Jarrell Waggoner

Biographical Data

Address	Department of Computer Science and Engineering, University of South Carolina, Columbia, SC 29208
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Online

Website	www.malloc47.com
Twitter	@malloc47
github	github.com/malloc47
LinkedIn	linkedin.com/in/malloc47

Interests computer vision, image processing, pattern recognition & machine learning, distributed data processing & analysis, functional programming, back end 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** using **PJAX** as a **pushState** framework and deployed to **AWS**. Responsible for curating full technology stack and coordinating with 4 developers.

2011—Present | **Research Assistant** funded by AFOSR

Developed computer vision algorithms for materials science datasets in **Python**+**NumPy/SciPy**, **OpenCV**, and **MATLAB** at the Computer Vision Lab at USC. Created a desktop GUI interface using **wxWidgets** and a web-based interface in **Django**. Conducted large-scale evaluations on dozens of datasets using multiple high-performance computing resources.

2011—Present | **Project Manager** at Palmetto Computer Labs

Conducted Open Source advocacy by assembling workshops on technology topics for IT-oLogy. Managed the Open IT Lab and associated projects (**Android** development). Assisted in planning POSSCON.

2011 | **Contractor** for Elastic Vision Consulting

Created a parser and generator for **XML** medical records formats (CCR and CCD) in **Java** web application. Used **JDOM**, **Xerces**, and **Hibernate**, on an **Axis2+Jetty6** driven server.

2010—2011 | **Research Assistant** funded by the DARPA Mind's Eye Program

Researched computer vision segmentation for video event recognition in the Mind's Eye DARPA competition. Collaborated with 10 students and faculty across three institutions. Developed algorithms in **Scheme**, **BASH**, **MATLAB**, and **C** to process a corpus of thousands of videos extracted into over 3 million frames. Distributed processing over 7 HPC machines. http://0xab.com/research/video-in-sentences-out.html

2009—2010 | **NSF Fellow** at the USC Center for Digital Humanities

Developed the prototype for a digital collation application. Used to identify sub-textual inconsistencies among multiple copies of *The Faerie Queene* by Edmund Spenser. Created in **MATLAB** using multiple computer vision techniques to process tens of thousands of book page images.

2007—2011 | **Teaching Assistant** for USC Department of Computer Science and Engineering

Taught classes in software development, web development, and computer engineering, utilizing **Java**, **Javascript**, **HTML/CSS**, and **Visual Basic**. Developed and graded assessments, 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	• • Javacript	• • • 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

NONPARTISAN.ME	Google Chrome extension that filters social media websites for political keywords. Available on the Chrome Web Store. Featured in the Charleston City Paper. www.github.com/malloc47/nonpartisan.me
TERM-DO	A CLI prompt that completes commands as you type. A hybrid of gnome-do and Emacs's ido-mode. Works on many tested VT100 terminal types and is built in **C++**. Includes full client/server architecture implemented with boost.interprocess and complete plugin system with bindings for multiple languages. Available in the Arch Linux AUR. www.github.com/malloc47/term-do
RATIO CONTOUR	Maintainer of the Ratio Contour project for contour grouping, created in **C** and **MATLAB**. www.github.com/malloc47/ratio-contour
DIGITAL COLLATION	Research prototype to "collate" high-resolution document scans using image registration. Written in **MATLAB** utilizing various computer vision libraries. www.github.com/malloc47/digital-collation

Selected Publications

[C1] **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)*, (to appear).

[C2] Andrei Barbu, Alexander Bridge, Dan Coroian Zachary Burchill, Sven Dickinson, Sanja Fidler, Aaron Michaux, Sam Mussman, Dhaval Salvi Siddharth Narayanaswamy, Lara Schmidt, Jeffrey Mark Siskind Jiangnan Shangguan, **Jarrell Waggoner**, Jinlian Wei Song Wang, Yifan Yin, and Zhiqi Zhang. Video in sentences out. In *Conference on Uncertainty in Artificial Intelligence (UAI)*, pages 102–112, Catalina Island, CA, 2012.

[C3] **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.

[C4] **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.

[C5] 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.

[C6] 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.

[C7] 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.

[C8] 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

[P1] *Android Application Development Workshop.* Appathon Contest. Columbia, SC. Nov. 17, 2012.

[P2] *Open Source and Education.* SC Municipal Technology Association (SCMTA) Conference. Charleston, SC. Sep. 6, 2012.

[P3] *Open Source and Higher Education.* SC Technical College System (SCTCS) Conference. Columbia, SC. Sep. 25, 2012.

[P4] *Introduction to Android Development.* Digital Humanities High Performance Computing (DHHPC) Workshop. Columbia, SC. Aug. 8, 2012.

[P5] *Combining Global Labeling and Local Relabeling for Metallic Image Segmentation.* SPIE (Computational Image X). Burlingame, CA. Jan. 23, 2012.

[P6] *Open Source and Government.* SC Government Management Information Systems (SCGMIS) Software Developers 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

Interests and Activities

Programming, Teaching, Mathematics
Open-source Software, Systems Administration, Linux
Typography, Music Composition