Jarrell Waggoner

Biographical

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Online

Website: www.malloc47.com
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Interests: computer vision, image processing, artificial intelligence, pattern recognition & machine learning, data science, functional programming, web development

Education

Expected Aug. 2013	**Ph.D.**	Computer Science & Engineering	**University of South Carolina**
May 2009	**M.E.**	Computer Science & Engineering	**University of South Carolina**

Experience

2012—Present — **Technical Lead** at Huntstand, Inc.
Software developer in an agile startup environment creating the huntstand.com web application. Written using **Python**, **Django**, and **Backbone.js**; deployed to **AWS**. Responsible for curating full technology stack and coordinating with 5 developers.

2011—Present — **Research Assistant** funded by AFOSR
Dissertation research on computer vision models and algorithms for materials science image segmentation in **Python**, **NumPy**, **SciPy**, **OpenCV**, and **MATLAB** at the Computer Vision Lab at USC. Created a desktop GUI using **wxWidgets** and a web interface using **Django**, **JavaScript**, and **jQuery**. Conducted large-scale analysis using a 98-core high-performance computing system.

2011—Present — **Project Manager** at Palmetto Computer Labs
Created and taught workshops on **git**, the **Linux** command line, **Android** development, and open source software for hundreds of students, developers, and government officials at IT-oLogy. Managed the Open IT Lab and associated projects. Assisted in planning POSSCON.

2011 — **Contractor** for Elastic Vision Consulting
Built a parser and generator for **XML** medical records formats (CCR and CCD) in a **Java** web application. Written using **JDOM**, **Xerces**, and **Hibernate**, and run on an **Axis2+Jetty6** driven server.

2010—2011 — **Research Assistant** for the DARPA Mind's Eye Program
Researched video event recognition for the DARPA Mind's Eye program. Collaborated with 10 students and faculty members across three institutions. Developed algorithms in **Scheme**, **Bash**, **MATLAB**, and **C** to process a corpus of 3480 videos extracted into over 1.5 million frames. Distributed processing over 7 HPC machines. 0xab.com/research/video-in-sentences-out.html , github.com/malloc47/video-in-sentences-out

2009—2010 — **NEH Fellow** at the USC Center for Digital Humanities (Sapheos/Paragon Project)
Developed the prototype for a *digital collation* application to identify sub-textual inconsistencies among multiple copies of *The Faerie Queene* by Edmund Spenser. Created in **MATLAB** using **VLFeat** and **OpenCV** to process tens of thousands of book page images. github.com/malloc47/digital-collation

2007—2011 — **Teaching Assistant** for USC Department of Computer Science and Engineering
Taught classes in software development, web development, and computer engineering, covering **Java**, **JavaScript**, **HTML/CSS**, and **Visual Basic**. Created syllabi and course objectives, developed and graded projects and assignments, supervised labs, and tutored students.

Skills & Languages

◦ ◦ • Bash	◦ ◦ • GNU/Linux	◦ • jQuery	• PHP
◦ ◦ • C/C++	• Haskell	◦ • LaTeX	◦ ◦ • Python
• Emacs Lisp	◦ ◦ • HTML/CSS	◦ ◦ • MATLAB	◦ • Django
◦ ◦ • English	◦ ◦ • Java	◦ ◦ • NumPy/SciPy	◦ ◦ • Scheme
◦ • git	◦ • JavaScript	◦ ◦ • OpenCV	◦ • SQL

• Small-scale projects and/or assignments ◦ • Multiple projects and/or experience teaching ◦ ◦ • Large-scale and/or multi-group projects

Personal and Open Source Projects

MATSCISEG	Framework for propagated 3D volume segmentation, used in my dissertation work. Algorithms created in **Python** and **C++** and exposed as a web API using **Django**. Includes a web application that consumes the API created in **JavaScript**, and **jQuery**. github.com/malloc47/matsciseg
NONPARTISAN.ME	Google Chrome extension that filters social media websites for political keywords. Available in the Chrome Web Store. Featured in the Charleston City Paper. github.com/malloc47/nonpartisan.me
TERM-DO	An interactive terminal prompt that displays potential command completions as you type. A hybrid of gnome-do and Emacs's ido-mode. Works on many tested VT100 terminal types; built in **C++**. Includes client/server architecture implemented with boost.interprocess and full-featured plugin system. Available in the Arch Linux AUR. github.com/malloc47/term-do
SINA WEIBO MOBILE CLIENT	Created a **J2ME**-based prototype mobile client for the popular Chinese SINA microblogging service, similar to TWITTER. Targeted at limited-functionality CLDC phones and uses a custom **Java** wrapper for the SINA API. Employs symmetric-key encryption for personal data. bd.weibo.10086.cn/2012/downloads_kjava

Selected Publications

[1] **Jarrell Waggoner**, Youjie Zhou, Jeff Simmons, Ayman Salem, Marc De Graef, and Song Wang. Interactive grain image segmentation using graph cut algorithms. In *Proceedings of SPIE (Computational Imaging XI)*, Burlingame, CA, 2013.

[2] Andrei Barbu, Alexander Bridge, Zachary Burchill, Dan Coroian, Sven Dickinson, Sanja Fidler, Aaron Michaux, Sam Mussman, Siddharth Narayanaswamy, Dhaval Salvi, Lara Schmidt, Jiangnan Shangguan, Jeffrey Mark Siskind, **Jarrell Waggoner**, Song Wang, Jinlian Wei, Yifan Yin, and Zhiqi Zhang. Video in sentences out. In *Conference on Uncertainty in Artificial Intelligence*, pages 102–112, 2012.

[3] **Jarrell Waggoner**, Jeff Simmons, Marc De Graef, and Song Wang. Graph cut approaches for materials segmentation preserving shape, appearance, and topology. In *International Conference on 3D Materials Science*, pages 147–152, Seven Springs, PA, 2012.

[4] **Jarrell Waggoner**, Jeff Simmons, and Song Wang. Combining global labeling and local relabeling for metallic image segmentation. In *Proceedings of SPIE (Computational Imaging X)*, volume 8296, Burlingame, CA, 2012.

[5] Zhiqi Zhang, Sanja Fidler, **Jarrell Waggoner**, Yu Cao, Sven Dickinson, Jeffrey Mark Siskind, and Song Wang. Superedge grouping for object localization by combining appearance and shape information. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, pages 3266–3273, Providence, RI, 2012.

[6] Song Wang, **Jarrell Waggoner**, and Jeff Simmons. Graph-cut methods for grain boundary segmentation. *JOM Journal of the Minerals, Metals and Materials Society*, 63:49–51, 2011.

[7] Andrew Temlyakov, Brent C. Munsell, **Jarrell Waggoner**, and Song Wang. Two perceptually motivated strategies for shape classification. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, pages 2289–2296, 2010.

[8] Zhiqi Zhang, Yu Cao, Dhaval Salvi, Kenton Oliver, **Jarrell Waggoner**, and Song Wang. Free-shape subwindow search for object localization. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, pages 1086–1093, 2010.

Talks

[1] Extending Django. *Palmetto Open Source Software Conference.* Columbia, SC. March 28, 2013.

[2] Computer Science: Research, Industry, and Entrepreneurship. *Careers in Science Lecture Series.* Lancaster, SC. March 6, 2013.

[3] Interactive Grain Image Segmentation Using Graph Cut Algorithms. *SPIE (Computational Imaging XI).* Burlingame, CA. February 6, 2013.

[4] Android Application Development Workshop. *Appathon Contest.* Columbia, SC. Nov. 17, 2012.

[5] Open Source and Education. *SC Municipal Technology Association (SCMTA) Conference.* Charleston, SC. Sep. 6, 2012.

[6] Open Source and Higher Education. *SC Technical College System (SCTCS) Conference.* Columbia, SC. Sep. 25, 2012.

[7] Introduction to Android Development. *Digital Humanities High Performance Computing (DHHPC) Workshop.* Columbia, SC. Aug. 8, 2012.

[8] Combining Global Labeling and Local Relabeling for Metallic Image Segmentation. *SPIE (Computational Imaging X).* Jan. 23, 2012.

[9] Open Source and Government. *SC Government Management Information Systems (SCGMIS) Workshop.* Columbia, SC. Jan. 19, 2012.

Honors/Awards at USC

2012	Gamecock Computing Research Symposium Poster Session, First Place	2004	Clara P. Hammond Award
2012	Graduate Student Day Presentation, First Place	2004	Science and Mathematics Award
2009	Upsilon Pi Epsilon	2004	Highest Academic Average Award

Activities

teaching, programming, open source software, system administration, data visualization, Linux, music composition