

# brandon amos. r sum .

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<http://bamos.github.io>

INTERESTS	<b>Compiler</b> or <b>security</b> research in a <b>Linux</b> environment.	
EDUCATION	<b>Virginia Polytechnic Institute and State University</b>	Blacksburg, Virginia
	<i>B.S. Computer Science</i>	<b>August 2011 – May 2014</b>
	<ul style="list-style-type: none"><li>• <b>Overall GPA:</b> 3.98/4.00</li><li>• <b>Major GPA:</b> 4.00/4.00</li><li>• <b>Courses:</b> Software Design, Data Structures, Numerical Methods, Cryptography, Computer Organization</li><li>• <b>Course Projects:</b> AES-128 (<b>Java</b>), MIPS assembler (<b>C</b>), PR Quadtree (<b>Java</b>)</li></ul>	
RESEARCH	<b>Virginia Tech Computer Science Department</b>	Blacksburg, Virginia
EXPERIENCE	<i>Undergraduate Research Assistant</i>	<b>January 2013 – Present</b>
	<ul style="list-style-type: none"><li>• Implement quasi-Newton stochastic optimization algorithm in <b>Fortran 95</b>. Specific libraries used include <b>BLAS</b> and <b>LAPACK</b>.</li></ul>	
	<b>Systems Software Research Group</b>	Blacksburg, Virginia
	<i>Undergraduate Research Assistant</i>	<b>November 2012 – Present</b>
	<ul style="list-style-type: none"><li>• Work supported with NSF and NEEC REU grants.</li><li>• Source-to-source compiler research on OpenMP to CUDA translation. Specifically, developed a compiler in <b>C++</b> with the <b>ROSE</b> compiler framework for automatic OpenMP to CUDA translation.</li><li>• Assisted development with runtime execution prediction. Created <b>Scala</b> scripts to parse raw data for feature vectors to be used by <b>WEKA</b>'s machine learning algorithms.</li><li>• Developed <b>Bash</b> scripts to automate benchmarking on heterogeneous hardware.</li></ul>	
	<b>Magnum Research Group</b>	Blacksburg, Virginia
	<i>Undergraduate Research Assistant</i>	<b>May 2012 – Present</b>
	<ul style="list-style-type: none"><li>• Work supported with Northrup Grumman and ARO REU grants.</li><li>• Android <b>malware detection research</b> resulting in primary authorship on a conference publication.</li><li>• Implemented a framework with <b>Bash</b> scripts to dynamically profile APKs and analyze popular machine learning algorithms with <b>WEKA</b>. Reimplemented framework in <b>Scala</b> with <b>Actors</b> for scalability.</li><li>• Developed <b>VC#</b> programs for a pilot study on manufacturing cyber-physical security.</li><li>• Assisted <b>C++</b> and <b>Make</b> development for a deployment optimization framework. Specific libraries used include <b>TCLAP</b> and <b>rapidxml</b>.</li><li>• Corresponded with another research group and modified the <b>Android source</b> to provide non-standard logging information for dynamic malware analysis. Configured a <b>Gerriit</b> server to host code review.</li></ul>	
INDUSTRY	<b>Qualcomm, Inc.</b>	San Diego, California
EXPERIENCE	<i>Source Integrity Team Software Intern</i>	<b>May 2013 – August 2013</b>
	<ul style="list-style-type: none"><li>• Developed a web application to modify an XML-based grammar for fuzz vector generation.</li><li>• Developed an XML-based grammar translator in <b>C++</b> with the <b>Xerces</b> XML parser. Reimplemented in <b>Python</b> using the <b>ElementTree</b> XML API for better analysis and tree transformation.</li></ul>	
	<b>Phoenix Integration, Inc.</b>	Blacksburg, Virginia
	<i>Software Engineer Intern</i>	<b>May 2012 – August 2012</b>
	<ul style="list-style-type: none"><li>• Integrated a new licensing mode into CenterLink via <b>FLEXlm</b> and <b>Java</b>.</li><li>• Fulfilled bug fixes and feature requests in <b>VC++</b>, <b>VC#</b>, and <b>Java</b>.</li><li>• Improved the testing (<b>JUnit</b> and <b>NUnit</b>) and installation (<b>Ant</b>, <b>InstallShield</b>, and <b>Make</b>) frameworks.</li><li>• Migrated the web server of CenterLink, a grid computing application, from Tomcat 5 to Tomcat 7.</li></ul>	
	<b>Sunapsys, Inc.</b>	Vinton, Virginia
	<i>Network Administrator Intern</i>	<b>January 2011 – August 2011</b>
	<ul style="list-style-type: none"><li>• Configured virtualized DHCP, DNS, and PDC servers in <b>Linux</b> to replace existing Windows servers.</li><li>• Created <b>Bash</b> scripts to back up data incrementally and monitor the status of the servers.</li></ul>	
TEACHING	<b>Virginia Tech Computer Science Department</b>	Blacksburg, Virginia
EXPERIENCE	<i>Undergraduate Teaching Assistant</i>	<b>January 2013 – May 2013</b>
	<ul style="list-style-type: none"><li>• Assisted students in a software design and data structures class using <b>Java</b> and <b>Android</b>.</li></ul>	
PUBLICATIONS	<ul style="list-style-type: none"><li>• “Applying machine learning classifiers to dynamic Android malware detection at scale.” <b>Brandon Amos</b>, Hamilton Turner, Jules White. <i>IWCMC’13 Security, Trust, and Privacy Symposium</i>. Cagliari, Italy, July 2013.</li></ul>	

SKILLS	<ul style="list-style-type: none"> <li>• <b>Environments:</b> Eclipse**, NetBeans*, vim/gdb***, Visual Studio**</li> <li>• <b>Frameworks:</b> Drupal*, .NET*, ZK*</li> <li>• <b>Languages:</b> Bash**, C/C++**, C#*, Fortran**, HTML/CSS*, L<sup>A</sup>T<sub>E</sub>X**, Java***, JavaScript**, <i>Mathematica</i>**, PHP*, Python***, R*, Scala**</li> <li>• <b>Software:</b> i3wm**, Make**, Ratpoison**, Samba**, Tomcat*, Zimbra*</li> <li>• <b>Systems:</b> Android**, Linux***, Windows*</li> <li>• <b>Version Control/Review:</b> Gerrit*, Git***, Subversion**</li> </ul> <p>Exposure* – Minimal knowledge** – Adequate knowledge*** – Maximum knowledge****</p>
PROJECTS	<p><b>Personal Blog and Website</b> – <a href="http://bamos.github.io">http://bamos.github.io</a> <b>July 2012 – Present</b></p> <ul style="list-style-type: none"> <li>• Hosted on GitHub Pages. Uses Markdown for posts and Jekyll for static HTML generation.</li> <li>• 23 posts across the following tags: <b>Python</b> (6), <b>Bash</b> (6), <b>LaTeX</b> (4), <b>Scala</b> (3), <b>Android</b> (2), <b>Mathematica</b> (1), <b>Fortran</b> (1), <b>Linux</b> (1), <b>CUDA</b> (1), <b>C++</b> (1)</li> </ul> <p><b>GitHub Portfolio</b> – <a href="http://github.com/bamos">http://github.com/bamos</a> <b>April 2011 – Present</b></p> <ul style="list-style-type: none"> <li>• Hosts code samples, original source code, and patches for open source projects.</li> <li>• 17 original repositories. <ul style="list-style-type: none"> <li>◦ dotfiles, latex-templates, mew, parsec-benchmark, reading-list, scala-sorting, simple-fortran-routines, simple-python-scripts, simple-shell-scripts</li> <li>◦ <b>AES</b> - 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.</li> <li>◦ <b>bamos.github.io</b> - My personal website.</li> <li>◦ <b>cpp-expression-parser</b> - Expression parsing in C++ with Dijkstra's Shunting-yard algorithm.</li> <li>◦ <b>latex-resume-cv</b> - My LaTeX resume and CV. Uses Make and produces PDFs and (rough) text versions of my resume and CV from the same LaTeX files.</li> <li>◦ <b>list-github-repos</b> - Obtain a LaTeX list of all of a user's public Github repos and descriptions.</li> <li>◦ <b>mbox-convos</b> - Export all emails in an mbox mailbox to or from somebody to a PDF.</li> <li>◦ <b>mutt-mass-mailer</b> - M3 parses a flat file and uses mutt to email many people different messages.</li> <li>◦ <b>safegit</b> - Wraps git to detect sensitive data before commits by using fuzzy Rabin fingerprints.</li> </ul> </li> <li>• 3 forked repositories. <ul style="list-style-type: none"> <li>◦ antimalware, gv-app, mirror-android-repo</li> </ul> </li> </ul>
HONORS & AWARDS	<ul style="list-style-type: none"> <li>• Benjamin F. Bock Scholarship, Virginia Tech Engineering, 2013</li> <li>• Sophomore Scholar Award, Virginia Tech Computer Science, 2013 <ul style="list-style-type: none"> <li>◦ Given to the sophomore in Computer Science with the most outstanding academic record.</li> </ul> </li> <li>• University Honors, Virginia Tech, 2012–2013</li> <li>• Intelligence Community Center of Academic Excellence Scholar, Virginia Tech, 2012–2013 <ul style="list-style-type: none"> <li>◦ Merit-based scholarship that provides a security-based research fellowship.</li> </ul> </li> <li>• Dean's List with Distinction, Virginia Tech, 2011–2013</li> <li>• Engineering Scholarship, Roanoke County Public Schools Education Foundation, 2011 <ul style="list-style-type: none"> <li>◦ Merit-based scholarship presented annually to one student in the graduating Engineering class.</li> </ul> </li> <li>• Papa John's Scholarship, 2011</li> <li>• Gay B. Shober Memorial Scholarship, Roanoke County Federal Credit Union, 2011</li> <li>• Pamplin Leader Scholarship, Virginia Polytechnic Institute and State University, 2011 <ul style="list-style-type: none"> <li>◦ Merit-based scholarship presented to one student from each public high school in Virginia.</li> </ul> </li> <li>• I. Luck Gravett Memorial Scholarship, Scottish Rite of Freemasonry, 2011</li> <li>• Salem–Roanoke County Chamber of Commerce Scholarship, 2011</li> <li>• Virginia Aerospace Science and Technology Scholar, National Space Grant Foundation, 2010 <ul style="list-style-type: none"> <li>◦ Selected as an attendee of a summer academy at NASA Langley Research Center.</li> </ul> </li> </ul>
ACTIVITIES	<ul style="list-style-type: none"> <li>• Honors Residential College, Virginia Tech, 2013</li> <li>• Hokies Pep Band, Virginia Tech, 2012–2013</li> <li>• Computer Science Community Service, Virginia Tech, 2012</li> <li>• Symphony Band, Virginia Tech, 2011–2012</li> <li>• Linux and Unix Users Group, Virginia Tech, 2011–2012</li> <li>• Galileo Living–Learning Community, Virginia Tech, 2011–2012</li> <li>• Trumpet Section Leader, Marching Band, Northside High School, 2010–2011</li> <li>• Tennis Team, Northside High School, 2008–2011</li> </ul>