

Eric LaMar

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SUMMARY OF QUALIFICATIONS

- Research scientist at Lawrence Livermore National laboratory
- Collaborated with NASA, Pittsburgh Supercomputer Center
- Software developer experienced in research and applied development of scientific and medical visualization algorithms with an established track record of peer-reviewed, published papers.

AREAS OF EXPERTISE

Languages: C, C++, HTML, Assembly
Operating Systems: Windows, Mac OS X, Linux
Development Software: Microsoft Visual Studio 2010, Mac Xcode, git/CVS/subversion, gdb/dbx, vTune, Windows profiler, ClearCase/ClearQuest
Libraries/APIs: OpenGL, VTK, Qt, Cg/GLSL, Posix shared memory and threads, MPI, D3
Visualization Software: Terascale Browser, Mesh TV, ViSIT, Volumizer (SGI), Vitrea (tm)

PROFESSIONAL EXPERIENCE

SOFTWARE ENGINEER 2015-2016

ANATOMAGE, SAN JOSE, California

- Developed application for dental visualization and workflow management
- Converted application code from MFC to Qt, Windows to Mac

GRAPHICS SIMULATION ENGINEER 2013-2014

INTEL, FOLSOM, California

- Developed application for simulating in-processor graphics hardware
- Diagnosed and debugged tests scripts for graphics hardware simulator

SOFTWARE DEVELOPER IV 2010-2013

GENERAL ATOMICS, SAN DIEGO, California

- Developed mini graphics applications for displaying signal data.
- Developed and maintained multi-panel, site-security visualization software.
- Investigated and developed algorithms for license plate recognition.
- Developed motion tracking algorithm for multi-panel visualization system
- Translated code for gasoline-from-algae simulation system.

CONSULTANT 2009-2010

VOLUME INFORMATICS, Davis, California

- Developed algorithm for advanced space leaping for volume-based surface visualization.
- Developed algorithm for volume-based visualization of free-form tessellated volumes.

SENIOR SCIENTIST-RESEARCH AND DEVELOPMENT 2006-2008

VITAL IMAGES, Minnetonka, Minnesota

- Significantly reduced image artifacts by analyzing, charactering, and solving problem with the rendering software.
- Redesigned the internal instrumentation of the rendering software, reaching 100% coverage.

- Designed and programmed new capability in to the rendering software.
- Studied and made recommendations on optimal utilization of graphics hardware.

SENIOR SCIENTIST-COMPUTING AND VISUALIZATION ENVIRONMENTS

2004-2006

INSTITUTE FOR SCIENTIFIC RESEARCH, Fairmont, West Virginia

- Principle Investigator for CAVE, a \$1M/yr funding stream. Establish research priorities and goals for five-member team
- Authored and received a National Science Foundation grant for \$482K to build several GPU-based visualization clusters
- Reduced data storage requirements by 95% for the NASA MODIS derived product service (collaborating with NASA and others)
- Principle Investigator to develop parallel, GPU-based visualization and simulation codes.
- Co-PI on the Deja-Vu software to allow check-pointing of grid-based codes.
- Leading effort to develop suite best-of-practice mini (demonstration) parallel applications for WVCCG
- Principle Investigator for the West Virginia Cluster Computing Grid project to introduce grid/parallel computing to West Virginia,
- Liaison to (SC)², a West Virginia & Pennsylvania regional effort to develop high-performance computing expertise

RESEARCH SCIENTIST – CENTER FOR APPLIED SCIENTIFIC COMPUTING

2001-2003

LAWRENCE LIVERMORE NATIONAL LABORATORY, Livermore, California

- Decreased data loaded by up to 90% when visualizing time-varying data by introducing an error-based temporal caching scheme
- Reduced data rendered by 75% for scientific visualization by using image caching on a distributed-memory parallel rendering cluster
- Decreased image error by 50% in volume visualization applications by characterizing error types and developing error-mitigation techniques
- Saved six months of development effort by correcting errors and increasing functionality in visualization system software and training scientists in advanced features of this visualization system
- Consulted on deliverables and research priorities on a statement of work for a tri-lab-funded contract with Kitware concerning the introduction of adaptive mesh refinement techniques into VTK
- Facilitated exchange of information and data between home research department and Stellar Evolution research project

POSTDOCTORAL RESEARCHER

2001

UNIVERSITY OF CALIFORNIA AT DAVIS, Davis, California

- Improved user exploration of large data sets using detail in-context methods and graphics-hardware accelerated magnification lens
- Collaborated with researchers at University of California at Irvine and University of Kaiserslautern, Germany

Education

PhD-Computer Science, <u>University of California-Davis</u> Davis, California	2000
MS-Computer Science, <u>University of California-Davis</u> , Davis, California	1998
BS-Computer Science, <u>California State University</u> , Sacramento, California	1993

PUBLICATIONS

Conference Publications (Peer-reviewed)

1. *Adaptive Border Sampling for Hardware Texture-based Volume Visualization*
E.C. LaMar; SPIE2006, January 2006
2. *Multi-Level Image Caching for Scientific Visualization*
E.C. LaMar; SPIE2004, January 2004
3. *On Issues of Precision For Hardware Texture-based Volume Visualization*
E.C. LaMar; SPIE2004, January 2004
4. *Error-based Temporal Cache and Reuse*
C. Nuber, E.C. LaMar, K.I Joy, and B. Hamann; Geometric Techniques for Scientific Visualization, 2003
5. *Multi-Level Image Caching for Scientific Visualization*
E.C. LaMar and V. Pascucci; IEEE Parallel Graphics and Visualization Symposium, November 2003
6. *A distributed-parallel multi-layered image cache for immersive exploration of scientific data*
E.C. LaMar and Falko Kuester, In Proceedings of the NSF Lake Tahoe Workshop on Collaborative Virtual Reality and Visualization, November 2003
7. *Using Graphs for Fast Error Term Approximation of Time-varying Datasets*
C. Nuber, E.C. LaMar, V. Pascucci, B. Hamann and K. I. Joy; Data Visualization 2003 (Proceedings of VisSym '03), May 2003
8. *Alpha dithering to correct low-opacity 8 bit compositing errors*, P.L. Williams, R.J. Frank, and E.C. LaMar.
Lawrence Livermore National Laboratory Technical Report UCRL-ID-153185, March 2003.
9. *Approximation of Time-varying Multiresolution Data Using Error-based Temporal-spatial Reuse*
C. Nuber, E.C. LaMar, B. Hamann and K.I. Joy; SPIE2003, January 2003
10. *A Magnification Lens for Volume Visualization*
E.C. LaMar, B. Hamann, and K.I. Joy; Pacific Graphics 2001, October 2001
11. *Multiresolution Techniques for Interactive Texturing-based Rendering of Arbitrarily Oriented Cutting-Planes*
E.C. LaMar, M.A. Duchaineau, B. Hamann, and K.I. Joy; Data Visualization 2000 (Proceedings of VisSym '00), May 2000
12. *Multiresolution Techniques for Interactive Hardware Texturing-based Volume Visualization*
E.C. LaMar, B. Hamann, and K.I. Joy; SPIE2000, January 2000
13. *Multiresolution Techniques for Interactive Hardware Texturing-based Volume Visualization*
E.C. LaMar, K.I. Joy, and B. Hamann; IEEE Visualization, October 1999

Articles and Books

1. *Efficient Error Calculation for Multiresolution Volume Visualization*
E.C. LaMar, B. Hamann, and K.I. Joy; Hierarchical Approximation and Geometrical Methods for Scientific Visualization, 2003

Journals

1. *High-quality Rendering of Smooth Isosurfaces*
E.C. LaMar, B. Hamann, and K.I. Joy, In The Journal of Visualization and Computer Animation, April—June 1999

Presentations

Multiresolution Volume Visualization

Visiting Researcher – Invited talk, Kaiserslautern, Germany, April 2000.