

# Curriculum Vitae: E. Jason Riedy

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- Current Employment** *Institution* School of Computational Science, College of Computing, Georgia Institute of Technology  
*Title* Senior Research Scientist  
*Since* 2009
- Education**
- Ph.D., Computer Science, University of California at Berkeley, December 2010, 3.8 GPA. Advisor: **Dr. James Demmel**. Thesis: *Making Static Pivoting Scalable and Dependable*.
  - B.S. with Honors, Computer Science and Mathematics, University of Florida, 1995, 3.8 GPA.
- Research Experience**
- 2017 – present **The CRNCH Rogues Gallery**: A part of the Center for Research into Novel Computing Hierarchies (CRNCH), the Rogues Gallery gathers novel and unusual hardware so academic researchers can explore new ideas leveraging these odd-ball architectures of the possible future.
- 2017 – present **SuperSTaRLU**: Developing logical primitives for advanced memory systems (3D stacked, hybrid memory cube) in support of unsymmetric sparse matrix factorization.
- 2015 – present **IEEE-754 revision** (floating-point arithmetic)
- 2017 – 2018 Evaluating memory-centric architectures for high performance data analysis: Combining architecture and algorithms to achieve high performance on architectures like the **Emu Technology** platform, where memory operations are moved to be local. Focuses on streaming graph analysis and sparse tensor decomposition.
- 2016 – 2018 **High Performance Data Analytics (HPDA)**: High-performance data analysis for streaming graphs.
- 2014 – 2016 **Idaho Bailiff**: High-performance data analysis for streaming graphs.
- 2013 – 2018 **NSF XScala**: High-performance kernel development, curation, and modeling for accelerators.
- 2012 – 2018 **DARPA GRATEFUL**: Graph analysis optimizing power and efficiency. Under the **DARPA Power Efficiency Revolution for Embedded Computing Technologies (PERFECT)** program.
- 2010 – 2014 **STING**: Spatio-Temporal Interaction Networks and Graphs An open-source dynamic graph package for Intel platforms.
- 2010 – 2013 Evaluation of the IBM PERCS and Cray Cascade HPCS architectures.
- 2009 – 2013 **CASS-MT**: Massively parallel graph analysis (537M node, 8.6B edge), threaded architectures, streaming data analysis and error modeling.
- 2002 – 2009 **LAPACK, ScaLAPACK, and XBLAS** (dense linear algebra): Extra-precise linear system refinement algorithms, eigenvalue routines, and optimization.
- 1999 – 2009 **SuperLU** (sparse linear algebra): Parallel combinatorial preprocessing, numerical stability analysis, iterative solver preconditioning.
- 2001 – 2006 **IEEE-754 revision** (floating-point arithmetic): Programming language interactions, exceptional behavior, decimal formats and arithmetic.
- 1996 – 1999 **Image Algebra** (image analysis): SIMD parallel optimization, edge detection, geometric hashing.
- Technical Experience** (To be honest, this section cannot keep up.)
- 2018 – present Directory of the **Rogues Gallery** of novel, post-Moore systems in the **Center for Research into Novel Computing Hierarchies**.
- 2011 – present Development and support for a high-performance shared memory **community detection package** for massive graphs.
- 2010 – 2014 Defining the **Graph500 benchmark** and providing the **reference implementations** for sequential and shared memory platforms (OpenMP, Cray XMT).
- 2009 – present Development of **STINGER**, a framework for analyzing massive graphs with streaming input on both OpenMP platforms and the Cray XMT.

2009 – 2013 Support and porting for [GraphCT](#), a massive graph characterization toolkit.  
 2009 – 2013 CASS-MT and follow-on projects: Development of [STINGER](#), a framework for analyzing massive graphs with streaming input on both OpenMP platforms and the [Cray XMT](#). Support and porting of [GraphCT](#), a massive graph characterization toolkit, and [STINGER](#), a streaming graph analysis framework.  
 2002 – 2009 Sca/LAPACK project: Development of coding standards, integration of C routines, multiplatform testing and debugging, code and design review.  
 1994 – 1999 Systems administration: Maintenance of servers and file systems for [CISE Department](#), Univ. of Florida, including performance tuning, troubleshooting, file system backups, and end-user support.  
 1995 Visualization: Animations of molecular dynamics simulations.

Teaching Experience

*Spring 2019 – present* Teaching/advising a Vertically Integrated Project introducing undergraduates to novel architectures via the [Rogues Gallery](#). With [Jeffrey Young](#).  
*Fall 2105 – present* Teaching/advising [Bee-Snap](#), a Vertically Integrated Project collecting and analyzing big data about bee-flower interactions on the Georgia Tech campus and beyond to inform property owners and policy makers about how land use can support pollinator health. With [Jennifer Leavey](#) in Biology. “Thank a Teacher” award in fall 2017. Number of undergraduates varies per semester. Internal funding for class projects. Internal link: <https://vip.gatech.edu/wiki/index.php/Bee-Snap> (Previously also with [Bistra Dilkina](#) and [Polo Chau](#) in CSE.)  
*Fall 2014 – May 2016* Advising of a Masters thesis into trade-offs between community quality and change size when adapting to streaming data. Student: Pushkar Godbole. Title: Agglomerative Clustering for Community Detection in Dynamic Graphs. (joined Yelp)  
*Summer 2014* Advising of two undergraduate [CRUISE](#) students in projects on sparse matrix - sparse vector products for graph analysis and identifying key members in graph communities.  
*Spring 2013, Fall 2013* Advising of Masters level research project in social network data acquisition and analysis.  
*Fall 2012* Guest lectures in CSE8803-MGA, Georgia Tech’s special topics class in massive graph analysis. Topics include streaming graph analysis, parallel community detection, and experiment design.  
*Spring, Fall 2010* Guest lectures in CSE6140, Georgia Tech’s parallel algorithms and applications class. Topics include floating-point arithmetic, parallel linear algebra, and parallel programming environments.  
*Spring 2010* Shared advising of Masters level research project in seeded community detection.  
*Fall 2008* Adjunct faculty in mathematics at [Virginia Intermont College](#). Teaching [Concepts of Modern Mathematics I](#) (focused on elementary education majors) and [Discrete Mathematics I](#) (required mathematics class for most majors). Constructed the programs from only the required textbook.  
*Fall 2006* Mentor for Intel Undergraduate Research program.  
*Fall 2006, Spring 2007* Mentor for Intel Undergraduate Research program. Introduced undergraduates into our research group on both mathematical and technical levels.  
*Spring 2000, 2004* Assistant for Applications of Parallel Computing: Multidisciplinary, graduate level class focused on introducing scientists to practical aspects of high-performance computers, tools, and programming.

Students Supervised

- Ph.D.
  - Chunxing Yin
- Masters
  - Pushkar Godbole, “Agglomerative Clustering for Community Detection in Dynamic Graphs,” May 2016. (Joined Yelp)
- Undergraduate
  - Total of 41 undergraduates from 13 majors in the BeeSnap project as of Fall 2018

## Awards, Recognition, and Honors

- Georgia Tech College of Computing Outstanding Research Scientist, 2017
- Georgia Tech “Thank a Teacher” award, fall 2017
- Georgia Tech Research Teaching Fellow, 2016-2017
- Best paper award, IEEE High Performance Extreme Computing Conference, 2012
- The 10<sup>th</sup> DIMACS Implementation Challenge’s Mix and Mix Pareto challenges winner, 2012
- Institute for Data and High Performance Computing Fellowship, 2010-2011

## Software

- (By its nature, this section always will be a bit out of date.)
- Public, parallel, scale-optimized [community detection](#) code for shared-memory platforms that supports pluggable community metrics and high performance. Winner of the 10<sup>th</sup> DIMACS Implementation Challenge’s Mix and Mix Pareto challenges.
  - Developer for Georgia Tech’s [STING](#) package for Spatio-Temporal Interaction Networks and Graphs.
  - Support and optimization in Georgia Tech’s [Graph Characterization Toolkit](#).
  - Research code for [distributed-memory weighted bipartite matching through a scaling auction algorithm](#).
  - Prototypes for [LAPACK’s extra-precise refinement codes](#); [XBLAS Fortran/C integration](#).
  - Optimized Sturm count routines and debugged eigenvalue drivers in LAPACK 3.1.
  - Enhanced and optimized Householder reflection generation and application in LAPACK.
  - [Iterative version of the recursive LU matrix factorization](#)
  - [Recursive matrix factorizations](#).
  - [Simple database interface](#) for GNU Octave.
  - A doubled-native arithmetic library, enabling high-precision sparse matrix factorization with [TAUCS](#).
  - Contributions and bug fixes to [git](#), [GNU Octave](#), [the R Project](#), [GNU Emacs](#), *etc.*

## Refereed Journals

- Eisha Nathan, Anita Zakrzewska, Jason Riedy, and David A. Bader. Local Community Detection in Dynamic Graphs Using Personalized Centrality. *Algorithms*, 10(3), August 2017. ISSN 1999-4893. doi: [10.3390/a10030102](#).
- David Ediger, Karl Jiang, Jason Riedy, and David A. Bader. [GraphCT: Multithreaded Algorithms for Massive Graph Analysis](#). *IEEE Transactions in Parallel and Distributed Systems*, pages 2220 – 2229, September 2013. ISSN 1045-9219. doi: [10.1109/TPDS.2012.323](#).
- James W. Demmel, Mark Frederick Hoemmen, Yozo Hida, and E. Jason Riedy. [Non-Negative Diagonals and High Performance on Low-Profile Matrices from Householder QR](#). *SIAM Journal on Scientific Computing*, 31(4):2832–2841, July 2009. ISSN 1064-8275. doi: [10.1137/080725763](#).
- James W. Demmel, Yozo Hida, Xiaoye S. Li, and E. Jason Riedy. [Extra-precise iterative refinement for overdetermined least squares problems](#). *ACM Transactions on Mathematical Software*, 35(4):1–32, February 2009. ISSN 0098-3500. doi: [10.1145/1462173.1462177](#).
- Osni A. Marques, E. Jason Riedy, and Christof Vömel. [Benefits of IEEE-754 Features in Modern Symmetric Tridiagonal Eigensolvers](#). *SIAM Journal on Scientific Computing*, 28(5):1613–1633, September 2006. ISSN 1064-8275. doi: [10.1137/050641624](#).
- James W. Demmel, Yozo Hida, W. Kahan, Xiaoye S. Li, Sonil Mukherjee, and E. Jason Riedy. [Error bounds from extra-precise iterative refinement](#). *ACM Transactions on Mathematical Software*, 32(2): 325–351, June 2006. ISSN 0098-3500. doi: [10.1145/1141885.1141894](#).

## Book Chapters

- E. Jason Riedy, Henning Meyerhenke, David Ediger, and David A. Bader. [Parallel community detection for massive graphs](#). In David A. Bader, Henning Meyerhenke, Peter Sanders, and Dorothea Wagner, editors, *Graph Partitioning and Graph Clustering*, volume 588 of *Contemporary Mathematics*, pages 207–222. American Mathematical Society, 2012. ISBN 978-0-8218-9038-7. doi: [10.1090/conm/588/11703](#).
- David Ediger, Jason Riedy, David A. Bader, and Henning Meyerhenke. [Computational Graph Analytics for Massive Streaming Data](#). In Hamid Sarbazi-azad and Albert Zomaya, editors, *Large Scale Network-Centric Computing Systems*, Parallel and Distributed Computing, chapter 25. Wiley, July 2013.

ISBN 978-0470936887. doi: 10.1002/9781118640708.ch25.

— Joseph N. Wilson, E. Jason Riedy, Gerhard X. Ritter, and Hongchi Shi. [An Image Algebra Based SIMD Image Processing Environment](#). In C. W. Chen and Y. Q. Zhang, editors, *Visual Information Representation, Communication, and Image Processing*, pages 523–542. Marcel Dekker, New York, 1999. ISBN 082471928X.

#### Invited Presentations

— Jason Riedy. [Plans for IEEE Standard 754-2028](#). In *25th IEEE Symposium on Computer Arithmetic (ARITH 25)*, June 2018.

— Jason Riedy. [Streaming Graph Analysis: New Models, New Architectures](#). In *ACM International Conference on Computing Frontiers*, May 2018. Invited paper and talk.

— E. Jason Riedy. [Graph Analysis Beyond Linear Algebra](#). Development of Modern Methods for Linear Algebra, October 2015. Invited presentation.

— Jason Riedy. [Network Challenge: Error and Sensitivity Analysis](#). SDM-Networks 2015: The Second SDM Workshop on Mining Networks and Graphs: A Big Data Analytic Challenge, May 2015. Invited panelist.

— Jason Riedy and David A. Bader. [Graph Analysis Trends and Opportunities](#). In *CMG Performance and Capacity*, Atlanta, GA, November 2014. Invited presentation.

— Jason Riedy and David A. Bader. [STINGER: Multi-threaded Graph Streaming](#). In *Graph Algorithms Building Blocks (GABB 2014)*, Phoenix, AZ, May 2014. Invited presentation and panelist. (Workshop with IPDPS 2014).

— Lauren L. Smith and Dolores A. Shaffer. DARPA’s High Productivity Computing Systems Program: A Final Report. Supercomputing Birds-of-a-Feather session, November 2012. Invited panel speaker.

— Jason Riedy, David Ediger, David A. Bader, and Henning Meyerhenke. [Tracking Structure of Streaming Social Networks](#). 2011 Graph Exploitation Symposium hosted by MIT Lincoln Labs, August 2011. Invited presentation.

— E. Jason Riedy. [Dependable direct solutions for linear systems using a little extra precision](#). CSE Seminar at Georgia Institute of Technology, August 2009. Invited presentation.

— E. Jason Riedy. [Auctions for Distributed \(and Possibly Parallel\) Matchings](#). Visit to CERFACS courtesy of the Franco-Berkeley Fund, December 2008. Invited presentation.

— E. Jason Riedy. [Modern Language Tools and 754R](#). ARITH’05, June 2005, (panel participant). Invited presentation and panelist.

#### Conference Proceedings

— Chunxing Yin, Jason Riedy, and David A. Bader. [A New Algorithmic Model for Graph Analysis of Streaming Data](#). In *Proceedings of the 14th International Workshop on Mining and Learning with Graphs (MLG)*, May 2018.

— Jason Riedy and James Demmel. [Augmented Arithmetic Operations Proposed for IEEE-754 2018](#). In *25th IEEE Symposium on Computer Arithmetic (ARITH 25)*, June 2018. doi: 10.1109/ARITH.2018.8464813.

— Eric Hein, Tom Conte, Jeffrey S. Young, Srinivas Eswar, Jiajia Li, Patrick Lavin, Richard Vuduc, and Jason Riedy. [An Initial Characterization of the Emu Chick](#). In *The Eighth International Workshop on Accelerators and Hybrid Exascale Systems (AsHES)*, pages 579–588, May 2018. ISBN 9781538655559. doi: 10.1109/IPDPSW.2018.00097.

— E. Jason Riedy, Chunxing Yin, and David A. Bader. [A New Algorithm Model for Massive-Scale Streaming Graph Analysis](#). In *SIAM Workshop on Network Science*, Pittsburgh, PA, July 2017.

— Marat Dukhan, Richard Vuduc, and Jason Riedy. [Wanted: Floating-Point Add Round-off Error Instruction](#). In *The 2nd International Workshop on Performance Modeling: Methods and Applications (PMMA16)*, Frankfurt, Germany, June 2016. arXiv:1603.00491. (Workshop with ISC High Performance).

— Jason Riedy. [Updating PageRank for Streaming Graphs](#). In *Graph Algorithms Building Blocks (GABB 2016)*, Chicago, IL, May 2016. (Workshop with IPDPS 2016).

- David Bader, Aleksandra Michalewicz, Oded Green, Jessie Birkett-Rees, Jason Riedy, James Fairbanks, and Anita Zakrzewska. Semantic database applications at the Samtavro Cemetery, Georgia. In *The 44th Computer Applications and Quantitative Methods in Archaeology Conference (CAA)*, Oslo, Norway, March 2016.
- Adam McLaughlin, Jason Riedy, and David A. Bader. [An Energy-Efficient Abstraction for Simultaneous Breadth-First Searches](#). In *The IEEE High Performance Extreme Computing Conference (HPEC)*, Waltham, MA, September 2015.
- Adam McLaughlin, Jason Riedy, and David A. Bader. [Optimizing Energy Consumption and Parallel Performance for Betweenness Centrality using GPUs](#). In *The IEEE High Performance Extreme Computing Conference (HPEC)*, Waltham, MA, September 2014. doi: [10.1109/HPEC.2014.7040980](#). “Rising Stars” section.
- E. Jason Riedy and David A. Bader. [Multithreaded Community Monitoring for Massive Streaming Graph Data](#). In *7th Workshop on Multithreaded Architectures and Applications (MTAAP)*, Boston, MA, May 2013. doi: [10.1109/IPDPSW.2013.229](#).
- David Ediger, Robert McColl, Jason Riedy, and David A. Bader. [STINGER: High Performance Data Structure for Streaming Graphs](#). In *The IEEE High Performance Extreme Computing Conference (HPEC)*, Waltham, MA, September 2012. doi: [10.1109/HPEC.2012.6408680](#). Best paper award.
- E. Jason Riedy, David A. Bader, and Henning Meyerhenke. [Scalable Multi-threaded Community Detection in Social Networks](#). In *6th Workshop on Multithreaded Architectures and Applications (MTAAP)*, May 2012. doi: [10.1109/IPDPSW.2012.203](#).
- Jason Riedy, Henning Meyerhenke, David A. Bader, David Ediger, and Timothy G. Mattson. [Analysis of Streaming Social Networks and Graphs on Multicore Architectures](#). In *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. Kyoto, Japan, March 2012. doi: [10.1109/ICASSP.2012.6289126](#).
- E. Jason Riedy, Henning Meyerhenke, David Ediger, and David A. Bader. [Parallel Community Detection for Massive Graphs](#). In *10th DIMACS Implementation Challenge Workshop - Graph Partitioning and Graph Clustering*. (workshop paper), Atlanta, Georgia, February 2012. Won first place in the Mix Challenge and Mix Pareto Challenge.
- E. Jason Riedy, Henning Meyerhenke, David Ediger, and David A. Bader. [Parallel Community Detection for Massive Graphs](#). In *9th International Conference on Parallel Processing and Applied Mathematics (PPAM11)*. Springer, September 2011. doi: [10.1007/978-3-642-31464-3\\_29](#).
- David Ediger, E. Jason Riedy, David A. Bader, and Henning Meyerhenke. [Tracking Structure of Streaming Social Networks](#). In *5th Workshop on Multithreaded Architectures and Applications (MTAAP)*, May 2011. doi: [10.1109/IPDPS.2011.326](#).
- David Ediger, Karl Jiang, E. Jason Riedy, David A. Bader, Courtney Corley, Rob Farber, and William N. Reynolds. [Massive Social Network Analysis: Mining Twitter for Social Good](#). In *39th International Conference on Parallel Processing (ICPP)*, San Diego, CA, September 2010. doi: [10.1109/ICPP.2010.66](#).
- David Ediger, Karl Jiang, E. Jason Riedy, and David A. Bader. [Massive Streaming Data Analytics: A Case Study with Clustering Coefficients](#). In *4th Workshop on Multithreaded Architectures and Applications (MTAAP)*, Atlanta, GA, April 2010. doi: [10.1109/IPDPSW.2010.5470687](#).
- James W. Demmel, Jack Dongarra, Beresford Parlett, W. Kahan, Ming Gu, David Bindel, Yozo Hida, Xiaoye S. Li, Osni A. Marques, E. Jason Riedy, Christof Vömel, Julien Langou, Piotr Luszczek, Jakub Kurzak, Alfredo Buttari, Julie Langou, and Stanimire Tomov. [Prospectus for the Next LAPACK and ScaLAPACK Libraries](#). In *PARA’06: State-of-the-Art in Scientific and Parallel Computing*, Umeå, Sweden, June 2006. High Performance Computing Center North (HPC2N) and the Department of Computing Science, Umeå University, Springer. doi: [10.1007/978-3-540-75755-9\\_2](#).
- David Hough, Bill Hay, Jeff Kidder, E. Jason Riedy, Guy L. Steele Jr., and Jim Thomas. [Arithmetic Interactions: From Hardware to Applications](#). In *17th IEEE Symposium on Computer Arithmetic (ARITH’05)*, June 2005. ISBN 0-7695-2366-8. doi: [10.1109/ARITH.2005.10](#). See [related presentation](#).
- Joseph N. Wilson and E. Jason Riedy. [Efficient SIMD evaluation of image processing programs](#). In

Hongchi Shi and Patrick C. Coffield, editors, *Parallel and Distributed Methods for Image Processing*, volume 3166, pages 199–210, San Diego, CA, July 1997. SPIE. doi: [10.1117/12.279618](https://doi.org/10.1117/12.279618).

## Conference

### Tutorials

- E. Jason Riedy and Jeffrey S. Young. Programming Novel Architectures in the Post-Moore Era with The Rogues Gallery. In *24th ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, Providence, RI, April 2019.
- David Ediger, Jason Riedy, Rob McColl, and David A. Bader. [Parallel Programming for Graph Analysis](#). In *17th ACM SIGPLAN Annual Symposium on Principles and Practice of Parallel Programming (PPoPP)*, New Orleans, LA, February 2012.
- David A. Bader, David Ediger, and E. Jason Riedy. Parallel Programming for Graph Analysis. In *full day tutorial*, Columbia, MD, September 2011.
- David A. Bader, David Ediger, and E. Jason Riedy. [Parallel Programming for Graph Analysis](#). In *16th ACM SIGPLAN Annual Symposium on Principles and Practice of Parallel Programming (PPoPP)*, San Antonio, TX, February 2011.

## Technical

### Reports

- Eric Hein, Srinivas Eswar, Abdurrahman Yaşar, Jiajia Li, Jeffrey S. Young, Thomas M. Conte, Ümit V. Çatalyürek, Rich Vuduc, Jason Riedy, and Bora Uçar. [Programming Strategies for Irregular Algorithms on the Emu Chick](#). *CoRR*, 2018. 1901.02775.
- Patrick Lavin, Jason Riedy, Rich Vuduc, and Jeffrey Young. [Spatter: a Benchmark Suite for Evaluating Sparse Access Patterns](#). *CoRR*, 2018. 1811.03743.
- Jeffrey Young, Eric Hein, Srinivas Eswar, Patrick Lavin, Jiajia Li, Jason Riedy, Richard Vuduc, and Tom Conte. [A Microbenchmark Characterization of the Emu Chick](#). Technical report, September 2018. arXiv:1809.07696.
- Will Powell, Jason Riedy, and Jeffrey S. Young. [Wrangling Rogues: Managing Experimental Post-Moore Architectures](#). Technical report, August 2018. arXiv:1808.06334.
- Marat Dukhan, Richard Vuduc, and Jason Riedy. Wanted: Floating-Point Add Round-off Error instruction. Technical report, 2016. 1603.00491.
- Lawrence B. Holder, Rajmonda Caceres, David F. Gleich, Jason Riedy, Maleq Khan, Nitesh V. Chawla, Ravi Kumar, Yinghui Wu, Christine Klymko, Tina Eliassi-Rad, and Aditya Prakash. Current and Future Challenges in Mining Large Networks: Report on the Second SDM Workshop on Mining Networks and Graphs. *SIGKDD Explorations Newsletter*, 18(1):39–45, August 2016. ISSN 1931-0145. doi: [10.1145/2980765.2980770](https://doi.org/10.1145/2980765.2980770).
- Shel Swenson, Yogesh Simmhan, Viktor Prasanna, Manish Parashar, Jason Riedy, David Bader, and Richard Vuduc. Sustainable Software Development for Next-Gen Sequencing (NGS) Bioinformatics on Emerging Platforms. Technical report, 2013. 1309.1828.
- Jason Riedy, David A. Bader, Karl Jiang, Pushkar Pande, and Richa Sharma. [Detecting Communities from Given Seeds in Social Networks](#). Technical Report GT-CSE-11-01, Georgia Institute of Technology, February 2011.
- IEEE 754 Committee. IEEE Standard for Floating-Point Arithmetic. IEEE Std 754-2008, Microprocessor Standards Committee of the IEEE Computer Society, New York, NY, August 2008. doi: [10.1109/IEEESTD.2008.4610935](https://doi.org/10.1109/IEEESTD.2008.4610935). (committee member and contributor).
- James W. Demmel, Mark Frederick Hoemmen, Yozo Hida, and E. Jason Riedy. [Non-Negative Diagonals and High Performance on Low-Profile Matrices from Householder QR](#). LAPACK Working Note 203, Netlib, May 2008. Also issued as UCB/EECS-2008-76; modified from SISC version.
- James W. Demmel, Yozo Hida, Xiaoye S. Li, and E. Jason Riedy. [Extra-precise iterative refinement for overdetermined least squares problems](#). LAPACK Working Note 188, Netlib, May 2007. Also issued as UCB/EECS-2007-77; version accepted for TOMS.
- James W. Demmel, Jack Dongarra, Beresford Parlett, W. Kahan, Ming Gu, David Bindel, Yozo Hida, Xiaoye S. Li, Osni A. Marques, E. Jason Riedy, Christof Vömel, Julien Langou, Piotr Luszczek, Jakub

- Kurzak, Alfredo Buttari, Julie Langou, and Stanimire Tomov. [Prospectus for the Next LAPACK and ScaLAPACK Libraries](#). LAPACK Working Note 181, Netlib, February 2007. Also issued as UT-CS-07-592.
- Osni A. Marques, E. Jason Riedy, and Christof Vömel. [Benefits of IEEE-754 Features in Modern Symmetric Tridiagonal Eigensolvers](#). LAPACK Working Note 172, Netlib, September 2005. Also issued as UCB//CSD-05-1414; expanded from SISC version.
  - James W. Demmel, Yozo Hida, W. Kahan, Xiaoye S. Li, Sonil Mukherjee, and E. Jason Riedy. [Error bounds from extra-precise iterative refinement](#). LAPACK Working Note 165, Netlib, February 2005. Also issued as UCB//CSD-05-1414, UT-CS-05-547, and LBNL-56965; expanded from TOMS version.
  - E. Jason Riedy. [Making Static Pivoting Scalable and Dependable](#). Technical Report UCB/EECS-2010-172. PhD thesis, EECS Department, University of California, Berkeley, December 2010.

## Presentations

- E. Jason Riedy, Jeffrey Young, and Tom Conte. [Novel Architectures for Applications in Data Science and Beyond](#). SIAM Conference on Computational Science and Engineering, March 2019, (presentation). Minisymposium organizer with Jeffrey Young and Tom Conte.
- Mark Gates, James W. Demmel, Greg Henry, Xiaoye S. Li, E. Jason Riedy, and Peter Tang. [A Proposal for Next-generation BLAS](#). SIAM Conference on Computational Science and Engineering, February 2019, (presentation).
- E. Jason Riedy. Characterization of Emu with Microbenchmarks. Emu Workshop at the Laboratory for Physical Sciences, January 2019, (presentation).
- E. Jason Riedy, Greg Henry, James Demmel, Mark Gates, Xiaoye S. Li, and Ping Tak P. Tang. [Updated Proposal for a Next-Generation BLAS](#). Batched, Reproducible, and Reduced Precision BLAS Birds-of-a-Feather at the International Conference for High Performance Computing, Networking, Storage and Analysis, November 2018.
- Jason Riedy. Graph Analysis: New Algorithm Models, New Architectures. SIAM Parallel Processing for Scientific Computing, March 2018, (presentation). Minisymposium organizer with Oded Green and David A. Bader.
- E. Jason Riedy, Greg Henry, James Demmel, Mark Gates, Xiaoye S. Li, and Ping Tak P. Tang. [A Proposal for a Next-Generation BLAS](#). Batched, Reproducible, and Reduced Precision BLAS Birds-of-a-Feather at the International Conference for High Performance Computing, Networking, Storage and Analysis, November 2017.
- Eisha Nathan, Anita Zakrzewska, Chunxing Yin, and Jason Riedy. A New Direction for Streaming Graph Analysis. IEEE Cluster, September 2017.
- Jason Riedy. [High-Performance Analysis of Streaming Graphs](#). HPC Analytic Workshop, June 2017.
- E. Jason Riedy. [High-Performance Analysis of Streaming Graphs](#). SIAM Conference on Computational Science and Engineering, March 2017, (presentation). Minisymposium organizer with Henning Meyerhenke.
- James Demmel, Greg Henry, Xiaoye Li, Jason Riedy, and Peter Tang. [A Proposal for a Next-Generation BLAS](#). Workshop on Batched, Reproducible, and Reduced Precision BLAS, February 2017.
- E. Jason Riedy and David A. Bader. [Scalable Network Analysis: Tools, Algorithms, Applications](#). SIAM Parallel Processing for Scientific Computing, April 2016, (presentation). Minisymposium organizer with Henning Meyerhenke and David A. Bader.
- Jason Riedy. [STINGER: Analyzing massive, streaming graphs](#). 3rd GraphLab Workshop, July 2014, (invited poster and demo).
- Jason Riedy, David A. Bader, David Ediger, Rob McColl, and Timothy G. Mattson. [STING: Spatio-Temporal Interaction Networks and Graphs for Intel Platforms](#). Presentation at Intel Corporation, Santa Clara, CA, January 2014, (presentation).
- Jason Riedy. [STINGER: Analyzing massive, streaming graphs](#). 2nd GraphLab Workshop, July 2013, (invited poster and demo).
- David A. Bader, Henning Meyerhenke, and Jason Riedy. [Applications and Challenges in Large-scale](#)

- Graph Analysis.** SIAM Conference on Computational Science and Engineering, February 2013, (presentation).
- Robert C. McColl, David Ediger, David A. Bader, and Jason Riedy. **Analyzing Graph Structure in Streaming Data with STINGER.** SIAM Conference on Computational Science and Engineering, February 2013, (presentation).
  - Jason Riedy, David A. Bader, David Ediger, Rob McColl, and Timothy G. Mattson. **STING: Spatio-Temporal Interaction Networks and Graphs for Intel Platforms.** Presentation at Intel Corporation, Santa Clara, CA, July 2012, (presentation).
  - David A. Bader, David Ediger, and Jason Riedy. **Streaming Graph Analytics for Massive Graphs.** SIAM Annual Meeting, July 2012, (presentation).
  - E. Jason Riedy and Henning Meyerhenke. **Scalable Algorithms for Analysis of Massive, Streaming Graphs.** SIAM Parallel Processing for Scientific Computing, February 2012, (Minisymposium organizer with Henning Meyerhenke.).
  - Henning Meyerhenke, E. Jason Riedy, and David A. Bader. **Parallel Community Detection in Streaming Graphs.** SIAM Parallel Processing for Scientific Computing, February 2012, (minisymposium organizer).
  - David Ediger, E. Jason Riedy, Henning Meyerhenke, and David A. Bader. **Analyzing Massive Networks with GraphCT.** SIAM Parallel Processing for Scientific Computing, February 2012, (poster).
  - E. Jason Riedy, David Ediger, Henning Meyerhenke, and David A. Bader. **STING: Software for Analysis of Spatio-Temporal Interaction Networks and Graphs.** SIAM Parallel Processing for Scientific Computing, February 2012, (poster).
  - Jason Riedy, David A. Bader, Henning Meyerhenke, David Ediger, and Timothy Mattson. **STING: Spatio-Temporal Interaction Networks and Graphs for Intel Platforms.** Presentation at Intel Corporation, Santa Clara, CA, August 2011, (presentation).
  - Jason Riedy, David Bader, and David Ediger. **Applications in Social Networks.** In *NSF Workshop on Accelerators for Data-Intensive Applications*, October 2010.
  - James W. Demmel, Yozo Hida, Xiaoye S. Li, E. Jason Riedy, Meghana Vishvanath, and David Vu. **Precise Solutions for Overdetermined Least Squares Problems.** Stanford 50 – Eighth Bay Area Scientific Computing Day, March 2007, (poster).
  - E. Jason Riedy. **Making Static Pivoting Dependable.** Seventh Bay Area Scientific Computing Day, March 2006, (poster).
  - E. Jason Riedy, Yozo Hida, and James W. Demmel. **The Future of LAPACK and ScaLAPACK.** Robert C. Thompson Matrix Meeting, November 2005, (presentation).
  - E. Jason Riedy. **Parallel Combinatorial Computing and Sparse Matrices.** SIAM Conference on Computational Science and Engineering, February 2005, (minisymposium speaker).
  - E. Jason Riedy. **Sparse Data Structures for Weighted Bipartite Matching.** SIAM Workshop on Combinatorial Scientific Computing, February 2004, (presentation).
  - E. Jason Riedy. **Parallel Weighted Bipartite Matching and Applications.** SIAM Parallel Processing for Scientific Computing, February 2004, (minisymposium speaker).
  - E. Jason Riedy. **Practical Alternatives for Parallel Pivoting.** SIAM Annual Meeting, June 2003, (presentation).
  - E. Jason Riedy. **Parallel Bipartite Matching for Sparse Matrix Computations.** SIAM Conference on Computational Science and Engineering, February 2003, (poster).
  - David Bindel and E. Jason Riedy. **Exception Handling Interfaces, Implementations, and Evaluation.** IEEE-754r revision meeting, August 2002, (presentation).
  - E. Jason Riedy. **Parallel Bipartite Matching for Sparse Matrix Computation.** Third Bay Area Scientific Computing Day, March 2002, (poster).

#### Other Technical Documents

- James Demmel, Mark Gates, Greg Henry, Xiaoye S. Li, Jason Riedy, and P.T. Peter Tang. **A Proposal for a Next-Generation BLAS.** November 2017. (living document, being updated).
- Shel Swenson, Yogesh Simmhan, Viktor Prasanna, Manish Parashar, Jason Riedy, David Bader, and



- Richard Vuduc. Sustainable Software Development for Next-Gen Sequencing (NGS) Bioinformatics on Emerging Platforms. In *First Workshop on Sustainable Software for Science: Practice and Experiences (WSSSPEI)*, Denver, CO, November 2013. held in conjunction with SC13, published electronically (<http://wssspe.researchcomputing.org.uk/>).
- Shel Swenson, Yogesh Simmhan, Viktor Prasanna, Manish Parashar, David Bader, Jason Riedy, and Richard Vuduc. Report on “Workshop on Accelerating Bioinformatics Applications Enabled by NextGen-Sequencing”. May 2013. Co-located with IPDPS 2013.
  - Shel Swenson, Yogesh Simmhan, Viktor Prasanna, Manish Parashar, David Bader, Jason Riedy, and Richard Vuduc. Report on “Workshop on Challenges in accelerating Next-Gen Sequencing (NGS) bioinformatics”. September 2013. in conjunction with ACM-BCB 2013.
  - David A. Bader, Jonathan Berry, Simon Kahan, Richard Murphy, E. Jason Riedy, and Jeremiah Willcock. Graph 500 Benchmark 1 (“Search”). October 2010. Version 1.1.
  - Participants. Report on NSF Workshop on Center Scale Activities Related to Accelerators for Data Intensive Applications, Viktor K. Prasanna and David A. Bader, editors. October 2010. This workshop is supported by NSF Grant Number 1051537, in response to the Call for Exploratory Workshop Proposals for Scientific Software Innovation Institutes (S2I2).
  - Jack Dongarra, Julien Langou, and E. Jason Riedy. Sca/LAPACK Program Style. August 2006.
  - E. Jason Riedy. Type System Support for Floating-Point Computation. May 2001.
  - E. Jason Riedy and Robert Szewczyk. Power and Control in Networked Sensors. May 2000. CiteSeer: [riedy00power.html](http://citeseer.riedy00power.html). Cited.
  - E. Jason Riedy and Rich Vuduc. Microbenchmarking the Tera MTA. May 1999. Cited.

#### Other Publications

- James Demmel, Jason Riedy, and Peter Ahrens. Reproducible BLAS: Make Addition Associative Again! *SIAM News*, 51(8):8, October 2018.
- Jason Riedy and David A. Bader. Massive Streaming Data Analytics: A Graph-based Approach. *XRDS: Crossroads, The ACM Magazine for Students — Scientific Computing*, 19(3):37–43, March 2013. ISSN 1528-4972. doi: [10.1145/2425676.2425689](https://doi.org/10.1145/2425676.2425689).

#### Projects

- David A. Bader (PI), Jason Riedy, and Haesun Park. High-Performance Data Analytics (HPDA) Research Topics, January 2018, (grant).
- E. Jason Riedy (PI), David A. Bader, and Thomas M. Conte. Evaluating Memory-centric Architectures for High Performance Data Analysis, August 2017, (grant).
- Jeffrey S. Young (PI), Jason Riedy, and Richard Vuduc. CDS&E: SuperSTARLU - SStacked, AcceleRATED Algorithms for Sparse Linear Systems, August 2017, (grant).
- David A. Bader (PI), Jack Dongarra (PI), Jason Riedy, Richard Vuduc, and Piotr Luszczek. Collaborative Research: EMBRACE: Evolvable Methods for Benchmarking Realism through Application and Community Engagement, September 2015, (grant).
- David A. Bader (PI GT), E. Jason Riedy (coPI GT), Rich Vudic (coPI GT), and Viktor Prasanna (PI USC). SI2-SSI: Collaborative: The XScala Project: A Community Repository for Model-Driven Design and Tuning of Data-Intensive Applications for Extreme-Scale Accelerator-Based Systems (NSF ACI-1339745), October 2013, (grant).
- David A. Bader (PI) and E. Jason Riedy (coPI). GRATEFUL: Graph Analysis Tackling power Efficiency, Uncertainty, and Locality. coPI for DARPA award under the Power Efficiency Revolution for Embedded Computing Technologies (PERFECT) program, August 2012, (grant).
- David A. Bader (PI) and E. Jason Riedy (coPI). Benchmarking the IBM PERCS and Cray CASCADE architectures. coPI for DARPA award, June 2011, (grant).
- Viktor Prasanna (PI USC), David A. Bader (PI GT), Manish Parashar (PI Rutgers), Jason Riedy (coPI GT), Rich Vuduc (coPI GT), Yogesh Simmhan (coPI USC), and Shantenu Jha (coPI Rutgers). Collaborative Research: Software Infrastructure for Accelerating Grand Challenge Science with Future

- Computing Platforms. coPI for NSF award under the Software Institutes program, October 2012, (grant).
- David A. Bader and E. Jason Riedy. Oracle: Multithreaded Algorithms. Grant for two Oracle X4470 servers with four processors each and 0.5TiB and 1.0TiB of memory, April 2012, (equipment grant).
- E. Jason Riedy. Evaluating PGAS scientific graph analysis codes on the Gemini interconnect. Department of Energy NERSC Initiative for Scientific Exploration, June 2011, (computing time grant).
- E. Jason Riedy and Logan Moon. Teaching Massive Data Analysis and Manycore Computing. Georgia Institute of Technology, Technology Fee Proposal, December 2010, (equipment grant).
- David A. Bader and E. Jason Riedy. STING: Spatio-Temporal Interaction Networks and Graphs; An open-source dynamic graph package for Intel platforms. Intel RFP on Parallel Algorithms in Non-Numeric Computing, April 2010, (grant).
- David A. Bader (PI) and E. Jason Riedy. Dynamic Graph Data Structures in X10. IBM X10 Innovation Award, December 2009, (grant).

#### Nontechnical

##### Writing

- E. Jason Riedy. [Here, on the farthest point of the peninsula](#). In Dana Martin Guthrie, editor, *Read Write Poem NaPoWriMo Anthology*, page 86. [issuu.com](#), September 2010.
- Jason Riedy. [The storm's coming when the chickens spread out](#). In Fiona Robyn and Kaspalita, editors, *pay attention: a river of stones*, page 77. [lulu.com](#), March 2011.

#### Professional

##### Societies

- [Association for Computing Machinery](#): Member since 1992. Univ. of Florida secretary 1995-1997.
- [Society for Industrial and Applied Mathematics](#): Member since 2000.
- [Institute of Electrical and Electronics Engineers](#): Member since 2010.
- [Society of Physics Students](#): Member 1993-1996. Univ. of Florida local officer 1994-1996.

#### Professional

##### Service

- Standardization committees:
  - IEEE 754-201x revision committee member, ballot resolution sub-committee member
  - IEEE 754-2008 revision committee member, [website and email archive maintenance](#)
- Program committee member for:
  - PAW-ATM 2019: Parallel Applications Workshop – Alternatives to MPI
  - GrAPL 2019: Workshop on Graphs, Architectures, Programming, and Learning
  - Technical program of International Conference for High Performance Computing, Networking, Storage, and Analysis (SC) 2019
  - IEEE International Parallel & Distributed Processing Symposium (IPDPS) 2013, 2016 – 2018
  - First Workshop on High Performance Graph Data Mining and Machine Learning (HPGDML) 2017
  - First Workshop on the Intersection of Graph Algorithms and Machine Learning (GRAML) 2017
  - Workshop on High Performance Graph Data Management and Processing (HPGDMP) 2016
  - Workshop on Irregular Applications: Architectures and Algorithms (IA<sup>3</sup>) 2016, 2017
  - High Performance Graph Processing 2016
  - International Conference on Parallel Processing (ICPP) 2015
  - Graph Data Management Experiences and Systems (GRADES) 2015
  - Architecture, Languages, Compilation and Hardware support for Emerging Manycore systems (ALCHEMY) 2015, 2017
  - Second SDM Workshop on Mining Networks and Graphs: A Big Data Analytic Challenge 2015
  - Graph Data Management Experiences and Systems (GRADES) 2014
  - 8th Workshop on Multithreaded Architectures and Applications (MTAAP) 2014
  - IEEE International Conference on High Performance Computing (HiPC) 2013, 2017, 2018
- Referee/technical reviewer for:
  - ACM Journal of Experimental Algorithmics (JEA)
  - ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP)
  - ACM Transactions on Architecture and Code Optimization (TACO)
  - ACM Transactions on Knowledge Discovery from Data (TKDD)
  - ACM Transactions on Mathematical Software (TOMS)
  - ACM/IEEE International Conference on Grid Computing (GRID)
  - Algorithms and Data Structures Symposium (WADS)
  - Circler Press
  - Computer Journal
  - 10<sup>th</sup> DIMACS Implementation Challenge
  - European Symposium on Algorithms (ESA)
  - IBM Journal of Research and Development
  - IEEE Cluster
  - IEEE International Parallel and Distributed Processing Symposium (IPDPS)
  - IEEE International Symposium on Computer Arithmetic (Arith)
  - IEEE Transactions on Computers
  - IEEE Transactions on Intelligent Systems and Technology

◦ IEEE Transactions on Knowledge and Data Engineering ◦ IEEE Transactions on Parallel and Distributed Systems (TPDS) ◦ Innovating Parallel Computing (INPAR) ◦ International Conference for High Performance Computing, Networking, Storage and Analysis (SC) ◦ International Journal of High Performance Computing (IJHPC) ◦ International Symposium on Code Generation and Optimization (CGO) ◦ International Symposium on Computer Architecture and High Performance Computing (SBAC-PAD) ◦ International Symposium on Distributed Computing (DISC) ◦ International Symposium on Experimental Algorithms (SEA) ◦ International Workshop on Accelerators and Hybrid Exascale Systems (AsHES) ◦ Journal of Parallel and Distributed Computing (JPDC) ◦ Journal of Systems and Software ◦ O'Reilly ◦ Parallel Computing ◦ SIAM Journal on Matrix Analysis and Applications (SIMAX) ◦ SIAM/ACM Algorithm Engineering and Experiments (ALENEX)

#### Skill Keywords

(Hilariously out of date. Always.)

*Languages/Libraries* C, Fortran, C++, Perl, Python, Lisp, R, Octave (Matlab), UPC, Chapel, Julia, SQL, LAPACK.

*Parallel styles/APIs* MPI, OpenMP, pthreads, shmem, UPC/PGAS, PAMI, LAPI, ScaLAPACK/BLACS.

*Tools* autoconf, automake, cmake, Bourne shell, bash, SQLite, Emacs, rdfproc, and pretty much everything else, too.

*Platforms* Debian and Fedora GNU/Linux on x86, x86-64, Power; Solaris on x86, UltraSPARC; AIX on Power.

*System Administration* Debian and Fedora GNU/Linux, RHEL, Solaris.

*Contributions/bug fixes* In GNU Octave, GNU Emacs, Linux kernel, cmake, R, git, and others.

I support and contribute to freedom in [software](#) and [network services](#).