcat 7.
- Integrated a new licensing mode into CenterLink via **FLEXlm** and **Java**.
- Improved the testing (**JUnit** and **NUnit**) and installation (**Ant**, **InstallShield**, and **Make**) frameworks.
- Fulfilled bug fixes and feature requests in **VC++**, **VC#**, and **Java**.

Sunapsys, Inc. — Vinton, Virginia
Network Administrator Intern — **January 2011 – August 2011**
- Configured virtualized DHCP, DNS, and PDC servers in Linux to replace existing Windows servers.
- Created **Bash** scripts to back up data incrementally and monitor the status of the servers.

Teaching Experience

Virginia Tech Computer Science Department — Blacksburg, Virginia
Undergraduate Teaching Assistant — **January 2013 – May 2013**
- Assisted students in a software design and data structures class using **Java** and **Android**.

Publications

- "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.

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**: BIND9*, i3**, Make**, Ratpoison**, Samba**, Tomcat*, Zimbra*
- **Systems**: Android**, Linux***, Windows**
- **Version Control/Review**: Gerrit*, Git**, Subversion**

Exposure* – Minimal knowledge** – Adequate knowledge*** – Maximum knowledge****

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.

GitHub Portfolio – http://github.com/bamos **April 2011 – Present**

- Hosts code samples, original source code, and patches for open source projects.
- 14 original repositories.
  - **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.
  - **bamos.github.com** - My personal website.
  - **cpp-expression-parser** - Expression parsing in C++ with Dijkstra's Shunting-yard algorithm.
  - **dotfiles** - A small collection of configuration files for my Linux systems.
  - **fortran-simple-routines** - Miscellaneous simple Fortran 95 routines.
  - **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.
  - **latex-templates** - Centralization of LaTeX templates and classes I use.
  - **list-github-repos** - Obtain a pretty list of all of a user's public Github repos.
  - **mew** - Website to produce random cat noises.
  - **parsec-benchmark** - An unofficial mirror of the core PARSEC 3.0 benchmark suite with patches to run on x86_64 Arch Linux and generalize builds.
  - **reading-list** - A collection of my reading list and notes.
  - **safegit** - Wraps git to detect sensitive data before commits.
  - **scala-sorting** - Educational implementations of popular sorting algorithms in Scala. Only tested on small integer data sets. Your mileage may vary!
  - **simple-shell-scripts** - A small potpourri of simple Bash shell scripts
- 5 forked repositories.
  - **antimalware** - Dynamic malware analysis for the Android platform
  - **gv-app** - Google Voice command line client
  - **mirror-android-repo** - Instructions and files for setting up a server that mirrors the entire Android project.
  - **music-organizer** - Automatically organize, sort or rename your mp3 music collection
  - **virustotal** - Pythonic VirusTotal Public API 2.0 client

Honors & Awards

- 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
  - 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