

# Ichitaro Yamazaki

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## Research Interests

- \* Numerical linear algebra
- \* Scientific computing
- \* High-performance computing

## Education

*Sep. 2002–July 2008*

Ph.D. in Computer Science, UC Davis (3.88 GPA)

*Sep. 1997–June 2000*

The Undergraduate School of Mathematics, UCLA (3.64 GPA)

B.S. in Mathematics of Computation with specialization in Business and Administration

*Sep. 1995 – June 1997*

Foothill college, California (3.73 GPA)

## Research Experience

\* *Summer 2008–present*

Postdoctoral researcher, Computer Research Division, Lawrence Berkeley National Lab.

\* *Summer 2004–Summer 2008*

Graduate student researcher, Computer Science Department, UC Davis

\* *Fall 2006–Summer 2007*

Scientific computing software developer, High Performance Computing Research Department, Lawrence Berkeley National Laboratory

## Teaching Experience

\* *Fall 2004*

Teaching Assistant for ECS130, Scientific Computing, UC Davis

## Publications and Talks

### Journal Publications

- \* **I. Yamazaki**, V. Natarajan, Z. Bai, and B. Hamann. “*Segmenting Point-Sampled Surfaces*,” submitted to the Visual Computer, An International Journal of Computer Graphics.
- \* **I. Yamazaki**, Z. Bai, H. Simon, L.-W. Wang, and K. Wu. “*Adaptive Thick-Restart Lanczos Method and Its Application to Electronic Structure Calculation*,” submitted to ACM Transaction on Mathematical Software.

### Conference Proceedings

- \* Z. Bai, W. Chen, R. Scalettar, and **I. Yamazaki**. “*Robust and Efficient Numerical Linear Algebra Solvers and Applications in Quantum Mechanical Simulations*.” In *Proceedings of the 4th International Congress of Chinese Mathematician (ICCM)*, Edited by Lizhan Ji, Kefeng Liu, Lo Yang, Shing-Tung Yau, Vol.III, pages 253--268, Higher Education Press, Hangzhou, China. Dec. 2007
- \* S. Chatterji, **I. Yamazaki**, Z. Bai, and J. Eisen. “*CompostBin: A DNA Composition-Based Algorithm for Binning Environmental Shotgun Reads*.” In *proceedings of International Conference on Research in Computational Molecular Biology (RECOMB)*, Singapore, March. 2008
- \* **I. Yamazaki**, V. Natarajan, Z. Bai, and B. Hamann. “*Segmenting Point Sets*.” In *Proceedings of IEEE International Conference on Shape Modeling and Applications (SMI)*, pages 4-13. Matsushima, Japan, June 2006 (37% acceptance rate)

## Conference Talks

- \* **I. Yamazaki**, X. S. Li, and E. Ng. “*Preconditioning Techniques for a Hybrid Method to Solve Highly-Indefinite Linear Systems.*” SIAM Conference on Computational Science and Engineering, Miami, Florida, 2009.
- \* **I. Yamazaki**, Z. Bai, R. Scalettar, and W. Chen, “*Multi-Length Scale Preconditioned Iterative Solver for Parallel Hybrid Quantum Monte Carlo Simulation.*” SIAM Conference on Parallel Processing for Scientific Computing, Atlanta, GA, March 2008
- \* **I. Yamazaki**, W. Chen, Z. Bai, and R. Scalettar. “*Robust Preconditioning Techniques for Quantum Monte Carlo Simulation.*” *International Conference on Preconditioning Techniques for Large Sparse Matrix Problems in Scientific and Industrial Applications*, Atlanta, GA, May 2005

## Research Monograph

- \* Z. Bai, W. Chen, R. Scalettar, and **I. Yamazaki**. “*Lecture Notes on Advances of Numerical Methods for Quantum Monte Carlo Simulations of the Hubbard Model.*” UCD department of computer science technical report, CSE-2007-36, 2007 (119 pages)

## Technical Reports

- \* **I. Yamazaki**, H. Simon, and K. Wu. “*nu-TRLan User Guide Version 1.0: A High-Performance Software Package for Large-Scale Hermitian Eigenvalue Problems.*” Lawrence Berkeley National Laboratory. Paper LBNL-1288E.
- \* **I. Yamazaki**, Z. Bai, H. Simon, and K. Wu. “*Adaptive Projection Subspace Dimension for the Thick-Restart Lanczos Method.*” Lawrence Berkeley National Laboratory. Paper LBNL-1059E.
- \* Z. Bai, W. Chen, R. Scalettar, and **I. Yamazaki**. “*Lecture Notes on Advances of Numerical Methods for Multi-Scale Quantum Simulations.*” Fudan University summer session lecture note. July 2006.
- \* **I. Yamazaki**, V. Natarajan, Z. Bai, and B. Hamman. “*Segmentation of Point Sets.*” *In Proceedings of UC Davis Student Workshop on Computing. Technical Report, CSE-2005-22, pages 20-21. Oct. 2005.*
- \* **I. Yamazaki**, Z. Bai, and R. Scalettar. “*Preconditioning Techniques for Multi-Length-Scale Linear Systems from Quantum Simulation in High Energy Physics.*” *In Proceedings of UC Davis Student Workshop on Computing. Technical Report, CSE-2004-30, pages 20-21. Oct. 2004*

## Other Talks

- \* **I. Yamazaki**, X. S. Li, and E. Ng. “*Hybrid method for solving highly-indefinite linear systems of equations.*” France-Berkely Fund meeting, CERFACS, Toulouse, France, Dec. 17, 2009.
- \* **I. Yamazaki**, X. S. Li, and E. Ng. “*TOPS activities for EM simulations.*” SciDac-2 ComPASS collaboration meeting, UCLA, Dec. 3, 2009.
- \* **I. Yamazaki**, Z. Bai, R. Scalettar, W. Chen. “*Algorithmic Challenges in Quantum Simulation of Strongly-Correlated Materials.*” CScADS workshop, Snowbird, UT, July 2007
- \* S. Chatterji, **I. Yamazaki**, Z. Bai, and J. Eisen. “*CompostBin: A DNA Composition-Based Algorithm for Binning Environmental Shotgun Reads.*” Technical report, arXiv.org:0708.3098, 2007
- \* **I. Yamazaki**, W. Chen, Z. Bai, and R. Scalettar. “*Robust and Efficient Preconditioned Iterative Solvers for Multi-Scale Quantum Simulation.*” *Bay Area Scientific Computing Day*, Poster session, Livermore, Ca, May 2006

## Activities and Services

Adviser for undergraduate research program, CS department, UC Davis  
Reviewer for ACM Transactions on Mathematical Software  
Reviewer for International Journal of High Performance Computing Applications  
Reviewer for Parallel Processing Letters

## Honors and Awards

College Honors from the School of Letters and Science at UCLA, June 2000

Departmental Honors from the Mathematics Department at UCLA, June 2000

## Work Experience

*Feb. 2006–Sep. 2006* Visual stimuli design at Mind and Brain Center of UC Davis

Create and present visual stimuli for an experiment which explores visual motion perception in adolescents with autism using MATLAB.

*Sep. 2001–Sep. 2002* Web Software Engineer at Just Skill Inc.

Designed and developed entire E-Learning system, using JSP/JavaBean/SQL/HTML/Java Script.

*Jun. 2000–Sep. 2001* Windows GUI Software Engineer at ITU Research

Developed application programs to analyze the human factor of a 3D input device, ErgoPoint 3D, using C/C++, Win32/MFC, DirectX/DirectDraw, and Java/Java3D.

*Mar. 2000–Jun. 2000* Network Software Programming Intern at TwinSun

Implemented and maintained a web system using Perl and CGI.

*Feb. 1999–Jun. 1999* Network Programming Intern at CHAIN

Designed and maintained SQL and programming of client-server GUI application using Power Builder, Visual Basic, and C/C++.

## Computer Skills

**Programming skills:** C/C++, Fortran, Java, MATLAB, LISP/Prolog, Perl/CGI

**Operating systems:** Windows95/98/2000/XP, UNIX/LINUX/Solaris

**Applications:** LATEX, Microsoft Office (Word, Power Point, Excel)

## Certificate Programs

Windows System and Application Programming

Java Object Oriented Programming

## Language Skills

Japanese, English

## Academic references

Zhaojun Bai, Department of Computer Science at UC Davis.

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Richard T. Scalettar, Department of Physics at UC Davis.

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Kensheng Wu, Computational Research Division, Lawrence Berkeley National Lab,  
Scientific Data Management Group.

Phone: (510)486-6609. Email: [kwu@lbl.gov](mailto:kwu@lbl.gov).