

Michael B. Gousie

Department of Math & Computer Science
Wheaton College
Norton, MA 02766

EDUCATION:

Rensselaer Polytechnic Institute, Troy, N.Y.

Ph.D. in Computer Science, May 1998.

Thesis: *Contours to Digital Elevation Models: Grid-Based Surface Reconstruction Methods.*

Thesis Adviser: Wm. Randolph Franklin.

University of New Hampshire, Durham, N.H.

M.S. in Computer Science, September 1988.

Thesis: *Analysis of Parallel Scanline Algorithms.*

Thesis Adviser: R. Daniel Bergeron.

Providence College, Providence, R.I.

B.A. (*Cum Laude*) in Mathematics–Computer Science, May 1985.

RESEARCH INTERESTS:

Geographic Information Systems, Information Visualization, Computational Geometry.

EXPERIENCE:

2004-present

Associate Professor of Computer Science.

Department of Mathematics and Computer Science, Wheaton College, Norton, MA.

- Transformed traditional CS1 to become Robots, Games, and Problem Solving.
- Created Senior Seminar in which students produce a product for an on-campus “client.”
- Directed independent study courses:
 - Fall 2009 GIS Visualization
 - Fall 2009 Advanced Computer Graphics
 - Fall 2008 Advanced Web Programming
 - Spring 2007 Web Programming with Flash
 - Spring 2006 Graphical User Interface Design
 - Spring 2006 Advanced Computer Graphics
 - Spring 2005 Advanced Java and Web Programming
 - Fall 2004 Operating Systems
- Adviser for Honors Thesis student (Chris Stuetzle, 2007).
- Worked with student on year-long research project in geo-visualization (Sarah Milewski, 2007).
- Part of a planning group that visited various colleges to help plan for CSII, June 2007.

Committee Work:

2006-2009 Appeals and Hearing Committee (Chair, 2008-2009)

2007 Ad-Hoc Committee Organizing Sophomore Halftime Program

2007-present

Chair, Department of Mathematics and Computer Science.

- Handled various departmental administrative duties.
- Represented the department on team that attended AAC&U Engaging Departments Institute (7/2009).
- Chair of Computer Science position Search Committee (2008).
- Aided in planning and development of the first Wheaton College Sophomore Halftime Program (1/2008).
- Organized the 2007-2009 Math/Science Visiting Days; instituted and moderated well-received panel session on undergraduate research opportunities.
- Created new office space for growing department.

- 2006-2007 **Computer Science Program Coordinator.**
 ● Scheduled courses, evaluated junior faculty, performed miscellaneous administrative duties.
- 2005 **Visiting Research Fellow in Informatics.**
 University of Sussex, Brighton, England.
 ● Resident Director of Wheaton's Study Abroad program in the United Kingdom and Ireland.
 ● Visited Wheaton students and local administrators at all participating universities.
 ● Collaborated on DEM research with Dr. Mike J. Smith, Kingston University, London.
- 1998-2004 **Assistant Professor of Computer Science.**
 Department of Mathematics and Computer Science, Wheaton College, Norton, MA.
 ● Taught full range of undergraduate computer science courses as well as Statistics.
 ● Developed new courses, including Computer Graphics and Theory of Computation.
 ● Directed several independent study courses:
 Fall 2003 Advanced Computer Graphics
 Fall 2001 Web Programming and E-Commerce
 Fall 1999 Advanced Computer Graphics
 ● Developed Web Programming, Graphics, and Design for non-majors, connected with Graphic Design I in the Art Department to form Graphic Design and Web Programming.
 ● Created connection Computer Architecture between Computer Organization and Electronic Circuits in Physics department.
 ● Adviser for Honors Thesis student (Greg Williams, 2002).
 ● Supervised student GIS research team.
 ● Set up Linux lab for upper-level courses, especially Computer Graphics and Operating Systems.
 ● Taught two-week mini-course in the January 2001 Technology Immersion Program.
 ● Organized several presentations in the *Puzzles in Science* lecture series.
 ● Faculty liaison for 2005 Math/Science Visiting Day.
- Committee Work:**
 2002-2005 Committee on Admissions and Academic Standing (CAAS)
 1998-2001 Library, Technology, and Learning Committee (LTLC)
- 1995-1998 **Instructor.**
 Department of Computer Science, Rensselaer Polytechnic Institute, Troy, N.Y.
 ● Taught Data Structures and Computing Languages (C, C++ and LISP).
- Summers
 1995, 1996 **Instructor for Computer Science I.**
 Department of Computer Science, Rensselaer Polytechnic Institute, Troy, N.Y.
 ● Taught basics of algorithmic design and programming using C.
- 1993-1994 **Graduate Teaching Assistant.**
 Department of Computer Science, Rensselaer Polytechnic Institute, Troy, N.Y.
- Fall 1994 **Instructor for Introduction to Computer Applications.**
 Department of Computer Science, Siena College, Latham, N. Y.
- Fall 1994 **Instructor for Introduction to Computing: Macintosh.**
 Department of Computer Science, College of St. Rose, Albany, N.Y.
- 1988-1992 **Adjunct Instructor.**
 Department of Mathematics and Computer Science, Providence College, Providence, R.I.
 ● Taught various computer science courses, including senior electives.
 ● Wrote software for Registrar's Office to schedule automatically incoming freshmen.
 ● Taught computer component of summer high school Environmental Biology program (2 years).

1987–1988

Instructor for Introduction to Computing.

Department of Computer Science, University of New Hampshire, Durham, N.H.

PEER REVIEWED PUBLICATIONS:

- ◇ Gousie, M.B. and Smith, M.J. DEMView: 3D Visualization of DEM Error. Accuracy 2010, Proceedings of the International Spatial Accuracy Research Association conference. To appear.
- ◇ LeBlanc, M.D., Armstrong, T., and Gousie, M.B. Connecting Across Campus. SIGCSE Technical Symposium on Computer Science Education 2010. To appear.
- ◇ Smith, M.J., Rose, J., and Gousie, M.B. The Cookie Cutter: A Method for Obtaining a Quantitative 3D Description of Glacial Bedforms. *Geomorphology* 108 (July 2009), 209-218.
- ◇ Gousie, M.B. The Profile Cutter: Exploring Uncertainty in Context in a 3D DEM Visualization System. In preparation.
- ◇ Gousie, M.B., Grady, J., Burrage, B., Grossman, R., Machado, D., Milewski, S., and Stuetzle, C. Using Metaphors in Dynamic Social Stratification Visualizations. In *IV08: 12th International Conference on Information Visualization* (London, 2008), IEEE, pp. 485-490.
- ◇ Gousie, M.B. and Milewski, S. A System for 3D Error Visualization and Assessment of Digital Elevation Models. In *Proceedings of the 2007 IEEE International Geoscience and Remote Sensing Symposium (IGARSS '07)* (Barcelona, 2007), pp. 4064-4067.
- ◇ Gousie, M.B. A Robust Web Programming and Graphics Course for Non-Majors. In *Proceedings of the 37th SIGCSE Technical Symposium on Computer Science Education* (Houston, 2006), pp. 72-76.
- ◇ Gousie, M. B. Digital Elevation Model Error Detection and Visualization. In *The 4th ISPRS Workshop on Dynamic & Multi-dimensional GIS* (Pontypridd, Wales, UK, 2005), C. Gold, Ed., pp. 42-46.
- ◇ Gousie, M. B. and Franklin, W.R. Augmenting Grid-Based Contours to Improve Thin Plate DEM Generation. *Photogrammetric Engineering & Remote Sensing* 71, 1 (2005), pp. 69-79.
- ◇ Gousie, M. B. and Franklin, W. R. Constructing a DEM from Grid-Based Data by Computing Intermediate Contours. In *GIS 2003: Proceedings of the Eleventh ACM International Symposium on Advances in Geographic Information Systems* (New Orleans, 2003), E. Hoel and P. Rigaux, Eds., pp. 71-77.
- ◇ Gousie, M. B., Williams, G., Agnitti, T., and Doolittle, N. CompSurf: An Environment for Exploring Surface Reconstruction Methods on a Grid. *Computers & Geosciences* 29, 9 (2003), pp. 1165-1173.
- ◇ Gousie, M. B. Teaching Computer Graphics in a Small Department. In *Journal of Computing in Small Colleges*, Proceedings of the Fifth Annual CCSC Northeast Conference (2000), pp. 194-202.
- ◇ Franklin, W.R. and Gousie, M. Terrain Elevation Data Structure Operations. In *19th International Cartographic Conference & 11th General Assembly of the International Cartographic Association (ICA)* (Ottawa, 1999).
- ◇ Gousie, M. and Franklin, W.R. Converting Elevation Contours to a Grid. In *Eighth International Symposium on Spatial Data Handling* (Vancouver, 1998), T. Poiker and N. Chrisman, Eds., pp. 647-656.

ADDITIONAL PUBLICATION:

- ◇ Gousie, M. Math for Non-Mathers: Using Math in Everyday Life. *Wheaton Quarterly* (Summer, 2005), 28-31.

STUDENT PUBLICATIONS and PRESENTATIONS:

- ◇ Stuetzle, C. *Computer Modeling and Visualization of Luminescent Crystals: The Role of Energy Transfer and Upconversion*. Honors Thesis, Wheaton College, 2007.
- ◇ Milewski, S. *Data Errors in Maps*. Poster presented at Wheaton College Academic Festival, April 2007.
- ◇ Bowe, S. Error Detection and Visualization in Digital Elevation Models. Poster presented at CCSC Northeast Conference. Abstract appears in *Journal of Computing Sciences in Colleges*, Proceedings of the Tenth Annual CCSC Northeast Conference (2005), pp. 103-104.
- ◇ Williams, G. *An Autoscheduling Optimizer for Perl*. Honors Thesis, Wheaton College, 2003.
- ◇ Williams, G., Doolittle, N., and Agnitti, T. A Surface Reconstruction Research Environment. Poster presented at CCSC Northeast Conference. Abstract appears in *Journal of Computing in Small Colleges*, Proceedings of the Seventh Annual CCSC Northeast Conference (2002), pp. 301-302.

PRESENTATIONS:

- *Methods for Visualizing Social Stratification*. Poster presented at Wheaton College faculty forum, May 14, 2009.
- *Math Connections in Computer Science*, panel discussion with Wilkens, et al. at CCSCNE, April 24, 2009. In *Journal of Computing Sciences in Colleges*, Proceedings of the Fourteenth Annual CCSC Northeastern Conference (2009), pp. 57-61.
- *How Good Is Google Earth?* Wheaton College Faculty Luncheon Series, 2008.
- *How Good Is Google Earth?* Department of Computer Science Seminar, Siena College, Albany, NY, October 2007.
- *Can You Trust Google Earth?* Department of Mathematics and Computer Science Seminar Series, Wheaton College, 2007.
- Stuetzle, C., Gousie, M., and Collins, J. *Stochastic Modeling of Decay Processes in Crystals with Random and non-Random Placement of Ions*. Poster presented at the Spring Meeting of the New England Section of the American Physical Society, Orono, ME, April 2007.
- Smith, M. J., Rose, J., and Gousie, M. B. *A Method of Quantifying Subglacial Sediment Transport/Deformation*. Poster presented at Geomorphology & Earth System Science, BGRG International Conference, Loughborough, UK, June 2006.
- *Math for Non-Mathers: Using Math and Programming in Everyday Life*, Wheaton College Faculty Luncheon Series, 2005.
- *Targeting Social Stratification*, with J. Grady. Conference of the International Visual Sociology Association, August 11-13, 2004.
- *The Role of Digital Logic in the Computer Science Curriculum*, panel discussion with Hoffman, et al. at CCSCNE, April 23, 2004. In *Journal of Computing Sciences in Colleges*, Proceedings of the Ninth Annual CCSC Northeastern Conference (2004), pp. 5-9.
- *Thunderstorms, Orange Slime, and Boiling Mud*, with B. Dyer and G. Collins. Part of the *Puzzles in Science* series, Wheaton College, 2003.
- *Implementing the Architecture, Assembly Language and Operating Systems Components of Curriculum 2001*, panel discussion with Wilkens, et al. at CCSCNE, April 25, 2003. In *Journal of Computing Sciences in Colleges*, Proceedings of the Eighth Annual CCSC Northeastern Conference (2003), pp. 118-122.
- *Building a Surface Reconstruction Research Environment*, Williams College, 2002.
- *Creating a Course Web Page using Blackboard*, LTLC Workshop, Wheaton College, 2001.
- *Making a Mountain out of a (Math) Model*, Wheaton College Faculty Luncheon Series, 2000.
- *Improving Terrain Reconstruction on a Grid*, Williams College, 1998.

GRANTS and AWARDS:

- Summer 2009 - Provost Faculty Research Award. *Map Zooming in Context Using Fish-Eye Perspective*. \$3000.
- 2008 - FY2008 Congressionally-Directed Grant (Earmark), U.S. Department of Education. \$10000 for smart board.
- Summer 2007 - Mellon Foundation grant. *Methods for Visualizing Social Stratification*. \$4000.
- 2006-07 - Wheaton Research Partnership (WRP) grant. Funding for one student to continue GIS research for one year.
- 2005 - FY2005 Congressionally-Directed Grant (Earmark), U.S. Department of Education. \$5000 for 3D scanner.
- Summer 2004 - Davis Educational Foundation grant. Created new course: *Web Programming, Graphics, and Design*; \$2500.
- Summer 2004 - Mars Fellow with one student. Continued research on quality assessment of digital elevation models; \$4000.
- Summer 2001 - Mars Fellow with one student. Designed and implemented much of CompSurf software; \$3000.
- Summer 2001 - two student Filene Research Fellows. Contributed to CompSurf software.
- Spring 2001 - Wheaton funding for departmental workshop: *How Can the Department Improve its Use of Technology?*
- 2000 - CCSCNE Best Paper award for *Teaching Computer Graphics in a Small Department*.

MAJOR GRANT PROPOSALS:

- 2009 - "CMG Research: Predictive Modeling, Manipulation, and Visualization of Terrain Error in Digital Elevation Models," National Science Foundation Collaboration in Mathematical Geosciences (CMG), with Michael Kahn (Wheaton) and Michael Smith (Kingston University, London). Pending.
- 2006 - "AOC Collaborative Research: Visualizing Goal-Oriented Social Statistics," National Science Foundation Directorate for Social, Behavioral & Economic Sciences (SBE), with John Grady (Wheaton) and Richard Kline (Pace University). Not funded.
- 2004 - "Advanced Visualization and Analysis Tools for Sociological Data Sets," National Science Foundation Directorate for Social, Behavioral & Economic Sciences (SBE), with John Grady (Wheaton) and Richard Kline (Pace University). Not funded.

PROFESSIONAL ACTIVITIES:

- Board member of the Consortium for Computing Sciences in Colleges-Northeast (CCSCNE), 2005-.
- Editor of CCSCNE's *Journal of Computing Sciences in Colleges*, 2004-.
- Papers Co-Chair for the CCSCNE Conference, 2004, 2005.
- Student Posters Chair for CCSCNE Conference, 2003.
- Member of the Association for Computing Machinery (ACM)
- Member of the Institute of Electrical and Electronics Engineers (IEEE).
- Reviewer for tenure case at peer institution.

REVIEWER:

- *IEEE Transactions on Geoscience and Remote Sensing*
- *IEEE Geoscience and Remote Sensing Letters*
- *Computers & Geosciences*
- *Photogrammetric Engineering and Remote Sensing*
- *Mathematical Geosciences*
- *The Cartographic Journal*
- *International Journal of Geographical Information Science*
- *Geomatica*
- *Arabian Journal for Science and Engineering*
- *Deep-Sea Research Part I*
- *Computer Science Education Journal*
- *The Journal of Computing Sciences in Colleges*

ASSETS and COMMUNITY ACTIVITIES:

- United States Patent, No. 6,659,492 B2, 2003. *Ski for uphill and downhill skiing*.
- Photograph published in Dyer, B., *A Field Guide to Bacteria*, Cornell University Press, 2003, plate 4.
- Experience in consulting (Providence College and Wyle Labs, Burlington, MA).
- Fluent in German; extensive experience from international travel.
- Cub Scout Den Leader, Pack 46, Old Colony Council, MA.
- Basketball coach for town grammar school program.
- Deep interest in music, especially piano and guitar; taught piano for several years.