

# JON ALLEN

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## Skills:

- **Languages and Tools:** Java, Ant, Maven, Eclipse, JET, C/C++, Make, openMP, Xcode, Doxygen, SQL, PHP, XML, Shell scripting, Python, R, L<sup>A</sup>T<sub>E</sub>X, Ruby, Perl, Assembly, SVN, CVS, Git
- **Development and Administration:** Hadoop, Mahout, Giraph, Cassandra, HDFS, HBase, Unix (Solaris, HP-UX, Linux, AIX, OS X, Irix, *etc.*), MySQL, Oracle, DevOps (Chef, Puppet), AWS (EC2, S3, *etc.*), OpenStack, LAM/MPI, Sun Grid Engine (SGE), Xgrid
- **Management Tools:** Agile, SCRUM/Kanban, JIRA, Grasshopper, Salesforce, Bugzilla, Trac
- **Data Analysis:** Maple, Matlab, Mathematica, Octave, GATE, openNLP, NER, WEKA, SciPy
- **Parallel Computation:** MapReduce, MPI, BSP, Pregel, SMP
- **Numerical Methods:** Coupled non-linear partial differential systems, distributed algorithms for global optimization, constrained numerical systems, initial value problems, solution stability analysis, finite difference / finite element methods, variational integration schemes, invariant subsystem discovery, non-linear kernel methods, graph problems, scalability and performance testing, machine learning / statistical analysis techniques for text processing and data mining.

## Experience:

- **Ravel Data Inc., Austin, TX**

*VP of Research and Development / Co-founder, June 2010 - October 2011*

Managed a team of engineers, physicists and mathematicians developing distributed algorithms for MapReduce, BSP, and Pregel frameworks. Developed and maintained customer and community technical relationships. Initiated and facilitated the development of customer driven product definitions and product roadmaps. Designed and implemented algorithms for PageRank, single source shortest path, max value, clustering, and bipartite graph calculations using Google's Pregel framework. Designed and implemented validated parallel algorithms for an interior point method solver, linear and non-linear support vector machines, hidden Markov model, and multivariate least squares linear regression in the MapReduce framework. Designed, implemented, deployed and maintained end-to-end solution for customer requiring custom MapReduce algorithms calculating statistically derived quantities from raw data for over 400 million users, processing and ranking the derived data, storing the processed data in Cassandra, and maintaining the availability of Cassandra and Hadoop clusters. Designed, implemented and deployed within a customer's existing Hadoop / Cassandra cluster a series of custom parallel algorithms for various customer defined metrics and unsupervised learning models using Mahout. Implemented and maintained DevOps solutions for development and production cluster operations utilizing Amazon's EC2 and S3 web services.

- **UT Center for Relativity, Austin, TX**

*Numerical Relativity Researcher, Spring 2004 - Current*

Implemented performance enhancements and created a more robust scalable MPI platform for General Relativity simulations while working with the Center for Relativity, under the direction of Dr. Richard Matzner. Continuing enhancements and end user documentation for *openGR*, the General Relativity simulations software developed at the Center for Relativity. Analytically investigating numerical properties of physical theories with gauge freedom, with a specific focus on the Hamiltonian formulation of Einstein's equations. Investigating the topological behavior of evolved isolated black holes with spin using the puncture method. Working towards binary black

hole, neutron star, and matter accretion simulations. Research going towards a Ph.D. under Dr. Matzner at UT.

- **Asteism Inc., Cambridge, MA**

*Developer, January 2008 - December 2009*

Developed and documented calibration software for proprietary hardware inertial sensors. Designed, implemented and documented hardware characteristics and stability tests. Designed, implemented and documented novel integration schemes to render physical six degree of freedom data from raw inertial sensor data. Designed coherent methods to capture inertial sensor data in field trials. Designed, implemented and documented signal processing algorithms to automate gait analysis. Developed and verified novel algorithms for automated gait phase detection. Developed automated data processing workflows for post-processing of data captured from field trials. Designed, implemented and documented data collection processes and standards for relevant trial specific data. Investigated, designed, documented and worked towards the implementation of supervised machine learning algorithms to automate lameness detection using raw and processed data gathered by equine veterinary researchers and professionals during field trials.

- **Solomio Inc., Austin, TX**

*Unix Administrator & Oracle DBA, March 2001 - May 2004*

Consulted the development team on design of software on the Ultrasparc II/III architecture. Implemented and maintained Unix environments for both QA and development teams. Designed and implemented a real time solution for our enterprise Java software with a focus on scalability and performance testing.

- **NetXstream Inc., Austin, TX**

*Unix Administrator & Developer, August 2000 - March 2001*

Designed, implemented, documented and maintained a Solaris/Oracle environment to support proprietary technology. Co-engineered a secure peer-to-peer protocol, implemented technology on the MacOS and PalmOS platforms, and presented technology to potential clients and investors. Responsible for developing the back-end to a content-based web portal.

- **MetaSolv Software, Inc., Plano, TX**

*Web Automation & Solaris Administrator Internship, Summer 1999*

Worked with management and development to create a user-driven intranet site to allow collaboration and event planning. Set up and administered a Solaris based server housing our intranet web application. Held many instructional sessions to facilitate the use of a UNIX environment for my co-workers.

## **Education:**

- **University of Texas at Austin**

Physics B.S.

Graduated 2006

- **Texas Academy of Math and Science**

Graduated 2000