Jonathan D. Suever, B.S., Ph.D.

Contact

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Education

Doctor of Philosophy (Ph.D.), Bioengineering
Georgia Institute of Technology & Emory University, 2008 - 2013, GPA: 3.83/4.0
- NSF Graduate Fellow, NIH T32 Trainee, President's Fellow

Bachelor of Science (B.S.), Biomedical Engineering and Mathematics
University of Alabama at Birmingham, 2004 - 2008, GPA: 4.0/4.0
- University Honors Program, Engineering Honors Program, *summa cum laude*

Skills

Languages & Technologies
- *Languages:* Python2/3, Ruby, Node, MATLAB, C, R, C++, Java
- *Databases:* MySQL, SQL Server, InfluxDB, MongoDB
- *Web:* Ruby on Rails, JavaScript, Express, React, Flask
- *Other:* Chrome DevTools, Git, DICOM, Bash, LaTeX, Markdown

Environments
- *Operating Systems:* Linux (Debian, Ubuntu, RHEL), Mac OS, Windows
- *IDEs & Editors:* PyCharm, RubyMine, R Studio, vi/Vim, Visual Studio, VS Code
- *Build & Deploy:* AWS, Docker, OpenStack, Packer, Puppet, Semaphore, Travis CI

Work Experience

Software Engineer May 2017 - Present
Rigor, Inc., Atlanta, GA
- Developed a Google Chrome synthetic testing agent complete with CI/CD and QA processes required to support Chrome's rapid release cycle and ensure accurate data
- Added cellular network emulation to our agents via the Linux networking stack
- Converted agent infrastructure to support Docker containers running on-premises
- Instrumented our agents to monitor health, performance, and cost in real-time
- Significantly reduced S3 costs by optimizing storage class, and data compression/access
- Wrote a utility in C to interface with the X server on our agents to record and process video of a running test without adversely affecting browser timings

Research Scientist I Jan. 2015 - Apr. 2017
Cardiac Imaging Technology Lab, Geisinger Health System, Danville, PA
- Developed HIPPA-compliant web applications for managing thousands of imaging studies and tracking custom image analysis results
- Engineered a solution to provide researchers with single-point de-identified access to clinical data hosted on a variety of systems across the institution
- Utilized machine learning and computer vision techniques to derive advanced measures of cardiac function from routine cardiac MRI datasets
- Mined 15 years of longitudinal clinical data to classify patients and predict outcomes
- Worked closely with the Information Security Office, and IT Compliance to ensure that the technical needs of Research are met while adhering to institutional policies
- Served as Systems Administrator for all servers and applications used by the group

Research Assistant Professor Jul. 2014 - Dec. 2014
Cardiac Imaging Research Lab, University of Kentucky, Lexington, KY
- Combined continuum mechanics and image processing to develop a robust pipeline for processing 3D displacement-encoded MRI data to assess heart function
- Created methodology for validating *in-vivo* measurements of cardiac displacements
- Released open source tools for analysis of displacement-encoded MRI data

Post-Doctoral Scholar Jul. 2013 - Jun. 2014
Cardiac Imaging Research Lab, University of Kentucky, Lexington, KY
- Developed a comprehensive image processing application used daily by all lab members with a custom plugin architecture for simple user customization
- Designed and administered a 50TB server with incremental backups for housing all research data and hosting internal web applications
- Worked closely with graduate students to understand the physics behind displacement-encoded MRI acquisitions and optimize parameters for all imaging studies
- Utilized advanced image processing and image acquisition techniques to answer clinical questions pertaining to pediatric obesity and congenital heart disease

Work Experience (continued)

Image Processing Consultant Mar. 2013 - Jul. 2013
Scientific Imaging and Visualization, LLC, Atlanta, GA
- Developed and implemented algorithms for automated tracking of cardiac motion
- Designed and delivered a custom user interface for visualizing cardiac motion

Independent Web Developer Jan. 2013 - Present
- Created websites and custom web applications for individuals and businesses
- Managed deployments on both shared hosting and virtual private servers
- Utilized search engine optimization to improve site visibility

Graduate Research Assistant Jul. 2008 - Jul. 2013
Georgia Institute of Technology & Emory University, Atlanta, GA
- Created a novel method for analyzing MR images of the heart to detect dyssynchrony
- Automatically aligned 2D X-ray images and 3D MR images of the coronaries and performed validation using a custom 3D-printed coronary vein phantom
- Conducted a clinical study to determine the effect of scar tissue, mechanical dyssynchrony, and coronary vein anatomy on patient response to pacemaker therapies
- Helped to create a robust method for registering longitudinal IVUS datasets
- Employed PDE-based image processing techniques to characterize mouse plaques
- *Served as a technical and scientific mentor for three undergraduate researchers

Teaching Assistant - Capstone Design Jan. 2010 - Dec. 2010
Department of Biomedical Engineering, Georgia Institute of Technology, Atlanta, GA
- Mentored 16 groups in the design, prototyping, and testing of biomedical devices
- Provided constructive feedback on project reports and 510(k) submissions

Undergraduate Research Assistant Jan. 2007 - Jul. 2008
University of Alabama at Birmingham, Birmingham, AL
- Designed and performed computational molecular dynamics simulations to study the interaction of key proteins involved in the apoptotic pathway of osteoclasts using an IBM Blue Gene supercomputer.

Theses

Ph.D. Dissertation (2013) - MRI Methods for Predicting Response to Cardiac Resynchronization Therapy
- Designed the methods and software required to assess scar burden, mechanical dyssynchrony, and coronary vein anatomy in the heart from MRI images and studied the effect of these various factors on patient response to biventricular pacemakers.

B.S. Honors Thesis (2008) - Conformation and Free Energy Analyses of the Complex of Ca^{2+}-Bound Calmodulin and the Fas Death Domain
- Performed molecular dynamics simulations to characterize the interactions between mutated versions of two proteins that are crucial in regulating bone density.

Awards

- *Society of Cardiovascular MRI*, Regional Scholarship, 2014. $1,000
- *National Science Foundation*, Graduate Research Fellowship, 2010 - 2013. $90,000
- *Georgia Institute of Technology*, President's Fellowship, 2008 - 2012. $20,000
- *University of Pittsburgh*, Mr. & Mrs. Kwok-Chong Woo Grant, 2007. $5,000
- *Univ. of Alabama at Birmingham*, Jane Knight Lowe Scholarship, 2004 - 2008. $40,000

Professional Development

- Open Source Developer: *MATL-Online* (creator, 2015), *DENSEanalysis* (development lead since 2014), *pydicom* (contributor since 2012), *DICOMSort* (creator, 2011)
- Community Contributor - 2015 - Present: *Stack Overflow (stackoverflow.com)*
- Reviewer - 2015 - Present: *Journal of the American College of Cardiology: Cardiovascular Imaging, Journal of Cardiovascular Magnetic Resonance, Nuclear Magnetic Resonance in Biomedicine*
- Programming Book Reviewer - 2013 - Present: *Manning Publications, Co.*
- Social Chair - 2011 - 2012: *Bioengineering and Bioscience Unified Graduate Students*
- Member - 2008 - Present: *International Society for Magnetic Resonance in Medicine*
- Member - 2008 - Present: *Society for Cardiovascular Magnetic Resonance*
- Webmaster - 2007 - 2008: *UAB Undergraduate Student Government Association*
- Webmaster - 2005 - 2008: *Habitat for Humanity, UAB Chapter*