

Nancy M. Amato

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Education

PH.D. IN COMPUTER SCIENCE, University of Illinois at Urbana-Champaign, January 1995.

Ph.D. Thesis: *Parallel Algorithms for Convex Hulls and Proximity Problems*

Thesis advisor: Prof. Franco P. Preparata

M.S. IN COMPUTER SCIENCE, University of California at Berkeley, May 1988.

M.S. Thesis: *Reversing Trains: A Turn of the Century Sorting Problem*

Thesis advisor: Prof. Manuel Blum

B.S. IN MATHEMATICAL SCIENCES, Stanford University, June 1986.

A.B. IN ECONOMICS, Stanford University, June 1986.

Research Interests

Motion planning, computational biology, robotics, computational geometry, animation,

Parallel and distributed computing, parallel algorithms, performance modeling and optimization.

Professional Experience

TEXAS A&M UNIVERSITY, College Station, TX (1/95–present)

Chair, Council of Principal Investigators (8/09–present)

Chair, Alliance for Bioinformatics, Computational Biology, and Systems Biology (8/07–present)

Head, OSIS (information management system), Dept. of Computer Science (3/06–present)

Graduate Advisor, Dept. of Computer Science (1/05–5/06)

Professor, Dept. of Computer Science and Engineering (9/04–present)

Member, Molecular Biophysics Training Program Faculty (2001–2007)

Associate Professor, Dept. of Computer Science and Engineering (9/00–8/04)

Co-Director, Parasol Laboratory (1998–present)

Assistant Professor, Dept. of Computer Science and Engineering (1/95–8/00)

UNIVERSITY OF PADOVA, Padova, Italy, Sabbatical Visitor (9/04–11/04)

IBM T.J. WATSON RESEARCH CENTER, Yorktown Heights, NY, Academic Visitor (9/03–8/04)

INTERNATIONAL COMPUTER SCIENCE INSTITUTE, Berkeley, CA, Visiting Scientist (Fall 1994)

AT&T BELL LABORATORIES, Murray Hill, NJ, Visiting Scientist (Summer 1994)

U.S. ARMY CORPS OF ENGINEERS, CERL, Champaign, IL, Research Assistant (1991–1993)

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN, IL, Research/Teaching Assistant (1988–1991)

BELL COMMUNICATIONS RESEARCH, Piscataway, NJ, Member of Technical Staff (1986–1988)

Honors and Awards

Research Recognition

NSF Faculty Early Career Development (CAREER) Award, 1996.

Distinguished Speaker, ACM Distinguished Speakers Program, 2008–present.

Distinguished Lecturer, IEEE Robotics and Automation Society, 2006-2007. Most active Distinguished Lecturer Award, 2008.

Fellow, World Technology Network, 2005.

TEES Sr. Fellow (2009), TEES Fellow (2001, 2004), College of Engineering, Texas A&M.

Halliburton Professorship Award, College of Engineering, Texas A&M, 2006.

Unocol Endowed Professorship in Engineering, Texas A&M, Sept 2001–Aug 2004.

Anton Philips Best Student Paper Award Finalist, for a paper co-authored with my student Guang Song, IEEE International Conference on Robotics and Automation, 2001.

TEES Select Young Faculty Award, College of Engineering, Texas A&M University, 1997.

AT&T Bell Laboratories Ph.D. Scholar, 1993–1994.

Teaching Recognition

Lockheed Martin Excellence in Engineering Teaching Award, College of Engineering, Texas A&M University, Fall 1999.

Montague Center for Teaching Excellence Scholar, Texas A&M University, 1997-98.

ACM Award for Teaching Excellence (voted by students), Department of Computer Science, Texas A&M University, 1997.

Service Recognition

Women's Progress Award, Texas A&M University, 2008.

Faculty Service Excellence Award, CSGSA (CS Graduate Student Association), Department of Computer Science, Texas A&M University, 1999-2000, 2000-2001, 2002-2003.

Diversity Award, Provost's Office, Texas A&M University, 1998.

Womens' Week Faculty Award, Texas A&M University, 1998.

Professional Service and Activities

Editorial Activities

Editorial Board Member, *Theory of Computing Systems (TCS)*, 2009–present.

Editorial Board Member, *Journal of Computational Geometry* (<http://jocg.org/>), 2009–present.

Associate Editor, *International Journal of Computational Geometry and Applications (IJCGA)*, 2008–present.

Editor, IEEE Robotics and Automation Society Conference Editorial Board (CEB), 2006–present.

Editor, *Journal of Information Science and Engineering*, 2005–present.

Associate Editor, *IEEE Transactions on Parallel and Distributed Computing*, 2002–2005.

Associate Editor, *IEEE Transactions on Robotics and Automation*, 2001-2004.

Guest Editor, *Theoretical Computer Science (TCS)*. Special Issue “Excursions in Algorithmics: A Collection of Papers in Honor of Franco P. Preparata,” **408**, 2008. (Co-editors D. T. Lee, Andrea Pietracaprina, and Roberto Tamassia.)

Guest Editor, *International Journal on Robotics Research (IJRR)*. Special Issue of selected papers from the 2006 Intern. Workshop on Algorithmic Foundations of Robotics (WAFR), **27**(11-12), 2008. (Co-editors Srinivas Akella, Wesley Huang, Bud Mishra.)

Guest Editor, *IEEE Transactions on Parallel and Distributed Computing*. Special Issue on High-Performance Computational Biology, **17**(8), August 2006. (Co-editors David Bader and Srinivas Aluru.)

Guest Editor, *Robotics and Autonomous Systems Journal (RAS)*, an Elsevier journal. Special Issue of selected papers from the 8th Conference on Intelligent Autonomous Systems (IAS-8), **54**(2), February 2006. (Co-editors Andrea Bonarini, Frans Groen, and Eiichi Yoshida.)

Guest Editor, *International Journal on Robotics Research (IJRR)*. **24**(2-3), 2005. Special Issue on Robotics Techniques Applied to Computational Biology. (Co-editors Greg Chirikjian and Lydia Kavraki.)

Guest Editor, *Theory of Computing Systems (TOCS)*. Special Issue of selected papers from the 13th Annual ACM Symposium on Parallel Algorithms and Architectures (SPAA 2001), **36**(5), 2003. (Co-editors Pierre Fraigniaud, Christos Kaklamanis, Friedhelm Meyer auf der Heide.)

Advisory Boards and Review Panels

External Evaluator, School of Computer Science and Statistics, Trinity College, Dublin, May 2008.

Swedish Research Foundation, Panelist. Computer science research proposals (08/09).

Science Foundation Ireland, Panelist. Computer science research proposals (10/05, 2/06, 10/07, 2/08, 3/09).

National Science Foundation (NSF), Advisory Committee Service. NSF Committee of Visitors (COV) for the Computing and Communication Foundations Division, CISE Directorate, March 2009, June 2006; NSF Cyber-Enabled Chemistry Workshop, October 2004; NSF BIO Advisory Committee Workshop on Cyberinfrastructure (CI) for the Biological Sciences, July 2003.

NRC ARLTAB Robotics Review, member of committee organized by the National Research Council's (NRC) Army Research Laboratory Technical Assessment Board (ARLTAB) to review the ARL's robotics activities, May 2004.

National Institute of Health (NIH), Study Section Member. Special Study Section SSS-H (90) on Computational Biology (6/03, 11/03); Biodata Management and Analysis (BDMA, 3/04, 6/04, 7/05); Biological Chemistry and Macromolecular Biophysics (BCMB-Q, 2/05); Special Emphasis Panel (2/09).

National Science Foundation (NSF), Panelist. Robotics, Geometric Computing, Theory and Broadening Participation in Computing programs, Graduate Fellowships, Distinguished Teaching Awards, Site Visits (5/97, 12/97, 4/98, 1/00, 11/00, 6/02, 10/02, 2/04, 9/05, 10/05, 4/06, 11/06, 3/07, 5/08).

Professional Societies and Other Major Service Activities

IEEE Robotics and Automation Society (IEEE RAS)
Administrative Committee Member (elected), 2009-2011.
Member, Steering Committee for Technical Programs (SCTP), 2009-present.
Member, Electronic Products and Services Board (EPSB), 2009-present.

NCWIT Academic Alliance Co-Chair, 9/09-present. NCWIT (National Center for Women & Information Technology) is a coalition of more than 170 prominent corporations, academic institutions, government agencies, and non-profits working to increase women's participation in information technology (IT). The NCWIT Academic Alliance (AA) consists of more than 80 institutions and is charged with implementing institutional change in higher education.

CDC Committee Member, Coalition to Diversity Computing (CDC), 9/08-present. The CDC is co-sponsored by the IEEE, the ACM (Association for Computing Machinery), and the CRA (Computing Research Association), the three main professional societies in computing. Co-Director of the Distributed Research Experiences for Undergraduates (DREU)

Project (DREU is jointly administered by the CDC and CRA-W, and was known as the DMP from 1994-2008), 9/08–present. See <http://cdc-computing.org/> for program details.

CRA-W Committee Member, Computing Research Association (CRA) Committee on the Status of Women in Computing Research (CRA-W), 9/00–present. Co-Director of the Distinguished Lecture Series (DLS) Project (DLS is jointly administered by the CDC and CRA-W), 8/08-present. Co-Director of the Distributed Research Experiences for Undergraduates (DREU) Project from 9/00-8/08 (DREU was known as the DMP, Distributed Mentor Project, from 1994-2008). See <http://www.cra-w.org/> for program details.

Service on Conference Organizing and Program Committees

Steering Committee Member, Intern. Workshop on the Algorithmic Foundations of Robotics, 2009-present.

General Chair, ACM International Conference on Computing Frontiers (CF), Bertinoro, Italy, 2010.

Conference Co-Chair, WAFR 2006: Intern. Workshop on Algorithmic Foundations of Robotics (WAFR), New York City, NY, 2006.

Program Committee Area Chair, Robotics: Science and Systems (RSS), 2006, 2007.

Program Committee Chair, HiCOMB 2005: 4th IEEE International Workshop on High Performance Computational Biology (Held in conjunction with IPDPS), Denver, CO, 2005.

Program Committee Co-Chair (for USA), Eighth International Conference on Intelligent Autonomous Systems (IAS-8), Amsterdam, Netherlands, 2004.

Organizer, Invited Minisymposium on Computational Biology, SIAM Conference on Discrete Mathematics, Austin, TX, 2010.

Organizing Committee Member, SIAM Conf. on Parallel Processing for Scientific Computing (PP), San Francisco, CA, 2006.

Registration and Web Chair, Parallel Architectures and Compilation Techniques (PACT), Brasov, Romania, 2007.

Local Arrangements Chair, 16th Workshop on Languages and Compilers for Parallel Computing (LCPC'03), College Station, Texas, October 2003.

Co-Organizer, CDC/CRA-W Workshop on Careers in High Performance Systems Research (CHIPS), Urbana-Champaign, IL, July 25-29, 2009.

Grace Hopper Celebration of Women in Computing: Program Committee Chair for Invited Talks, 2004; Member of Academic Advisory Committee, 2006; Scholarship Committee Co-Chair, 2007, 2008, 2009.

Program Committee Member:

- Intern. Conf. on Research in Computational Molecular Biology (RECOMB), 2010.
- IEEE Intern. Conf. on Robotics and Automation (ICRA), 2002, 2003, 2005, 2006. Senior Program Committee Member 2010.
- International Conf. on Computer Animation and Social Agents (CASA), 2008, 2010.
- ACM SIGPLAN Symp. on Principles and Practices of Parallel Programming (PPoPP), 2009.
- IEEE International Workshop on High Performance Computational Biology (HiCOMB, held in conjunction with IPDPS), 2009.
- Robotics: Systems and Science (RSS), 2005, 2006, 2007, 2008, 2009.
- 2nd International Frontiers of Algorithmics Workshop (FAW), 2008.
- 13th ACM Symposium on Solid and Physical Modeling (SPM), 2008.

Fun with Algorithms, 2007.

Intern. Workshop on Algorithmic Foundations of Robotics (WAFR), 2000, 2002, 2006.

Intern. Parallel & Distributed Processing Symp. (IPDPS), 2000, 2002, 2006.

IEEE/RSJ Intern. Conf. of Intelligent Robots and Systems (IROS), 2003, 2004, 2005.

IEEE Intern. Conf. on Systems, Man and Cybernetics (SMC), 2005

Workshop on Languages and Compilers for Parallel Computing (LCPC), 2003, 2004, 2005

Euro-Par 2004, Vice-Chair Topic 13 (Theory and Algor. for Parallel Computation), 2004

IEEE Intern. Conf. on Networking, Sensing and Control (ICNSC), 2004

Intern. Conf. on Parallel Processing (ICPP), 2002, 2003.

Grace Hopper Celebration of Women in Computing, 2002.

4th Workshop on Algorithm Engineering and Experiments (ALENEX), 2002.

Mexican Intern. Conf. in Computer Science (ENC), 2001.

13th Annual ACM Symp. on Parallel Algorithms and Architectures (SPAA), 2001.

17th Annual ACM Symp. on Computational Geometry (SoCG), 2001.

8th Intern. Symp. on Robotics with Applications (ISORA), 2000.

Invited Talks (Selected, last 5 years)

- ACM Banquet Speaker, Lamar U., April 2010
- Invited Speaker, U. of Pennsylvania, December 2009
- Invited Speaker, CRA-W/CDC Workshop on Computational Geometry, Tufts U., November 2009
- Invited Talk, ICES, U. Texas Austin, March 2009
- Computational Science Lecture, Texas A&M Commerce, April 2008
- Distinguished Lecture, Department of Computer Science, UBC, March 2008
- MITACS Bioinformatics Series, UBC and SFU, March 2008
- Invited Speaker, Workshop on Protein Folding, IMA, Minneapolis, January 2008.
- Invited Speaker, Workshop for Architectures and Compilers for Multithreading, IIT Kanpur, India, December 2007
- Invited Speaker, Indo-US Science and Technology Forum, Workshop on “Spatial Kinematics and Protein Conformations,” Indian Institute of Science, Bangalore, India, December 2007
- Distinguished Lecture, Center for Computational Molecular Biology, Brown University, October 2007
- National Academy of Engineering, German-American Frontiers of Engineering Symp., Hamburg, Germany, April 2007
- iRobot, Boston, Massachusetts, March 2007.
- Science and Technology Innovators Lecture, Digital Technology Center, Univ. of Minnesota, September 2006.
- Concurso Mexicano de Robotica and ITAM, Mexico City, Mexico, August 2006.
- Geometry in the Real World Seminar, Othmer Institute for Interdisciplinary Studies, Polytechnic University, March 2006.
- Intern. Workshop on Pattern Discovery in Biology, Covenant University, Nigeria, April 2005.

Presentations Related to Underrepresented Groups in CS&CS (Selected)

- CDC Academic Career Mentoring Workshop, December 2007, April 2009. For underrepresented graduate students, assistant and associate professors.
- CRA-W Advanced Career Mentoring Workshop, November 2008. For female associate professors and advanced professionals in research labs.
- CRA-W/CDC Systems Research Mentoring Workshop, June 2008. For female and underrepresented undergraduate students.
- Grace Hopper Celebration of Women in Computing, October 2006.
- CRA-W Career Mentoring Workshop, 2003, 2005. For female advanced graduate students, assistant professors and junior professionals in research labs.
- 9th Ann. WISE Career and Professional Develop. Conf., Texas A&M Univ., February 2001. For women undergraduate and graduate students in science and engineering.
- Spring Independent School District (ISD) Conference, Houston, TX, June 2001.
- Conference for the Advancement of Science Teaching (CAST 2000, an annual meeting of approximately 5000 pre-college science teachers), October 2000 (**Plenary Speaker**).

Invited Participant (Selected):

- Dagstuhl Seminar, Germany, September 2009.
- Microsoft Faculty Summit, Redmond, WA, July 2008, July 2003, July 2002, July 2001.
- PETALS Workshop (Software Engineering Methods for Petascale Community Applications and Scientific End Stations), Oakridge National Laboratory, December 2006. (Invited Speaker)
- Intern. Workshop on Pattern Discovery in Biology, Covenant University, Nigeria, April 2005. (Invited Speaker)
- Workshop on Flexibility in Biomolecules, Tempe, AZ, May 2005. (Invited Speaker)
- Workshop on “Limited Visibility Problems,” Barbados, February 2005
- Workshop “Motion Planning Technology,” LAAS-CNRS, Toulouse, France, January 2005. (Invited Speaker)
- Senior Women Leadership Summit, Chicago, October 2004
- Workshop on Scalable Approaches to High Performance and High Productivity Computing, Bertinoro International Center for Informatics, Italy, September 2004. (Invited Speaker)
- Workshop on Modeling Protein Stability, Flexibility and Motions, Banff Institute Research Station, Canada, July 2004. (Invited Speaker)
- National Academy of Engineering, German-American Frontiers of Engineering Symp., Ludwigsburg, Germany, May 2003.
- Workshop on “The Geometry of Protein Folding,” Barbados, January 2003
- NSF Workshop on Compiler Technology, Annapolis, MD, Sept 2001.
- Workshop on “Pseudo-triangulations,” Barbados, January 2001
- Joint European-US Workshop “Key Research Issues and Opportunities in Motion Planning,” LAAS-CNRS, Toulouse, France, June 2000. (Invited Speaker)
- “Workshop on Motion Support for Virtual Prototyping,” Stanford, CA, May 1999.
- National Academy of Engineering, Frontiers of Engineering Symp., Irvine, CA, Sept. 1998.
- Computational Geometry Working Group, ACM Workshop on Strategic Directions in Computing Research, MIT Laboratory for Computer Science, MA, June 1996.

Member of ACM, IEEE (senior member), SIAM, ISCB, and Sigma Xi.

Significant University Service and Community Outreach Activities

Council of Principal Investigators, Texas A&M University, Sept 2007–Aug 2010.

- Chair, 2009-2010.
- Interim Vice Chair, June – August, 2009.
- Executive Committee member 2007-2008, 2008-2009.
- Member (elected), Sept. 2007–Aug. 2010.

Chair, Alliance for Bioinformatics, Computational Biology, and Systems Biology (ABCS), Texas A&M University, Sept 2007–present.

Head, OSIS (One Stop Information Source), departmental information management system, Department of Computer Science, Texas A&M University, March 2006–present.

Graduate Advisor, Department of Computer Science, Texas A&M University, January 2005–May 2006.

Senator (elected), Faculty Senate, Texas A&M University, May 2000–May 2003.

University/College Committee Membership:

Research Environment Council, Sept. 2009–present.

College of Engineering Tenure and Promotion Committee, 2008-2009, 2009-2010.

Vice President for Research of Texas A&M Search Committee, 2008-2009.

Engineering Faculty Advisory Committee (EFAC): CS representative (elected), 2001-2002, 2002-2003, 2007-2008. Vice-chair 2007-2008, 2008-2009, 2009-2010.

Goldwater Fellowship Selection Committee, University-level, 1999, 2000, 2001, 2002, 2007, 2008, 2009.

Bioinformatics Writing Group: steer the development of TAMU Bioinformatics Facility, spring 2005.

College of Engineering Honors and Awards Committee: Spring 2003.

Bioinformatics Faculty Search Committee: External member of faculty search committee: Dept. Biochemistry and Biophysics, 2000-2001; Dept. of Statistics, 2002-2003.

Vice Chancellor and Dean of College of Engineering Search Committee: 2001-2002.

Dean of Faculties Advisory Committee on Diversity Issues, 2000-2001.

Faculty Teaching Award Selection Committee, College of Engineering, Fall 2000.

Vision 2020 Committee Member: University-level committee formed to create a strategic plan for Texas A&M for the year 2020, 1997-1998, 1998-1999.

Horizons of Engineering Conference Organizing Committee Member: conference to encourage interdisciplinary research in engineering, College of Engineering, 1998.

Founder and Administrator of Departmental Undergraduate Mentoring Program, 9/97–9/03.

Faculty Advisor, for CSGSA (Computer Science Graduate Student Association), 7/99–12/04.

Founder and Faculty Advisor for AWICS (Aggie Women in Computer Science), Fall 1996 – present.

AWICS has been an ACM-W chapter since Fall 2000. Contribution recognized by university-level awards (Diversity Award, Provost's Office, 1998, and Women's Week Faculty Award, 1998). Corporate sponsorship (\$80,000+) supports distinguished lectures, seminars, peer-mentoring. Received travel grants from Microsoft, NSF and other sponsors to bring students to the Grace Hopper Conferences in Keystone, CO (2008, 15 students), Orlando (2007, 20+ students), San Diego (2006, 20+ students), Chicago (2004, 23 students), Vancouver, BC (2002, 25 students), Cape Cod (2000, 21 students), and San Jose (1997, 3 students), and the CRA-W Workshops on Research Careers at FCRC, San Diego (2003, 3 students), Atlanta (1999, 8 students). (Program details can be found at <http://awics.cs.tamu.edu/>.)

Judge, Texas BEST (Boosting Engineering, Science, and Technology) high-school robotics competition (covering Texas and several other states), November 2000, 2001, 2002.

Departmental Committee Service

Advisory Committee (elected), 95–96, 97–98, 98–99, 99–00, 00–01, 01–02, 02–03, 04–05, 05–06, 06–07, 07–08, 08–09, 09–10.
Promotion & Tenure Committee (elected, 3 year terms), 1/05-12/07, 1/08-12/10.
Department Head Search Committee, 01-02.
Endowed Chair Search Committee, 01-02 (chair).
Faculty Search Committee, 97–98, 98–99, 99–00, 00–01, 01–02, 02–03, 04–05 (chair, information storage & retrieval search), 05–06, 06–07 (chair, systems biology search), 07–08.
Graduate Assistantship & Scholarship Selection Committee, 04–05, 05–06, 06–07, 07–08, 08–09.
Faculty & Staff Awards Committee, 97–98, 99–00.
Graduate Admissions and Awards Committee, 95–96.
Graduate Advisory Committee, 96-97, 97-98, 99-00, 00–01, 01–02, 02–03, 04–05, 05–06.
Undergraduate Curriculum Committee, 95–96, 96–97, 97–98, 98–99, 99–00, 00–01.
 Subcommittee, restructured first two CS courses, 96-97, 97-98.
 Organizer of new (volunteer) mentoring program, 97-98, 98-99, 99-00, 00-01.
Colloquium Committee, 00–01 (chair), 01-02.
Web Advisory Committee, 98–99, 99–00 (co-chair), 00–01, 01-02, 02-03, 06-07.

Courses Taught

Graduate:

CPSC-629: Analysis of Algorithms
CPSC-620: Computational Geometry
CPSC-626: Parallel Algorithm Design and Analysis
CPSC-643: Robotics
CPSC-689: Special Topics in Randomized Motion Planning
CPSC-689: Special Topics: Seminars in Robotics
CPSC-681: Graduate Seminar

Undergraduate:

CPSC-221: Data Structures & Algorithms
CPSC-221H: Data Structures & Algorithms, Honors
CPSC-311: Analysis of Algorithms
CPSC-311H: Analysis of Algorithms, Honors
CPSC-433: Formal Languages and Automata Theory
CPSC-481: Seminar

Research Support

Research Grants

“CAREER: Building and Searching Data Structures for Spatial Environments” (CCR-9624315), *The National Science Foundation (CAREER Program)*, PI: N. Amato, \$225,000, 4/1/96 – 3/31/02. (Includes \$15,000 in REU Supplements, 1997, 1998, 2000.)
“RI: Small: Scalable Roadmap-Based Methods for Simulating and Controlling Behaviors of Interacting Groups: from Robot Swarms to Crowd Control” (IIS-0917266), *The National Science Foundation*, PI: N. Amato, co-PI: L. Rauchwerger, \$450,000, 09/01/09–08/31/12.
“DC: Small: Collaborative Research: Shape Representation of Large Geometries via Convex Approximation” (IIS-096053), *The National Science Foundation*, PIs: N. Amato (lead), J.-M. Lien (George Mason U.), \$500,000 (\$200,000 TAMU), 09/01/09–08/31/12.

- “Motion Planning Based Techniques for Modeling & Simulating Molecular Motions” (CCF-0830753), *The National Science Foundation*, PI: N. Amato, co-PI: L. Rauchwerger, \$386,000, 09/15/08–09/14/11.
- “A Compositional Approach to Scalable Parallel Software” (CCF-0833199), *The National Science Foundation (HECURA Program)*, PI: L. Rauchwerger, co-PIs: N. Amato, B. Stroustrup, \$1,232,000, 09/01/08–08/31/11.
- “Support of Stockpile Stewardship Program,” *Lawrence Livermore National Security*, PI: J. Morel, co-PIs: M. Adams, N. Amato, R. Arroyave, A. Benzerga, T. Cagin, J.-L. Guermond, Y. Jin, B. Mallick, B. Popov, L. Rauchwerger, \$2,936,677, 09/09/08–06/30/11.
- “Institute for Applied Mathematics and Computational Science (IAMCS),” *King Abdullah University of Science and Technology (KAUST)*, PI: J. Calvin, co-PIs: M. Adams, G. Almes, N. Amato, P. Balbuena, W. Bangerth, R. Carroll, C. Douglas, C. Economides, Y. Efendiev, M. Genton, J.-L. Guermond, C. Hansen, J. Hendler, J. Huang, T. Ioerger, C. Johnson, M. Jun, G. Kanschat, P. Kuchment, R. Lazarov, F. Liang, B. Mallick, J. Pasciak, G. Petrova, B. Popov, L. Rauchwerger, H. Sang, G. Qin, W. Rundell, V. Sarin, B. Stroustrup, V. Taylor, J. Walton, W. Zhao. \$25,000,000, 06/01/08–05/31/13.
- “Center for Radiative Shock Hydrodynamics (CRASH),” *The Department of Energy, PSAAP Program* (DE-FC52-08NA28616), PI: P. Drake (Michigan); co-PIs: K. Powell (Michigan), J. Holloway (Michigan), Q. Stout (Michigan), M. Adams (Nuclear Engineering, TAMU), N. Amato (CSE, TAMU), T. Gombosi (Michigan), S. Karni (Michigan), E. Larsen (Michigan), B. van Leer (Michigan), B. Mallick (Statistics, TAMU), W. Martin (Michigan), J. Morel (Nuclear Engineering, TAMU), P. Roe (Michigan), L. Rauchwerger (CSE, TAMU). I. Sokolov (Michigan), K. Thornton (Michigan), G. Toth (Michigan). \$17,000,000 (Texas A&M portion \$1,850,000), 04/15/08–03/31/13.
- “ARI-LA: A Framework for Developing Novel Detection Systems Focused on Interdicting Shielded HEU” (2008-DN-077-ARI018-02), *The National Science Foundation (DNDO-NSF Academic Research Initiative)*, PI: W. S. Charlton, co-PIs: M. Adams, N. Amato, W. Bangerth, D. R. Boyle, S. G. Choi, Y. Ding, G. M. Gaukler, J.-L. Guermond, G. Kanschat, P. Kuchment, Y. Kuo, S. P. Khatri, E. W. Lindquist, W. F. Miller, Jr., J. C. Ragusa, L. Rauchwerger, C. Sprecher, A. Vedlitz, \$1,440,000, 9/1/07–8/31/10.
- “Nutrition, Biostatistics and Bioinformatics Training Grant (NIH-CA-R25T-090301),” *The National Institutes of Health* PI: R. J. Carroll (Statistics), Amato’s role: investigator and mentor, \$490,000 (direct costs), 07/1/06–06/30/11.
- “SmartApps: Middle-ware for Adaptive Applications on Reconfigurable Platforms,” *The Department of Energy, Office of Science (Operating/Runtime Systems for Extreme Scale Scientific Computation Program)*, PI: L. Rauchwerger, co-PIs: M. Adams (Nuclear Engineering), N. Amato, B. Stroustrup, O. Krieger (IBM), J. Moreira (IBM), V. Sarkar (IBM), D. Quinlan (LLNL), \$1,500,000 (Texas A&M award), 09/1/04–08/31/08.
- “ITR/NGS: STAPL: A Software Infrastructure for Computational Biology and Physics” (ACI-0326350), *The National Science Foundation (Medium ITR Program)*, PI: L. Rauchwerger, co-PIs: N. Amato, B. Stroustrup, M. Adams (Nuclear Engineering), \$404,000, 11/1/03–10/31/08.
- “Efficient Massively Parallel Adaptive Algorithm for Time-Dependent Transport on Arbitrary Spatial Grids,” *The Department of Energy*, PI: M. Adams (Nuclear Engineering), co-PIs: N. Amato, P. Nelson, L. Rauchwerger, \$1,668,827, 5/6/02–4/30/06.
- “ITR/AP: A Motion Planning Approach for Protein Folding Simulation” (CCR-0113974), *The National Science Foundation (ITR Program)*, PI: N. Amato, co-PIs: L. Rauchwerger, Ken Dill (UCSF), \$330,000, 9/1/01–8/31/06.

- “ITR/SY: SmartApps: An Application Centric Approach to Scientific Computing” (ACR-0113971), *The National Science Foundation (ITR Program)*, PI: L. Rauchwerger, co-PI: N. Amato, \$463,809, 9/1/01–2/28/07.
- “ITR/ACS: An Adaptive Wavefront Construction Algorithm for Optimal Seismic Ray Tracing” (ACR-0081510), *The National Science Foundation (ITR Program)*, PI: R. Gibson (Geophysics), co-PI: N. Amato, \$437,927, 9/1/00–8/31/05.
- “NGS: SmartApps: An Application Centric Approach to High Performance Computing” (EIA-0103742), *The National Science Foundation (Next Generation Software Program)*, PI: L. Rauchwerger, co-PIs: N. Amato, J. Torrellas (UIUC), \$300,000, 9/15/01–8/31/05.
- “Geometry, Connectivity, and Simulation of Cortical Networks” (000512-0261-2001), *Texas Higher Education Coordinating Board (ATP Program)*, PI: N. Amato, co-PI: L. Rauchwerger, \$240,400, 1/1/02–08/31/04.
- “SmartApps: Smart Applications for Heterogeneous Computing” (EIA-9975018), *The National Science Foundation (Next Generation Software Program)*, PI: L. Rauchwerger, co-PI: N. Amato, J. Torrellas (UIUC), \$300,000, 10/1/99–9/30/02.
- “PARASOL: An Adaptive Framework for Parallel Processing” (ACI-9872126), *The National Science Foundation*, PI: L. Rauchwerger, co-PI: N. Amato, \$199,662, 1/1/99–12/31/02.
- “Planning Manipulation with Contact under Uncertainty” (IRI-9619850), *The National Science Foundation*, PI: N. Amato, co-PIs: J. Trinkle, Jong-Shi Pang (JHU), \$404,571, 8/1/97–7/31/02. (Includes \$15,000 in REU Supplements 1998.)
- “Real-Time Multibody Dynamics for Virtual Reality Training Systems with Haptic User Interface” (EIA-9805823), *The National Science Foundation (CISE Postdocs in Experimental Computer Science)*, PI: N. Amato, co-PI: J. Trinkle, \$66,000, 4/1/98–3/31/02.
- “Efficient Massively-Parallel Implementation of Modern Deterministic Transport Calculations” (B347886), *Department of Energy (ASCI ASAP Level 2 and 3 Programs)*, PI: M. Adams (Nuclear Engineering), co-PIs: N. Amato, P. Nelson, L. Rauchwerger, \$889,000, 10/21/98–3/31/02.
- “Real-Time Multibody Dynamics for Virtual Reality Training Systems with Haptic User Interface” (ARP-036327-017), *Texas Higher Education Coordinating Board (ARP Program)*, PI: J. Trinkle, co-PI: N. Amato, \$174,930, 1/1/98–8/31/00.
- “Bulk Synchronous Computational Geometry” (CRG-961243), *NATO Collaborative Research Grant Programme*, PI: N. Amato, co-PIs: A. Pietracaprina, G. Pucci, Univ. Padova, Italy, \$9,120, 1/1/97–12/31/98.

Fellowship, Equipment, and Software Grants

- “Undergraduate and Graduate Student Scholarship and Travel Grants for 2009-2011 Grace Hopper Celebration of Women in Computing,” *NSF*, PI: T. Whitney, co-PIs: N. Amato, Deanna Kosaraju, \$332,532, June 1, 2009 – May 31, 2012.
- IBM Faculty Award in support of activities promoting women in computing, *IBM*, PI: N. Amato, \$30,000, January 2008.
- “CRI Infrastructure Acquisition: A Cluster Testbed for Experimental Research in High Performance Computing,” *The National Science Foundation*, PI: V. Taylor, Co-PI: N. Amato, L. Rauchwerger \$537,000, 5/15/06–4/30/10.
- “REU Site: Research Experiences at Texas A&M University Department of Computer Science for Undergraduate Students,” *The National Science Foundation*, PI: V. Taylor, Co-PI: J. Chen, N. Amato, \$255,000, 4/15/04–3/31/07. Renewal, \$300,000, 4/15/07–3/31/10.

- ”Student Travel Support for the 16th International Conference on Parallel Architecture and Compiler Techniques (PACT), September 2007,” *The National Science Foundation*, PI: Lawrence Rauchwerger, Co-PI: Nancy M. Amato, \$12,000, September 1, 2007 – August 31, 2008.
- “Student Participant Support for the Workshop on the Algorithmic Foundations of Robotics (WAFR),” *The National Science Foundation*, PI: N. Amato, \$15,000, 7/15/06–6/30/07.
- “Workshop NGS: Support for the Workshop on Languages and Compilers for Parallel Computing (LCPC),” *The National Science Foundation*, PI: L. Rauchwerger, Co-PI: N. Amato, \$15,000, 9/1/03–8/31/04.
- “Scale-Up, Evaluation, and Institutionalization of the CRA Distributed Mentor Project” (EIA-0124641), *The National Science Foundation*, PI: N. Amato, Co-PIs: A. Bernat (CRA), M. Harrold (Georgia Tech), \$1,613,911, 5/1/02–4/30/07.
- “GAANN: Fellowships for Research in Computer Science and Computer Engineering,” *U.S. Department of Education (GAANN Fellowship Program)* (P200A030109), PI: V. Taylor, co-PIs: D. Friesen, J. Chen, J. Welch, N. Amato, \$393,552, 8/15/03 – 8/14/07.
- “HP University Grants – Upgrade 16-proc V2200 System to 20-proc V2500 System,” *Hewlett-Packard Co.*, PIs: N. Amato, L. Rauchwerger, \$583,430, 3/00.
- “Research Equipment Grant – 16 Processor V-class Shared Memory Multiprocessor Server,” *Hewlett-Packard Co.*, PI: L. Bhuyan, co-PIs: N. Amato, L. Rauchwerger, co-Investigators: B. Childs, S. Oliveira, P. Nelson, Texas A&M University, \$1,200,000, 1998.
- “GAANN: Fellowships in Robotics, Training Science, Mobile Computing and High Performance Computing” (P200A80305), *U.S. Department of Education (GAANN Fellowship Program)*, PI: R. Volz, co-PIs: N. Amato, L. Everett, J. Welch, co-Investigators: L. Rauchwerger, J. Trinkle, N. Vaidya, J. Yen, Texas A&M University, \$601,224, 8/15/98–8/14/01.
- “MRI: Development of Brain Tissue Scanner” (EIA-0079874), *The National Science Foundation*, PI: B. McCormick, co-PIs: N. Amato, L. Rauchwerger, Texas A&M University, J. Fallon, UC Irvine, \$105,000, 9/1/00–7/31/01.
- “MRI: Training in Virtual Environments” (EIA-9810937), *The National Science Foundation*, PI: R. Volz, co-PIs: N. Amato, J. Trinkle, J. Yen, J. Wall, Texas A&M University, \$134,996, 9/15/98–8/31/01.
- “CISE Research Instrumentation: Distributed Computing and Real-Time Networking Research” (CDA-9529442), *The National Science Foundation*, PI: N. Vaidya, co-PIs: J. Welch, W. Zhao, N. Amato, Texas A&M University, \$108,360, 1/1/96–12/31/97.
- Product Vision and motion planner (CAD software), *The General Electric Company* (GE Corporate R&D Center), 1996.

Postdoctoral Scholars and Students

Postdoctoral Scholars Sponsored

- Dr. Jennifer E. Walter, 1/01–8/01 (PhD, CS, Texas A&M, 12/00). Current position: Associate Professor, Vassar College, Poughkeepsie, NY.
- Dr. Sooyong Lee, 4/99–5/00 (PhD, ME, MIT, 5/96). First position: Assistant Professor, Dept. of Mechanical Engineering, Texas A&M University, College Station, TX.
- Dr. Kyunghwan Kim, 8/98–8/99 (PhD, EE, Tokyo University, 8/97). First position: Research Scientist, Korea Institute of Science and Technology (KIST), Seoul, Korea.
- Dr. Mauro Bianco, 10/07–present (PhD, CS, Univ. Padova, Italy).

Doctoral Students

- Lydia Tapia, PhD. 12/09, “Intelligent Motion Planning and Analysis with Probabilistic Roadmap Methods for the Study of Complex and High-Dimensional Motions.” GAANN Fellowship, 2001-2002, 2005-2006; Molecular Biophysics Training Program Fellowship, 2006-2007; Philanthropic Educational Organization Scholar Award, 2008-2009. First position: Computing Innovation (CI) Fellow, UT Austin, with Ron Elber.
- Marco Morales, PhD. 12/07, “Metrics for Sampling-Based Motion Planning.” Fulbright-Garcia Robles Fellowship, 2000-2004. Current Position: Assistant Professor, Instituto Tecnológico Autónomo de México (ITAM), Mexico.
- Xinyu Tang, PhD. 12/07, “Techniques for Modeling and Analyzing RNA and Protein Folding Energy Landscapes.” Current Position: Google, Inc.
- Jyh-Ming Lien, PhD. 12/06, “Approximate Convex Decomposition and its Applications,” Current Position: Assistant Professor, George Mason University.
- Jinsuck Kim, PhD. 8/04, “A Framework for Roadmap-Based Navigation and Sector-Based Localization of Mobile Robots.” Current Position: Software Engineer, Arcadia Entertainment (start-up, multi-player computer games), San Jose, CA.
- Guang Song, PhD. 12/03, “A Motion Planning Approach to Protein Folding.” IBM PhD Fellowship, 2002-2003. Current Position: Assistant Professor, Iowa State University.
- Osman Burchan Bayazit, PhD. 5/03, “Solving Motion Planning Problems by Iterative Relaxation of Constraints.” First Position: Assistant Professor, Washington University in St. Louis.
- Wookho Son, PhD. 5/01, “A Generalized Interactive Dynamic Simulation for Multi-Rigid-Body Systems” (co-advisor Amato; primary advisor was J. Trinkle). Current Position: Research Scientist, Electronics and Telecommunications Research Inst., Taejon, Korea.
- Lucia K. Dale, PhD. 12/00, “Optimization Techniques for Probabilistic Roadmaps.” Current Position: Associate Professor, The University of South, Sewanee, TN.
- Daniel Vallejo, PhD. 12/00, “An Adaptive Framework for ‘Single Shot’ Motion Planning.” Current Position: Assistant Professor, University of the Americas, Puebla, Mexico.
- Greg Schmidt, PhD. 12/00, “Model-Based Gesture Recognition” (co-advisor Amato; primary advisor D. House, Architecture). Current Position: Research Scientist, Naval Research Lab, VA.
- Steven Wilmarth, PhD. (Mathematics) 12/99, “A Probabilistic Method for Rigid Body Motion Planning using Sampling from the Medial Axis of the Free Space” (primary advisor Amato; co-advisor P. Stiller, Math). First Position: Metron, Inc., Reston, VA.
- Mr. Antal Buss, in progress. Colciencias-LASPAU (Fulbright) Scholarship, Colombia/USA.
- Mr. Samson Jacobs, in progress.
- Mr. Troy McMahan, in progress.
- Ms. Olga Pearce, in progress. Association of Former Students (AFS) Fellowship, 2004-2006; GAANN Fellowship, 2005-2006; NSF Graduate Research Fellowship, 2006-2009.
- Mr. Roger Pearce, in progress. GAANN Fellowship, 2006-2007.
- Mr. Samuel Rodriguez, in progress. University Merit Fellowship, LSAMP Bridge to Doctorate Fellowship, 2004-2005; National Physical Sciences Consortium Fellowship, 2005-2010.
- Mr. Gabriel Tanase, in progress. (Co-advisor Lawrence Rauchwerger.)
- Ms. Shawna Thomas, in progress. NSF PhD Fellowship, 2002-2005; Philanthropic Educational Organization Scholar Award, 2005-2006; GAANN Fellowship, 2006-2007; IBM PhD Fellowship, 2007-2009.
- Mr. Xiabing Xu, in progress.

Masters Students

Amato has supervised 9 masters students with thesis (3 current) and 6 non-thesis masters students. Five of these students continued on in our graduate program for their PhD, and Amato is supervising one of them currently.

Undergraduate Research Projects Supervised

Amato has supervised a total of 44 undergraduate researchers (28 have already graduated): 17 Texas A&M (TAMU) undergrads performing summer and academic year research projects and 27 non-TAMU summer undergraduate research interns (14 CRA-W DMP students, 8 international ugrads).

- 11 of the TAMU students participated in the highly selective University Undergraduate Research Fellows program that culminates in a senior honors thesis, 3 were awarded best thesis in engineering (& physics) for their year.
- 13 co-authored at least 1 peer reviewed conference or journal paper.
- 25 of the 28 graduated students have gone on to graduate school; of the TAMU students, 6 stayed at TAMU and the others went to top programs (including 2 at Stanford, and 1 each at CMU, UIUC, UT Austin, and USC).
- 4 were awarded NSF graduate research fellowships, 5 were awarded other competitive fellowships, 4 were awarded Goldwater Scholarships while still undergraduates,
- Amato's students won the department undergraduate Research Award in 1999, 2000, 2001, 2002, 2006.

Publications in Refereed Journals and Conferences

(Organized by topic; most papers available at <http://parasol.tamu.edu/~amato/>)

Amato's advisees indicated by: undergraduates[†], graduate students[‡], postdocs*.

Computational Biology

- [1] Lydia Tapia[‡], Shawna Thomas[‡], Nancy M. Amato, "A Motion Planning Approach to Studying Molecular Motions," *Communications in Information and Systems*, special issue in honor of Michael Waterman, 2009, to appear.
- [2] Xinyu Tang[†], Shawna Thomas[‡], Lydia Tapia[‡], David P. Giedroc, Nancy M. Amato, "Simulating RNA Folding Kinetics on Approximated Energy Landscapes," *Journal of Molecular Biology*, **3811**(4), 2008, pp. 1055-1067. (Journal version of [4].)
- [3] Lydia Tapia[‡], Xinyu Tang[†], Shawna Thomas[‡], Nancy M. Amato, "Kinetics Analysis Methods For Approximate Folding Landscapes," *Proc. 15th Annual International Conference on Intelligent Systems for Molecular Biology (ISMB) & 6th European Conference on Computational Biology (ECCB)*, July 2007, published in *Bioinformatics*, **23**, 2007, pp. i539-i548.
- [4] Xinyu Tang[†], Shawna Thomas[‡], Lydia Tapia[‡], Nancy M. Amato, "Tools for Simulating and Analyzing RNA Folding Kinetics," *Proc. the 11th International Conference on Computational Molecular Biology (RECOMB)*, April 2007, pp. 268-282.
- [5] Shawna Thomas[‡], Xinyu Tang[†], Lydia Tapia[‡], Nancy M. Amato, "Simulating Protein Motions with Rigidity Analysis," special issue of selected papers from *RECOMB 2006*, *Journal of Computational Biology*, **14**(6), 2007, pp. 839-855. (Journal version of [6].)

- [6] Shawna Thomas[‡], Xinyu Tang[‡], Lydia Tapia[‡], Nancy M. Amato, “Simulating Protein Motions with Rigidity Analysis,” *Proc. the 10th International Conference on Computational Molecular Biology (RECOMB)*, April 2006, pp. 394–409.
- [7] Shawna Thomas[‡], Guang Song[‡], Nancy M. Amato, “Protein Folding by Motion Planning,” *Physical Biology*, **2**, November 2005, pp. S148–S155.
- [8] Xinyu Tang[‡], Bonnie Kirkpatrick[‡], Shawna Thomas[‡], Guang Song[‡], Nancy M. Amato, “Using Motion Planning to Study RNA Folding Kinetics,” special issue of selected papers from *RECOMB 2004*, *Journal of Computational Biology*, **12**(6), 2005, pp. 862–881. (Journal version of [9].)
- [9] Xinyu Tang[‡], Bonnie Kirkpatrick[‡], Shawna Thomas[‡], Guang Song[‡], Nancy M. Amato, “Using Motion Planning to Study RNA Folding Kinetics,” *Proc. the 8th International Conference on Computational Molecular Biology (RECOMB)*, March 2004, pp. 252–261.
- [10] Shawna Thomas[‡] and Nancy M. Amato, “Parallel Protein Folding with STAPL,” *Proc. 3rd IEEE International Workshop On High Performance Computational Biology (HiCOMB)*, April 2004.
- [11] Guang Song[‡] and Nancy M. Amato, “A Motion Planning Approach to Folding: From Paper Craft to Protein Folding,” *IEEE Transactions on Robotics and Automation*, **20**(1), 2004, pp. 60–71. (Journal version of [18].)
- [12] Nancy M. Amato, Ken A. Dill, and Guang Song[‡], “Using Motion Planning to Map Protein Folding Landscapes and Analyze Folding Kinetics of Known Native Structures,” special issue of selected papers from *RECOMB 2002*, *Journal of Computational Biology* **10**(3-4), 2003, pp. 239–255. (Journal version of [14].)
- [13] Guang Song[‡], Shawna Thomas[‡], Ken A. Dill, J. Martin Scholtz, Nancy M. Amato, “A Path Planning-Based Study of Protein Folding Pathways with a Case Study of Hairpin Formation in Protein G and L,” *Proc. Pacific Symposium on Biocomputing (PSB)* January 2003, pp. 240–251.
- [14] Nancy M. Amato, Ken A. Dill, Guang Song[‡], “Using Motion Planning to Map Protein Folding Landscapes and Analyze Folding Kinetics of Known Native Structures,” *Proc. the 6th International Conference on Computational Molecular Biology (RECOMB)*, April 2002, pp. 2–11.
- [15] Nancy M. Amato and Guang Song[‡], “Using Motion Planning to Study Protein Folding Pathways,” special issue of selected papers from *RECOMB 2001*, *Journal of Computational Biology*, **9**(2), 2002, pp. 149–168. (Journal version of [16].)
- [16] Guang Song[‡], Nancy M. Amato, “Using Motion Planning to Study Protein Folding Pathways,” *Proc. the 5th International Conference on Computational Molecular Biology (RECOMB)*, April 2001, pp. 287–296.
- [17] O. Burchan Bayazit[‡], Guang Song[‡], and Nancy M. Amato, “Ligand Binding with OBPRM and User Input,” *Proc. of the 2001 IEEE International Conference on Robotics and Automation (ICRA)*, May 2001, pp. 954–959.
- [18] Guang Song[‡], and Nancy M. Amato, “A Motion Planning Approach to Folding: From Paper Craft to Protein Folding,” *Proc. of the 2001 IEEE International Conference on Robotics and Automation (ICRA)*, May 2001, pp. 948–953. One of six finalists for **Anton Philips Best Student Paper Award**, IEEE International Conference on Robotics and Automation, 2001.

Robotics (Motion Planning, Animation, Mobile & Reconfigurable Robots, Virtual/Augmented Reality)

- [19] Xinyu Tang[‡], Shawna Thomas[‡], Philip Coleman[‡], Nancy M. Amato, “Reachable Distance Space: Efficient Sampling-Based Planning for Spatially Constrained Systems,” *International Journal of Robotics Research (IJRR)*, special issue of selected papers from WAFR 2008, to appear.
- [20] Lydia Tapia[‡], Shawna Thomas[‡], Bryan Boyd[‡], Nancy M. Amato, “An Unsupervised Adaptive Strategy for Constructing Probabilistic Roadmaps,” *Proc. of the 2009 IEEE International Conference on Robotics and Automation (ICRA)*, Kobe, Japan, May 2009, pp. 4037-4044.
- [21] Xinyu Tang[‡], Shawna Thomas[‡], Nancy M. Amato, “Planning with Reachable Distances,” Algorithmic Foundation of Robotics VIII, Selected Contributions of the Eighth International Workshop on the Algorithmic Foundations of Robotics (WAFR 2008), Springer Tracts in Advanced Robotics, to appear.
- [22] Roger Pearce[‡], Marco Morales[‡], Nancy M. Amato, “Structural Improvement Filtering Strategy for PRM,” *Proc. of Robotics: Science and Systems (RSS)*, 2008, pp. 167–174.
- [23] Samuel Rodriguez[‡], Jyh-Ming Lien[‡], Nancy M. Amato, “A Framework for Planning Motion in Environments with Moving Obstacles,” *Proc. of the 2007 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2007, pp. 3309–3314.
- [24] Marco Morales[‡], Roger Pearce[‡], Nancy M. Amato, “Analysis of the Evolution of C-Space Models,” *Proc. of the 2007 IEEE International Conference on Robotics and Automation (ICRA)*, 2007, pp. 1029–1034.
- [25] Xinyu Tang[‡], Shawna Thomas[‡], Nancy M. Amato, “Fast Enforcement of Closure Constraints,” *Proc. of the 2007 IEEE International Conference on Robotics and Automation (ICRA)*, 2007, pp. 2694–2699.
- [26] Shawna Thomas[‡], Marco Morales[‡], Xinyu Tang[‡], Nancy M. Amato, “Biasing Samplers to Improve Motion Planning Performance,” *Proc. of the 2007 IEEE International Conference on Robotics and Automation (ICRA)*, 2007, pp. 1625–1630.
- [27] Dawen Xie[‡], Marco Morales[‡], Roger Pearce[‡], Shawna Thomas[‡], Jyh-Ming Lien[‡], Nancy M. Amato, “Incremental Map Generation (IMG),” Algorithmic Foundation of Robotics VII, Selected Contributions of the Seventh International Workshop on the Algorithmic Foundations of Robotics (WAFR 2006), Springer Tracts in Advanced Robotics, vol. 47, 2008, pp. 53-68.
- [28] Samuel Rodriguez[‡], Shawna Thomas[‡], Roger Pearce[‡], Nancy M. Amato, “RESAMPL: A Region-Sensitive Adaptive Motion Planner,” Algorithmic Foundation of Robotics VII, Selected Contributions of the Seventh International Workshop on the Algorithmic Foundations of Robotics (WAFR 2006), Springer Tracts in Advanced Robotics, vol. 47, 2008, pp. 285-300.
- [29] Marco Morales[‡], Roger Pearce[‡], Nancy M. Amato, “Metrics for Comparing C-Space Roadmaps,” *Proc. of the 2006 IEEE International Conference on Robotics and Automation (ICRA)*, 2006, pp. 1268–1273.
- [30] Samuel Rodriguez[‡], Xinyu Tang[‡], Jyh-Ming Lien[‡], Nancy M. Amato, “An Obstacle-Based Rapidly-Exploring Random Tree,” *Proc. of the 2006 IEEE International Conference on Robotics and Automation (ICRA)*, 2006, pp. 895-900.
- [31] Samuel Rodriguez[‡], Jyh-Ming Lien[‡], Nancy M. Amato, “Planning Motion in Completely Deformable Environments,” *Proc. of the 2006 IEEE International Conference on Robotics and Automation (ICRA)*, 2006, pp. 2466–2471.
- [32] Aimee Vargas E.[‡], Jyh-Ming Lien[‡], Nancy M. Amato, “Vizmo++,” *Proc. of the 2006 IEEE International Conference on Robotics and Automation (ICRA)*, 2006, pp. 727–732.

- [33] Jennifer E. Walter, Elizabeth M. Tsai[†], Nancy M. Amato, ‘Algorithms for Fast Concurrent Reconfiguration of Hexagonal Metamorphic Robots,’ *IEEE Transactions on Robotics*, **21**(4), 2005, pp. 621–631.
- [34] O. Burchan Bayazit, Dawen Xie[‡], Nancy M. Amato, ‘Iterative Relaxation of Constraints: A Framework for Improving Automated Motion Planning,’ *Proc. of the 2005 IEEE/RSJ International Conference on Intelligent Robotics and Systems (IROS)*, August 2005, pp. 586–593.
- [35] Marco Morales[‡], Lydia Tapia[‡], Roger Pearce[‡], Samuel Rodriguez[‡], Nancy M. Amato, ‘C-Space Subdivision and Integration in Feature-Sensitive Motion Planning,’ *Proc. of the 2005 IEEE International Conference on Robotics and Automation (ICRA)*, 2005, pp. 3125–3130.
- [36] Jyh-Ming Lien[‡], Samuel Rodriguez[‡], Jean-Philippe Malric[†], and Nancy M. Amato, ‘Shepherding Behaviors with Multiple Shepherds,’ *Proc. of the 2005 IEEE International Conference on Robotics and Automation (ICRA)*, 2005, pp. 3413–3418.
- [37] O. Burchan Bayazit, Jyh-Ming Lien[‡], Nancy M. Amato, ‘Swarming Behavior Using Probabilistic Roadmap Techniques,’ *Lecture Notes in Computer Science (LNCS)*, volume 3342, Jan 2005, pp. 112-125.
- [38] Jennifer Walter, Jennifer L. Welch, Nancy M. Amato, ‘Distributed Reconfiguration of Metamorphic Robot Chains,’ *Distributed Computing*, Springer-Verlag, **17**, 2004, pp. 171-189.
- [39] Wookho Son[‡], Kyunghwan Kim[‡], Nancy M. Amato, and Jeffrey C. Trinkle, ‘A Generalized Framework for Interactive Dynamic Simulation for MultiRigid Bodies’, *IEEE Tran. on Systems, Man and Cybernetics Part B-CYBERNETICS*, **34**(2), 2004, pp. 912-924.
- [40] Jinsuck Kim[‡], Nancy M. Amato, ‘Complexity Analysis and Approximate Solutions for Two Multiple-Robot Localization Problems,’ *Proc. of the 2004 IEEE International Conference on Robotics and Automation (ICRA)*, 2004, pp. 1052–1057.
- [41] Jyh-Ming Lien[‡], O. Burchan Bayazit[‡], Ross Sowell[†], Samuel Rodriguez[‡], and Nancy M. Amato, ‘Shepherding Behaviors,’ *Proc. of the 2004 IEEE International Conference on Robotics and Automation (ICRA)*, 2004, pp. 4159–4164.
- [42] Jennifer E. Walter, Mary E. Brooks[†], David Little[†], and Nancy M. Amato, ‘Enveloping Multi-Pocket Obstacles with Hexagonal Metamorphic Robots,’ *Proc. of the 2004 IEEE International Conference on Robotics and Automation (ICRA)*, April 2004, pp. 2204-2209.
- [43] Dawen Xie[‡] and Nancy M. Amato, ‘A Kinematics-Based Probabilistic Roadmap Method for High DOF Closed Chain Systems,’ *Proc. of the 2004 IEEE International Conference on Robotics and Automation (ICRA)*, 2004, pp. 473–478.
- [44] M. Morales[‡], L. Tapia[‡], R. Pearce[‡], S. Rodriguez[‡], N. M. Amato ‘A Machine Learning Approach for Feature-Sensitive Motion Planning,’ Algorithmic Foundation of Robotics VI, Selected Contributions of the Sixth International Workshop on the Algorithmic Foundations of Robotics (WAFR 2004), Springer Tracts in Advanced Robotics, vol. 17, 2005, pp. 361-376.
- [45] Jennifer E. Walter, Mary E. Brooks[†], and Nancy M. Amato, ‘Filling an Obstacle Pocket with Hexagonal Metamorphic Robots,’ *Proc. of 8th Conference on Intelligent Autonomous Systems (IAS-8)*, Amsterdam, The Netherlands, March 2004, pp. 703-711.
- [46] Jinsuck Kim[‡], Roger A. Pearce[†], Nancy M. Amato, ‘Feature-Based Localization using Scannable Visibility Sectors,’ *Proc. of the 2003 IEEE International Conference on Robotics and Automation (ICRA)*, September 2003, pp. 2854–2859.

- [47] Jinsuck Kim[‡], Roger A. Pearce[†], Nancy M. Amato, “Extracting Optimal Paths from Roadmaps for Motion Planning,” *Proc. of the 2003 IEEE International Conference on Robotics and Automation (ICRA)*, September 2003, pp. 2424–2429.
- [48] Jyh-Ming Lien[‡], Shawna Thomas[‡], Nancy M. Amato, “A General Framework for Sampling on the Medial Axis of the Free Space,” *Proc. of the 2003 IEEE International Conference on Robotics and Automation (ICRA)*, September 2003, pp. 4439–4444.
- [49] Marco Morales[‡], Samuel Rodriguez[†], Nancy M. Amato, “Improving the Connectivity of PRM Roadmaps,” *Proc. of the 2003 IEEE International Conference on Robotics and Automation (ICRA)*, September 2003, pp. 4427–4432.
- [50] Guang Song[‡], Shawna Thomas[‡], Nancy M. Amato, “A General Framework for PRM Motion Planning,” *Proc. of the 2003 IEEE International Conference on Robotics and Automation (ICRA)*, September 2003, pp. 4445–4450.
- [51] Jennifer E. Walter, Elizabeth M. Tsai[†], Nancy M. Amato, “Enveloping Obstacles with Hexagonal Metamorphic Robots,” *Proc. of the 2003 IEEE International Conference on Robotics and Automation (ICRA)*, September 2003, pp. 741–748.
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- [53] O. Burchan Bayazit[‡], Jyh-Ming Lien[‡], Nancy M. Amato, “Better Group Behaviors using Rule-Based Roadmaps,” *Algorithmic Foundation of Robotics V, Selected Contributions of the Fifth International Workshop on the Algorithmic Foundations of Robotics (WAFR 2002)*, Springer Tracts in Advanced Robotics, vol. 7, 2002, pp. 95–111.
- [54] O. Burchan Bayazit[‡], Jyh-Ming Lien[‡], Nancy M. Amato, “Better Group Behaviors in Complex Environments using Global Roadmaps,” *Proc. Artificial Life VIII: 8th International Conference on the Simulation and Synthesis of Living Systems (ALIFE 8)*, December 2002, pp. 362–370.
- [55] Jinsuck Kim[‡], Roger Pearce[†], Nancy M. Amato, “Robust Geometric-Based Localization in Indoor Environments using Sonar Range Sensors,” *Proc. the 2002 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, vol 1, October 2002, pp. 421–426.
- [56] O. Burchan Bayazit[‡], Jyh-Ming Lien[‡], Nancy M. Amato, “Roadmap-Based Flocking for Complex Environments,” *Proc. 10th Pacific Conference on Computer Graphics and Applications, (Pacific Graphics 2002)*, October 2002, pp. 104–113.
- [57] O. Burchan Bayazit[‡], Jyh-Ming Lien[‡], Nancy M. Amato, “Probabilistic Roadmap Motion Planning for Deformable Objects,” *Proc. of the 2002 IEEE International Conference on Robotics and Automation (ICRA)*, May 2002, pp. 2126–2133.
- [58] Jennifer E. Walter*, Elizabeth M. Tsai[†], Nancy M. Amato, “Choosing Good Paths for Fast Distributed Reconfiguration of Hexagonal Metamorphic Robots,” *Proc. of the 2002 IEEE International Conference on Robotics and Automation (ICRA)*, May 2002, pp. 102–109.
- [59] Guang Song[‡], Nancy M. Amato, “Randomized Motion Planning for Car-like Robots with C-PRM,” *Proc. the 2001 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, November 2001, pp. 37–42.
- [60] Lucia K. Dale[‡] and Nancy M. Amato, “Probabilistic Roadmaps - Putting It All Together,” *Proc. of the 2001 IEEE International Conference on Robotics and Automation (ICRA)*, May 2001, pp. 1940–1947.

- [61] Jinsuck Kim[‡], Nancy M. Amato, and Sooyong Lee*, “An Integrated Mobile Robot Path (Re)Planner and Localizer for Personal Robots,” *Proc. of the 2001 IEEE International Conference on Robotics and Automation (ICRA)*, May 2001, pp. 3789–3794.
- [62] Wookho Son[‡], Jeffrey C. Trinkle, and Nancy M. Amato, “Hybrid Dynamic Simulation of Rigid-Body Contact with Coulomb Friction,” *Proc. of the 2001 IEEE International Conference on Robotics and Automation (ICRA)*, May 2001, pp. 1376–1381.
- [63] Guang Song[‡], Shawna Miller[†], and Nancy M. Amato, “Customizing PRM Roadmaps at Query Time,” *Proc. of the 2001 IEEE International Conference on Robotics and Automation (ICRA)*, May 2001, pp. 1500–1505.
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