

Adam Stewart

Graduate Student,
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Education

- 2017 - Present **Ph.D., Computer Science**, *University of Illinois at Urbana-Champaign, College of Engineering*, Urbana, IL, GPA: 3.95.
- 2010 - 2014 **B.S., Science of Earth Systems**, *Cornell University, College of Engineering*, Ithaca, NY, Graduated *magna cum laude* with Honors, Cumulative GPA: 3.94, Major GPA: 4.04.
Honors Thesis: Monitoring Glacial Velocity Variation in the Russian High Arctic Using Remote Sensing

Research Experience

- 2018 - Present **Department of Computer Science, University of Illinois at Urbana-Champaign, Urbana, IL**, Research Assistant, with Professors Jian Peng and Kaiyu Guan.
- Performed interdisciplinary research on crop classification and crop yield prediction
 - Designed a U-Net architecture to detect center pivot irrigation from satellite imagery
 - Developed large-scale machine learning algorithms to process 30 TB worth of satellite imagery
 - Tuned hyperparameters and fetched data on Blue Waters, a petascale supercomputer
 - Wrote deep learning programs using PyTorch, TensorFlow, and scikit-learn
- 2013 - 2014 **Department of Earth and Atmospheric Sciences, Cornell University, Ithaca, NY**, Undergraduate Research Assistant, with Professor Matthew E. Pritchard.
- Investigated the effects of climate change on glacial velocities, calving rates, and ice shelf breakup in the Russian High Arctic using remote sensing techniques such as feature tracking
 - Processed ASTER and Landsat satellite imagery using GMT, AROP, and ROI_PAC software
 - Wrote Python, MATLAB, and Bash scripts to automate rapid processing of data
 - Designed new method of noise removal based on comparison of each pixel with its nearest neighbors
- 2012 - 2013 **Department of Earth and Atmospheric Sciences, Cornell University, Ithaca, NY**, Undergraduate Research Assistant, with Professor Larry D. Brown.
- Studied the application of seismic interferometry to monitor magma reservoir inflation at Montserrat
 - Researched the effects of seismic attenuation on aftershocks by analyzing records from dense station arrays in Maine and Virginia

Professional Experience

- 2015 - 2017 **Argonne National Laboratory, Lemont, IL**, Assistant HPC System Administrator.
- Collaborated on the development of Spack, a Supercomputing PACKage manager written in Python and hosted on GitHub, enabling the installation of scientific software with multiple compilers and MPI libraries
 - Managed a supercomputing cluster composed of 720 36-core Intel Broadwell nodes, each with 128 GB of RAM, and 360 64-core Intel Knights Landing nodes, each with 96 GB of RAM, with a peak theoretical performance of 1.5 PFlops

- 2014 - 2015 **Lockheed Martin, Owego, NY**, Associate Software Engineer.
- Infrastructure Analytics program (IA)**
- Worked on a NYSEG/Iberdrola contract to develop software to detect downed power lines and flooding
 - Enhanced simulator for modeling LiDAR data of a town with houses, trees, poles, and power lines
 - Programmed primarily in C# in a .NET Framework using Microsoft Visual Studio
 - Investigated several different Continuous Integration (CI) software tools for build and test automation
- Remote Computer Reader program (RCR)**
- Worked on the machine learning software used by the USPS to sort and deliver mail
 - Enhanced Performance code (C) and overhauled internal testing tools (Perl, Bash, Python)
 - Performed a Failure Mode and Effects Analysis to track down bugs and discover monetary potential
 - Wrote Expect script to run Makefiles, ssh into remote machine, and ftp tar files to test bench
 - Cleared for a Secret Security Clearance in order to access classified address databases
- 2010 - 2012 **Paleontological Research Institution, Ithaca, NY**, Collections Assistant.
- Renovated and reorganized upper collections under NSF grant, allowing for easier access for researchers
 - Inventoried and relabeled older, more delicate specimens for organization and preservation
 - Cataloged Zinsmeister collection and updated master database of specimens
 - Photographed and documented Syracuse University collection journals

Teaching Experience

- 2017 - 2018 **Department of Computer Science, University of Illinois at Urbana-Champaign, Urbana, IL**, Teaching Assistant.
- Served as a Teaching Assistant for Numerical Methods course of over 500 students
 - Held office hours, wrote homework assignments and exams, and answered course questions on Piazza
 - Presented a crash course lecture on Python, specifically for working with Numpy, Scipy, and Matplotlib
 - Managed course website through RELATE framework, including reference pages for course content
- 2014 **Department of Earth and Atmospheric Sciences, Cornell University, Ithaca, NY**, Teaching Assistant.
- Served as a Teaching Assistant for Satellite Remote Sensing Training for Biological Oceanographers
 - Taught an intensive graduate-level course composed of 20 oceanographers from around the world
 - Wrote Python lesson plan from scratch and answered questions about Python and IDL programming
 - Debugged satellite image processing scripts and managed Python module installation from source
- 2014 **Department of Computer Science, Cornell University, Ithaca, NY**, Undergraduate Python Consultant.
- Helped teach Introduction to Computing using Python and Transition to Object-Oriented Programming
 - Facilitated learning in a weekly lab session of 36 students, troubleshoot assignments, and graded exams
 - Held weekly consulting hours, working one-on-one with students to help clarify course material
- 2012 - 2013 **Department of Physics, Cornell University, Ithaca, NY**, Undergraduate Teaching Assistant, PhysTEC Program.
- Taught course material for Introduction to Mechanics, Heat/Electromagnetism, and Oscillations, Waves, and Quantum Physics courses to 50+ students
 - Led cooperative discussion and laboratory sections to promote understanding of physics material
 - Coordinated homework study groups to encourage collaboration on homework assignments
- 2008 - 2012 **Camp Barton, Boy Scouts of America, Trumansburg, NY**, Nature Director.
- Managed a department of 6 staff members, training them to become ecology counselors and leaders
 - Instructed between 3 and 5 weekly merit badges to up to 30 boy scouts ranging in age from 10 to 18
 - Rewrote lesson plans for all 20 merit badges, working with counselors to address various shortcomings
 - Established new off-site ecology program, introducing scouts to advanced topics at outside organizations
 - Maintained Camp Conservation Plan and oversaw conservation projects led by each Boy Scout troop

Publications

Papers

- [1] Andrew K. Melkonian, Michael J. Willis, Matthew E. Pritchard, and Adam J. Stewart. Recent changes in glacier velocities and thinning at Novaya Zemlya. *Remote Sensing of Environment*, 174:244–257, 2016.

Panels

- [2] Todd Gamblin, Adam J. Stewart, Johannes Albert von der Gönna, Marc Pérache, and Matt Belhorn. Spack community BoF. In *Supercomputing 2018*, Dallas, TX, Nov 2018.

Tutorials

- [3] Gregory B. Becker, Massimiliano Culp, Matthew P. LeGendre, Mario Melara, Peter Scheibel, Adam J. Stewart, and Todd Gamblin. Managing HPC software complexity with Spack. In *Supercomputing 2018*, Dallas, TX, Nov 2018. Full day.
- [4] Todd Gamblin, Gregory Becker, Massimiliano Culp, Gregory L. Lee, Matthew P. LeGendre, Mario Melara, and Adam J. Stewart. Managing HPC software complexity with Spack. In *Supercomputing 2017*, Denver, CO, Nov 2017. Full day.
- [5] Adam J. Stewart. Managing HPC software complexity with Spack. Lemont, IL, Jun 2017. Argonne National Laboratory. Two day.

Grants, Honors, and Awards

- 2014 Frank H. T. Rhodes Award
- 2010 - 2014 Dean's List
- 2013 Michael W. Mitchell Prize
- 2012 - 2013 Engineering Learning Initiatives Research Grant
- 2011 Gertrude Spencer Prize Honorable Mention
- 2010 Lockheed Martin Foundation Scholarship
- 2008 Eagle Scout

Outreach and Leadership Experience

- 2018 - Present Outreach Coordinator for Graduate Student Society
- 2015 Mentor for New Visions Job Shadowing Program at Lockheed Martin
- 2015 Test Proctor for Cornell Science Olympiad Invitational
- 2012 - 2014 President of Science of Earth Systems Student Association
- 2011 - 2012 Tae Kwon Do Team
- 2010 - 2012 Executive Board of Cornell Ski and Snowboard Club
- 2002 - 2012 Boy Scouts of America
- 2010 - 2011 Volunteer in Collections Department of Paleontological Research Institution

Computer Skills

- Programming Python, Bash, Perl, Ruby, Java, C, C#, MATLAB, OCaml, JavaScript, Make, Expect, Tcl, IDL
- Markup \LaTeX , Markdown, reStructuredText, YAML, HTML, CSS, XML, XPath, XSLT, Graphviz
- ML/DL PyTorch, TensorFlow, scikit-learn
- Soft. Eng. Travis CI, Codecov, Coveralls, PyTest, Flake8, Sphinx, GNU Debugger, Jira, Confluence, Crucible

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| VCS | Git (GitHub, GitLab, Bitbucket), Mercurial (Bitbucket), Subversion, CVS |
| Sys. Admin. | Spack, Lmod, Environment Modules, SoftEnv, Torque, Maui, Slurm, GPFS |
| IDEs | Vim, Sublime Text, Visual Studio, Eclipse, WordPress |
| Platforms | Linux (Fedora, RHEL, CentOS, Ubuntu, Mint), macOS, Windows |