Curriculum Vitae

Hao Ji

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Education

- **Old Dominion University (ODU)**, USA *2011-Present*
  Ph.D. Student, Computer Science
  Advisor: Yaohang Li
- **Hefei University of Technology (HFUT)**, China *2007-2010*
  M.E., Computer Software and Theory
  Advisor: Xiaoping Liu
- **Hefei University of Technology**, China *2003-2007*
  B.S., Mathematics and Applied Mathematics

Research Interests

- Monte Carlo Methods for Big Data Analysis
- Large-Scale Linear Algebra
- High Performance Scientific Computing

Research Experience

- **Research Assistant, Department of Computer Science, ODU** *2011-Present*
  - Research Topic: "Advanced Monte Carlo Methods for Linear Algebra Applications"
    - Solving extremely large system of linear equations;
    - Estimating low-rank approximation to big matrices;
    - Processing big matrices using high performance computing.
- **Research Assistant, School of Computer and Information, HFUT** *2007-2010*
  Visualization and Cooperative Computing Lab (VCC)
  - Project: "Manifold Learning and Data Visualization of Dynamical Systems"

Teaching Experience

- **Instructor, Department of Computer Science, ODU** *Summer 2015*
  - CS 170 Computer Organization and Architecture I
- **Teaching Assistant, Department of Computer Science, ODU** *2011-Present*
  - CS 417/517 Computational Methods and Software
  - CS 170 Introduction to Computer Architecture I
  - CS 270 Introduction to Computer Architecture II
  - CS 695/795/895 Monte Carlo Methods and Applications

Publications

- **Journal Papers**

  [1] Hao Ji, Yaohang Li, and Seth Weinberg. **Calcium Ion Fluctuations Alter Channel Gating in a Stochastic Luminal Calcium Release Site Model**. IEEE/ACM Transactions on Computational Biology and Bioinformatics (TCBB), 2015. (invited extended version, submitted)

  [2] Hao Ji and Yaohang Li. **Block Conjugate Gradient Algorithms for Least-squares Problem**. Journal of Computational and Applied Mathematics (JCAM), 2015. (submitted)

  [3] Hao Ji, Michael Mascagni, and Yaohang Li. **Gaussian Variant of Freivalds' Algorithm for Efficient and Reliable Matrix Product Verification**. SIAM Journal on Matrix Analysis and Applications (SIMAX), 2015. (under review)

  [4] Hao Ji and Yaohang Li. **Breakdown-Free Block Conjugate Gradient Method**. BIT Numerical Mathematics (BIT), 2015. (under review)

  [5] Ashraf Yaseen, Hao Ji, and Yaohang Li. **A Load-Balancing Workload Distribution Scheme for Three-Body Interaction Computation on Graphics Processing Units (GPU)**. Journal of Parallel and Distributed Computing (JPDC), 2015. (under second-round review)

  [6] Hao Ji, Michael Mascagni, and Yaohang Li. **Convergence Analysis of Markov Chain Monte Carlo Linear Solvers using Ulam-von Neumann Algorithm**. SIAM Journal on Numerical Analysis (SINUM), 51(4): 2107-2122, 2013

- **Book Chapters**

  [1] Hao Ji and Yaohang Li. **Monte Carlo Methods and their Applications in Big Data Analysis**. Mathematical Problems in Data Science, Springer, 2015, (to appear)

- **Conference Papers**

  [1] Hao Ji, Yaohang Li, and Seth Weinberg. **Calcium Ion Fluctuations Alter Channel Gating in a Stochastic Luminal Calcium Release Site Model**. The Eleventh International Symposium on Bioinformatics Research and Applications (ISBRA), Norfolk, Virginia, 2015.

  [2] Hao Ji, Erich O'saben, Adam Boudion, and Yaohang Li. **March Madness Prediction: A Matrix Completion Approach**. Proceedings of Modeling, Simulation, and Visualization Student Capstone Conference, Suffolk, VA, 2015. (Best Paper Award)

  [3] Hao Ji, Masha Sosonkina, and Yaohang Li. **An Implementation of Block Conjugate Gradient Algorithm on CPU-GPU Processors**. The First International Workshop on Hardware-Software Co-design for High Performance Computing (Co-HPC), in conjunction with the SC'14 conference. New Orleans, LA, 2014.

  [4] Hao Ji and Yaohang Li. **GPU Accelerated Randomized Singular Value Decomposition and Its Application in Image Compression**. Proceedings of Modeling, Simulation, and Visualization Student Capstone Conference, Suffolk, VA, 2014. (Best Paper Award)

  [5] Hao Ji and Yaohang Li. **Reusing Random Walks in Monte Carlo Methods for Linear Systems**. Proceedings of the International Conference on Computational Science, (ICCS2012), Omaha, 2012.

  [6] Xiaoping Liu, Lin Du, Hao Ji, and Hui Shi. **The Visualization of Constraints Conflict in Collaborative Design**. The Thirteenth International Conference on Computer Supported Cooperative Work in Design, (CSCWD 2009), 32-37. IEEE, 2009.

- **Posters**

[1] Hao Ji, Thomas Goldsmith, and Yaohang Li. **Exploring the Dominant Eigenvectors of Big Matrix Using Sampling Based Optimization**, The Fourteenth Annual Tidewater Student Research Poster Session at Christopher Newport University. November, 2012.

Honors and Awards

- Travel Grant for Attending ISBRA 2015. *2015*
- Gene Newman Award, Best Presentation Award, and Best Paper Award, Modeling, Simulation, and Visualization Student Capstone Conference (MSVESCC) 2015, Suffolk, VA. *2015*
- Modeling and Simulation Research Fellowship, ODU *2014-2015*
- Graduate Student Travel Award, ODU *2014*
- Travel Grant for Attending the Extreme Science and Engineering Discovery Environment (XSEDE) Conference 2014, Atlanta, GA *2014*
- Gene Newman Award and Best Paper Award, MSVESCC 2014, Suffolk, VA. *2014*
- Modeling and Simulation Certificate in Computing and Informatics, ODU *May 11, 2013*
- Modeling and Simulation Research Fellowship, ODU *2013-2014*
- Graduate Teacher Assistant Instructor Institute Certificate, College of Sciences, ODU *Aug. 24, 2012*
- Patent: Automatic Mechanical Part Model Simplification and Evaluation Method Based on Steady State Thermal Analysis, China, ZL200910185331.6. (Co-inventor) *May 9, 2012*
- Outstanding Graduate of Colleges and Universities in Anhui Province, China *2010*
- Outstanding Graduate of Hefei University of Technology, China *2010*
- Software: Analysis and Visualization Platform Software for Nonlinear System (NLSAV), China, 2010SR034948. (Main Developer) *July 15, 2010*
- The Third Prize, The Third National Computer Simulation Competition, China *2009*
- The Third Prize, The Fourth Mathematical Contest in Modeling for Graduate Students, China *2008*
- The Third Prize, The Third Mathematical Contest in Modeling for Graduate Students, China *2007*

Computer Skills

- Programming Skill: C/C++, Java, CUDA, Bash, HTML, Javascript, and Perl.
- Software/Libraries: BLAS/LAPACK, MKL, MPI, OpenMP, Matlab, WebGL, OpenGL, and Node.js.

Affiliations

- SIAM, ACM, and IEEE