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Degrees

- 2004 Ph.D. in Computer Science, The University of North Carolina at Chapel Hill
- 1997 M.S. in Computer Science, The University of North Carolina at Chapel Hill
- 1984 B.A. in Mathematics, Kalamazoo College

Experience

- August 2007 – present Visiting Lecturer in Computer Science, UMN, Morris (UMM)
Division of Science and Mathematics
- August 2002 – August 2007 Assistant Professor at Allegheny College
Department of Computer Science
- January 1993 – May 2004 Teaching and Research Assistant at UNC-Chapel Hill
Dept. of Computer Science, Dept. of Radiation Oncology

Grants

- 2003 – 2006 “Teaching Computing in the 21st Century.” A *Buhl Foundation* grant to the Allegheny Department of Computer Science of \$50,000 to support new pedagogy and software development for interactive teaching. (Dr. Robert Cupper, PI)
- 1998 – 1999 “M-reps: Deformable Solid Modeling for Computer Graphics and Simulation using Medially-Defined Multifigural Objects.” *NSF SGER (Special Grant for Exploratory Research)*, \$44,000 to support thesis research. (Dr. Stephen Pizer, PI)

Honors and Awards

- 1997 – 1998 Link Foundation Fellowship to support thesis research on deformable medial models
- 1980 – 1984 F.W. & Elsie Heyl Scholarship, four-year math/science scholarship

Professional Societies

- ACM SIGGRAPH (Association of Computing Machinery, Special Interest Group on Graphics)
- ACM SIGCSE (Special Interest Group on Computer Science Education)
- IEEE Computer Society
- IEEE Engineering in Medicine and Biology
- SIAM (Society for Industrial and Applied Mathematics)

Publications

- Andrew Thall. Extended-precision floating-point numbers for GPU computation. Poster at ACM SIGGRAPH Annual Conference on Computer Graphics (SIGGRAPH 06), Boston, Mass., July 30–August 3, 2006.
- Matthew J. Rummel, Gregory M. Kapfhammer, and Andrew Thall. Towards the prioritization of regression test suites with data flow information. In *SAC '05: Proceedings of the 2005 ACM Symposium on Applied Computing*, pages 1499–1504, New York, NY, USA, 2005. ACM Press.

Publications (continued)

- Stephen M. Pizer, P. Thomas Fletcher, Sarang Joshi, A. Graham Gash, Joshua Stough, Andrew Thall, Gregg Tracton, and Edward L. Chaney. A method and software for segmentation of anatomic object ensembles by deformable m-reps. *Medical Physics*, 32(5):1335–1345, May 2005.
- Joseph Zumpella and Andrew Thall. Texture synthesis using reaction-diffusion systems and genetic evolution. Poster at ACM SIGGRAPH Annual Conference on Computer Graphics (SIGGRAPH 04), Los Angeles, August 2004.
- Andrew L. Thall. *Deformable Solid Modeling via Medial Sampling and Displacement Subdivision*. PhD thesis, The University of North Carolina at Chapel Hill, March 2004.
- Qiong Han, Conglin Lu, Shawn Liu, Stephen M. Pizer, Sarang C. Joshi, and Andrew Thall. Representing multi-figure anatomical objects. In *IEEE International Symposium on Biomedical Imaging (ISBI)*, pages 1251–1254, 2004.
- Paul A. Yushkevich, P. Thomas Fletcher, Sarang C. Joshi, Andrew Thall, and Stephen M. Pizer. Continuous medial representations for geometric object modeling in 2D and 3D. *Image Vision Comput.*, 21(1):17–27, January 2003. Special issue on Generative-Model-Based Vision (GMBV2002).
- Stephen M. Pizer, P. Thomas Fletcher, Andrew Thall, Martin Styner, Guido Gerig, and Sarang C. Joshi. Object models in multiscale intrinsic coordinates via m-reps. *Image Vision Comput.*, 21(1):5–15, January 2003. Special issue on Generative-Model-Based Vision (GMBV2002).
- Stephen M. Pizer, P. Thomas Fletcher, Sarang Joshi, Andrew Thall, James Z. Chen, Yonatan Fridman, Daniel S. Fritsch, A. Graham Gash, John M. Glotzer, Michael R. Jiroutek, Conglin Lu, Keith E. Muller, Gregg Tracton, Paul Yushkevich, and Edward L. Chaney. Deformable m-reps for 3D medical image segmentation. *Int. J. Comput. Vision*, 55(2-3):85–106, 2003.
- Sarang C. Joshi, Stephen M. Pizer, P. Thomas Fletcher, Paul A. Yushkevich, Andrew Thall, and J. S. Marron. Multi-scale deformable model segmentation and statistical shape analysis using medial descriptions. *IEEE Transactions on Medical Imaging (TMI)*, 21(5):538–550, May 2002.
- Sarang C. Joshi, Stephen M. Pizer, P. Thomas Fletcher, Andrew Thall, and Gregg Tracton. Multi-scale 3-D deformable model segmentation based on medial description. In *IPMI '01: Proceedings of the 17th International Conference on Information Processing in Medical Imaging*, pages 64–77, London, UK, 2001. Springer-Verlag.
- D. Fritsch, E. Chaney, A. Boxwala, M. McAuliffe, S. Raghavan, A. Thall, and J. Earnhart. Core-based portal image registration for automatic radiotherapy treatment verification. *International Journal of Radiation, Oncology, Biology, Physics; Special Issue on Conformal Therapy*, 5(33):1287–1300, 1995.
- Andrew Thall. Fast C^2 interpolating subdivision surfaces using iterative inversion of stationary subdivision rules. Technical Report TR02-001, Chapel Hill, NC, USA, 2000.
- P. Thomas Fletcher, Yoni Fridman, Andrew Thall, and Daniel Fritsch. SCAMP: A solid modeling program using slice-constrained medial primitives for modeling 3D anatomical objects. Technical Report TR99-035, Chapel Hill, NC, USA, 1999.

Publications (under submission)

Andrew Thall. Implementing a fast Lucas-Lehmer test on programmable graphics hardware. Under submission; Technical report available. Fall 2007.

Andrew Thall. Extended-precision floating-point numbers for GPU computation. Under submission; Technical report available. Fall 2007.

Book Chapters

S. Pizer, Q. Han, S. Joshi, P. T. Fletcher, P. A. Yushkevich, and A. Thall, "Synthesis, Deformation, and Statistics of 3D Objects via M-Reps," in *Medial Representations: Mathematics, Algorithms and Applications*, K. Siddiqi and S. Pizer, Eds., Kluwer Academic Publishers, 2006, Ch. 8.

Patents

S. Joshi, E. Chaney, S. Pizer, P. T. Fletcher, A. Thall. Methods and Systems for Modeling Objects and Object Image Data using Medial Atoms. U.S. Patent 7200251, April 3, 2007.

Talks Presented

"Extended-Precision Floating-Point Numbers for GPU Computation" (2006). Invited talk for the Advanced Visual Computing Group, Intel Research, Cornell Oaks Campus, October 16, 2006.

"An Infrastructure and Pedagogy to Support Interactive Teaching of Computer Science" (2005). A. Thall, B. Cupper. Invited talk at the *Liberal Arts Computer Science Consortium Annual Meeting (LACS'05)*. Rochester Institute of Technology.

"Computer Graphics and Animation!" (2005). A learning event for 3–6 graders as part of *Super Science Saturday!* at Meadville First District Elementary School.

"Doing Research in an Undergraduate Setting" (March 21, 2005). Presentation at Image Lunch, UNC–Chapel Hill, Dept. of Computer Science.

"Texture Synthesis Using Reaction-Diffusion Systems and Genetic Evolution" (2004). Poster session with Joseph Zumpella (Senior Thesis), *SIGGRAPH, 31st International Conference on Computer Graphics and Interactive Techniques*, Los Angeles.

"Doing What You Like: a Personal Perspective on Graduate School and the Ph.D." (Feb. 2004). Presentation for the ACM Student Chapter at Allegheny College.

"Fast Interpolating Subdivision Surfaces using Iterative Inversion of Subdivision Rules" (February 2003). Presentation to MIDAG (Medical Image Display and Analysis Group) at UNC–Chapel Hill.

"M-reps: Medial Geometry Primitives for Image-Analysis and Computer Graphics" (2002). Invited talk, Allegheny College.

"Shapemonger: Mathematics Visualization and Software Design" (2001). Invited talk, Kalamazoo College, Department of Mathematics and Computer Science.

Teaching Summary

Courses taught at UMN-Morris, August 2007 – May 2008 (pending):

CSci 1001	Introduction to the Computing World (Javascript/Python-based)
CSci 1201	Digital Media Computation (Python-based introduction to computer science)
CSci 1301	Introduction to Computer Science (Scheme-based)
CSci 2101	Data Structures (introducing Java) (Two semesters)
CSci 4901	Senior Seminar II: adviser on two senior projects

Courses taught at Allegheny College, August 2002 – May 2007:

CMPSC 101/102	Intro. to Computer Science I/II
CMPSC 111	Intro. to Computer Science I (Integrated lecture/laboratory) (Three semesters)
CMPSC 112	Intro. to Computer Science II (Integrated lecture/laboratory)
CMPSC 220	Programming Language Concepts (Two semesters)
CMPSC 230	Theory of Computation and Formal Languages (Two semesters)
CMPSC 250	Analysis of Algorithms (Four semesters)
CMPSC 390/490	Modern Computer Graphics (Two semesters)
CMPSC 420	Introduction to Compilers (Two semesters)
CMPSC 550–551	Internship Seminar
CMPSC 580	Junior Seminar—Scientific Research, Technical Writing, and Professional Practice (co-taught) (Five semesters)
CMPSC 601	Senior Thesis (20 advisees, second reader for 18 others)
FS 101	Freshman Seminar: The Computer as a Mirror of the World

Independent Study Courses

- Independent study on compiler design, continued from CMPSC 420 (three students)
- Independent study in computer graphics
- Independent study on GPU-based numerical computation
- Art-major's senior project on Maya 3D modeling, animation and rendering
- Weekly tutorial on C and C++ programming for Computer Graphics (6–10 students)
- Workshop on 3D Modeling, Gaming, and Media Arts (15–20 students) (ongoing)

Senior Comprehensive Thesis Advisees

Brenda Gruber (2003)—*A Survey of Object-Oriented Software Testing*

David Kay (2003)—*Artificial Text Detection*

Michael Mong (2003)—*Effective Spam Filtering*

John Pigza (2003)—*Using Image-Stitching and Intensity-Analysis to Scan Large Images*

Elizabeth Zehner (2003)—*Using Data Mining to Detect Plagiarism*

Brian McAlister (2004)—*Effective, Realistic Rendering of Water in Interactive, Real-time Applications*

Stacy Monarko (2004)—*Customer Relationship Management: Survey of the Technology and Economic Value* (joint comp with Economics, Dr. Steven Onyeiwu, Second Reader)

Matthew Visyak (2004)—*Dynamic Parallelizing of Computationally Intensive Image Rendering for Animation*

Joseph Zumpella (2004)—*Texture Synthesis Using Reaction-Diffusion Systems and Genetic Algorithms*

Senior Comprehensive Thesis Advisees (continued)

Anthony Borres (2005)—*An Empirical Evaluation of the Performance of Tuple-Space Monitoring*

Richard Jones (2005)—*Autostereoscopic Viewing: Surveying Current Art and Implementing Inexpensive Displays*

Andrew Miller (2005)—*A Conceptual Framework for the Study of Schooling Behavior in Computer-Simulated Fish*

Brandon Redding (2005)—*Computational Solution of the Antiferromagnetic Potts Model* (joint comp with Physics, Dr. Shafiq Rahman, Advisor) (Senior Prize in Physics)

Jason Zeleznik (2005)—*Optimizing Genetic Algorithms in the Presence of a Dynamic Fitness Function* (co-advisor with Dr. Robert Roos)

Jason Johnson (2006)—*A Survey of Game-Based Computer Science Education and Pilot Curriculum for Children*

Matthew McGettigan (2006)—*Using Ant-Colony Optimization with the Rural Postman Problem*

Evan Merrill (2006)—*Testing Performance of Feature-Based vs. Eigenface-Based Facial Authentication Systems* (Senior prize in Computer Science)

Ian Volkwein (2006)—*Particle Swarms for Evolution and Augmentation of Neural Networks*

Brian Boyle (2007)—*Game Engines as a Platform for 3D Desktop Development*

Justin Carulli (2007)—*Modeling Terrain Erosion using Particle Systems*

Second Reader

(2003)—Tiffany Bennett, Jennifer Hannon, Brian Hunter, Michael McGrath

(2004)—Jason Betts (joint comp with History, with Profs. Roos and Turk), Leonard Puciata, Matthew Rummel, Brandon Taylor, Brian Woods

(2005)—Bryan Johnston, Christopher Lauderdale, Thomas Richardson

(2006)—Kerron Kalloo, Warren Wright

(2007)—Vahid Azamtarrhian, James Carl, Steven Hazen

New Courses

CMPSC 490/390 (Spring 2003, Fall 2005)—Modern Computer Graphics
Computer graphics and interactive techniques taught using modern APIs and object-oriented design. Emphasis is also placed on geometric techniques for visualizing and manipulating objects in 3D. This course replaced CMPSC 390—Human-Computer Interaction in the current catalogue.

FS 101 (Fall 2003)—The Computer as a Mirror of the World: When is a Map the Territory?
A Freshman Seminar designed to teach reading, writing and oral presentation skills through study of philosophical, cultural, and economic issues raised broadly by computer simulation as seen in artificial intelligence, virtual reality, computer gaming and the media arts.

Revision of Courses and Curricula

CMPSC 101/111 (Spring 2004, Fall 2004, Fall 2005)—Introduction to Computer Science I
Devising and incorporating changes in the course to (a) emphasize experimentation in laboratory programming assignments, given the course's reclassification by the college as a lab-science meeting distributional requirements in the sciences; and (b) integrate interactive programming exercises into the lecture periods, given the aims of the new Alden 101 teaching lab and the Buhl Grant.

Applied Computing major (Fall 2003/Spring 2004)

Helping to draft revisions to the major needed to establish the Management and Entrepreneurship track alongside the already established Software Development track. The committee consisted of Profs. Cupper, Roos, Kapfhammer from Computer Science and Onyeiwu and Goldstein from Economics.

CMPSC 230—Theory of Computation and CMPSC 250—Analysis of Algorithms

Designing changes in the established theory courses to better teach these and other mathematically challenging courses in the Computer Science curriculum. The plan in progress (Fall 2005) will create a pair of courses to be taken by majors during their Freshman or Sophomore year placing Discrete Mathematics, Computation, and Algorithms in a unified framework.

CMPSC 580 (Spring 2005)—Junior Seminar

Helping to design and incorporate changes to better prepare students for their Senior Thesis work. These changes included more instruction on research methodology: on hypothesis design and testing; on background research, literature surveying and creation of bibliographies; and on formal document preparation.

CMPSC 360 (Spring 2006)—Scientific Computation

This course is a proposed retasking of an older Numerical Methods course to serve the needs of physical and social science students, introducing them to data structures, algorithms, and scientific methodology required to use computers effectively in scientific experimentation. Part of a general revision of computational science at Allegheny, in coordination with a committee of science, math, and economics professors. Included in this program is a weekly meeting of students and faculty to discuss computational issues in the sciences, and a weekly lecture series planned for Fall 2006 to build interest for the new course in the spring.

Professional Activities

Co-created a graphics, image and visualization lab at UMM as a venue for student and faculty projects. This includes a workstation with dual quad-core processors, nVidia Quadro graphics, digital projectors, and pen-tablet-based input. Fall 2007

Coached UMM team for ACM Programming Contest and Digi-Key Invitational Competition, Fall 2007

Attended UMN CSE Education and Grad Study Event (October 4, 2007); UMN CSE Open House and Technology Forum (October 5, 2007), Minneapolis

Attended 3-day Media Computation Workshop at Georgia Tech, June 2007, Atlanta.

Attended IEEE Point-Based-Graphics/Volume Graphics (PBG/VG 2006), July 29-31, Boston.

Organized steering committee for promotion of scientific computation at Allegheny College

Professional Activities (continued)

Contributed to *RICS*, weekly interdepartmental *Research in Computer Science* colloquium

Supervised work on interactive teaching software under Buhl Grant (2004–2005)

Coached Allegheny College's teams for ACM Programming Contest (2004, 2005, 2006)

Sat on Finance and Facilities Committee at Allegheny College (2005)

Participated in Allegheny College Teaching Circle program (2003–2004).

Attended the Liberal Arts Computer Science Consortium annual meeting (LACS '05) as an invited speaker

Attended ACM SIGGRAPH annual convention (1993–2006)

Participated in tutoring and computer-science outreach programs for elementary and secondary school students (2003–2007)

Professional References

Available on request.