

NEOPHYTOS NEOPHYTOU

Campus Address:
Center for Visual Computing
Computer Science Department
Stony Brook University
Stony Brook, NY 11794-4400
(631) 632-8427

Home Address:
1 Anne Rd.
Centereach NY 11720
nneophyt@cs.sunysb.edu
<http://fytos.com>
(631) 835-5335

EDUCATION

Ph.D. in Computer Science, *Stony Brook University, Stony Brook, NY, September 2006*
Research Area: Computer Graphics Systems, Visualization, GPU Accelerated Rendering
Dissertation: “*A Generalized Framework for Interactive Volumetric Point-Based Rendering*”
Advisor: *Klaus Mueller*

B.Sc., Computer Science, *University of Cyprus, Nicosia, Cyprus, June 1997*
Diploma Project: “*Parallel and Distributed debugging of MPI parallel programs using Web authoring tools and Java*” (Design and implementation of a parallel debugger in Java).

RESEARCH AREAS OF INTEREST

Computer Graphics Systems with focus on Visualization and Real-time Rendering, Medical Imaging, Parallel and Distributed Computing, and Human-Computer Interaction: 3D User-Interfaces.

RESEARCH EXPERIENCE

Post-Doctoral Research Associate, *Center for Visual Computing, SB U., NY, Sept. 2006- Present*

- Applies current research to Medical Imaging applications and collaborates with the GPU-assisted tomography research group to achieve a commercial quality Medical Imaging System.
- Leading the CAVE virtual environment installation group for Software infrastructure development.

Research Assistant, *Center for Visual Computing, Stony Brook University, NY, Sept. 2002- Aug. 2006*

- Conducted novel research in Computer Graphics and Scientific Visualization.
- Engineered a GPU-based visualization system for structured and unstructured point based scientific data using generalized elliptical point primitives.
- Utilized alternative grids to achieve up to 50% lossless compression on time-varying volumes.
- Designed GPU-based Photoshop plug-ins (Color-space CAD) for real-time 3D gamut manipulation.
- Lead the SIMD-aware GPU ray-casting project team to achieve up to 800% speedups.

Research Assistant, *Dept. of Applied Math and Statistics, Stony Brook U., NY, Sept. 2004-May 2005*

- Developed several modules of Bio-Informatics Software (ProteoExplorer), including a GPU-aware spectrum visualization system for the analysis of high resolution proteomic data.
- Implemented ViStaMS, a DNA statistical analysis system for SAGE and Micro-Array datasets.

Research Assistant, *Experimental Computer Systems Lab, Stony Brook U., NY, June 1999-Aug. 2002*

- Conducted novel research on Graphics Architectures.
- Implemented GERM, a Graphics Engine Resource Manager for Linux based graphics systems.
- Developed Sunder, a distributed rendering system for large datasets using a Myrinet cluster.

Research Associate, *Meduse E.U. Project, University of Cyprus, June 1997-Aug. 1998*

- Implemented part of the distributed version of the ETA/NMC weather forecasting System.
- Developed Net-dbx, a Java-based web-enabled Debugger for MPI based distributed systems.
- Designed and implemented MPI-FT, a fault tolerance framework for MPI.

TEACHING EXPERIENCE

- Guest lecturer**, Computer Science Dept., Stony Brook University, NY, Sept. 2003-Present
“Introduction to Medical Imaging”, “Introduction to Visualization”, “Advanced Visualization”
(graduate course). Replaced Prof. Mueller for several lectures in each class.
- Teaching Assistant**, Computer Science Dept., Stony Brook University, NY, Sept. 1998-May 1999
CSE 230 “Introduction to C and Unix”, graduate class CSE 528 “Fundamentals of Window
Systems and Event Driven Programming”.
- Teaching Assistant**, Computer Science Department, University of Cyprus, Sept. 1997-May 1998
Undergraduate classes CS 233: “Object Oriented Programming”, CS 321: “Computer Architecture”
and CS 421: “Parallel Processing: Architectures and Languages”.
-

SUMMARY OF RESEARCH INTERESTS AND ACCOMPLISHMENTS

My current research focuses on Computer Graphics, and specifically Scientific and Medical Visualization. After resolving different aspects of representing and rendering regular and irregular point-based datasets during my dissertation research, I have been investigating real-time rendering and CT reconstruction using modern GPU hardware. I have also developed a novel interaction paradigm for real-time color gamut manipulation targeted to color professionals and artists. My past research spans to Parallel and Distributed Architectures and the development of programming tools targeted to these systems.

PEER REVIEWED JOURNAL PUBLICATIONS

1. W. Hong, N. Neophytou, K. Mueller, and A. Kaufman, *Constructing 3D Elliptical Gaussians for Irregular Data*, to appear in: Moeller, T., Hamann, B. and Russell, R.D., eds., *Mathematical Foundations of Scientific Visualization, Computer Graphics, and Massive Data Exploration*, Springer-Verlag, Heidelberg, Germany.
 2. N. Neophytou, P. Evtipidou: *Net-dbx: A Web-Based Debugger of MPI Programs Over Low-Bandwidth Lines*. *IEEE Transactions on Parallel and Distributed Systems*. 12(9): 986-995 (2001)
 3. S. Louca, N. Neophytou, A. Lachanas, P. Evtipidou: *MPI-FT: Portable Fault Tolerance Scheme for MPI*. *Parallel Processing Letters* 10(4): 371-382 (2000)
-

PEER REVIEWED CONFERENCE PUBLICATIONS

4. N. Neophytou, F. Xu and K. Mueller, *Hardware acceleration vs. algorithmic acceleration: can GPU-based processing beat complexity optimization for CT?*, to appear in *SPIE Symposium on Medical Imaging*, San Diego, February 2007.
5. N. Neophytou and K. Mueller, *Color-space CAD*, in *Sketches & Applications Catalog SIGGRAPH 2006*, Boston. ACM, 2006.
6. W. Leung, N. Neophytou and K. Mueller, *SIMD-Aware Ray-Casting*, proceedings of the *International Workshop on Volume Graphics*, Boston, MA, USA July 2006
7. N. Neophytou, K. Mueller, K. T. McDonnell, W. Hong, X. Guan, H. Qin and A. Kaufman, *GPU-Accelerated Volume Splatting With Elliptical RBFs*, *Joint Eurographics - IEEE TCVG Symposium on Visualization 2006*, Lisbon, Portugal, May, 2006.
8. N. Neophytou and K. Mueller, *GPU Accelerated Image Aligned Splatting*, proceedings of the *International Workshop on Volume Graphics*, Stony Brook, NY, USA June 2005

PEER REVIEWED CONFERENCE PUBLICATIONS (CONTINUED)

9. Bitter, N. Neophytou, K. Mueller, and A. Kaufman, *SQUEEZE: Numerical-precision-optimized volume rendering*, SIGGRAPH/Eurographics Workshop on Graphics Hardware 2004, Grenoble, August, 2004
10. P. Neophytou, N. Neophytou, P. Evripidou. *Net-dbx-g: A Web-based Debugger of MPI Programs Over Grid Environments*, IEEE Cluster Computing and the Grid, 2004 International Symposium, April 2004, Pages: 35- 42.
11. P. Neophytou, N. Neophytou, P. Evripidou. *Debugging MPI Grid applications using Net-dbx*, European Across Grids Conference 2004: Pages: 139-148.
12. N. Neophytou and K. Mueller, *Post-convolved Splatting*, Joint Eurographics - IEEE TCVG Symposium on Visualization 2003, Grenoble, France, May, 2003
13. N. Neophytou and K. Mueller, *Space-time points: Splatting in 4D*, Symposium on Volume Visualization and Graphics 2002, Boston, October 2002
14. N. Neophytou, P. Evripidou: *Net-dbx: A Java Powered Tool for Interactive Debugging of MPI Programs Across the Internet*. Proceedings of EuroPar'98 (Southampton, United Kingdom), Lecture Notes in Computer Science 1470, 181-189, September, 1998

INVITED TALKS AND CONFERENCE PRESENTATIONS

- “SC829 MIC-GPU: High-Performance Computing for Medical Imaging on Programmable Graphics Hardware (GPU)”*. Advanced Course instructor for SPIE Medical Imaging, San Diego, CA, February 2007.
- “Hardware acceleration vs. algorithmic acceleration: can GPU-based processing beat complexity optimization for CT?”* Presentation at SPIE Medical Imaging, San Diego, CA, February 2007.
- “Color-Space CAD”*, Presentation at SIGGRAPH 2006 Sketches and Applications Session, Boston, August 2006.
- “Building a Generalized Framework for Interactive Volumetric Point-Based Rendering”*, invited talk at Stevens Institute of Technology, December 2005.
- “GPU Accelerated Image Aligned Splatting”*, Presentation at the International Workshop on Volume Graphics, Stony Brook, NY, June 2005
- “Post-convolved Splatting”*, Presentation at the Joint Eurographics - IEEE TCVG Symposium on Visualization 2003, Grenoble, France, May 2003.
- “Space-time points: Splatting in 4D”*, Presentation at the Symposium on Volume Visualization and Graphics 2002, Boston, October 2002.

PROFESSIONAL SERVICES

- Reviewer for IEEE Visualization conference
- Reviewer for the Workshop on Volume Visualization
- Reviewer for the Visual Computer
- Reviewer for VisSym - Joint EUROGRAPHICS - IEEE TCVG Symposium on Visualization
- Student volunteer for Volume Graphics 2005, Computer Graphics International 2005
- Elected student representative in the Computer Science Department Committee, 1995-1998

HONORS

- Recipient, Best Paper Award, Graduate Research Conference, Stony Brook U., April 2006
 - Recipient, Renaissance Fellowship, Computer Science Department, Stony Brook U., 1999-2003
 - Recipient, Outstanding Student Award, University of Cyprus, June 1997.
-

MEMBERSHIPS

IEEE, ACM SIGGRAPH

REFERENCES

Klaus Mueller, Associate Professor,
Computer Science Department
2428 Computer Science
Stony Brook University
Stony Brook, NY 11794-4400
Tel: (631) 632-1524
mueller@cs.sunysb.edu,
<http://www.cs.stonybrook.edu/~mueller>

Arie E. Kaufman
Distinguished Professor and Chairman,
Computer Science Department
2431 Computer Science
Stony Brook University
Stony Brook, NY 11794-4400
Tel: (631) 632-8428
ari@cs.sunysb.edu
<http://www.cs.sunysb.edu/~ari/>

H. Quynh Dinh, Assistant Professor,
Department of Computer Science
Stevens Institute of Technology
Castle Point on Hudson
Hoboken, NJ 07030
Tel: (201) 216-5321
Fax: (201) 216-8249
quynh@cs.stevens.edu
<http://guinness.cs.stevens.edu/~quynh/>

Paraskevas Evripidou, Professor, Dept. Chair,
Department of Computer Science
University of Cyprus
75 Kallipoleos Str., P.O. Box 537
CY-1678 Nicosia, Cyprus
Tel: + 357-22-892696, + 357-22-892726
Fax: + 357-22-892701
skevos@ucy.ac.cy,
<http://www.cs.ucy.ac.cy/~skevos>