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, robotics, computational biology, computational geometry, animation, CAD, VR.

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

Professional Experience

UNIVERSITY OF ILLINOIS, Urbana-Champaign, IL (starting 1/19)
Department Head, Computer Science (starting 1/19)
Abel Bliss Professor of Engineering (starting 1/19)

TEXAS A&M UNIVERSITY, College Station, TX (1/95–present)
Senior Director for Honors Programs, College of Engineering (9/14–)
Co-Director, ACE Scholars Honors Program, Dept. Computer Science and Engineering (9/14–)
Interim Department Head (8/13–8/14)
Ombuds Officer, College of Engineering (9/12–8/13)
Unocal Professor (9/11–)
Associate Director, Center for Large-Scale Scientific Simulations (9/11–)
Deputy Director, Inst. Applied Mathematics and Computational Science (IAMCS) (6/10–8/13)
Chair, Alliance for Bioinformatics, Computational Biology & Systems Biology (8/07–2013)
Past Chair (9/10-8/11), Chair (8/09-8/10) Council of Principal Investigators (CPI)
Director, OSIS (information system), Dept. of Computer Science and Engineering (3/06–)
Graduate Advisor, Dept. of Computer Science (1/05–5/06)
Professor, Dept. of Computer Science and Engineering (9/04–)
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–)
Assistant Professor, Dept. of Computer Science and Engineering (1/95–8/00)

ETH, Zurich, Switzerland. Guest Professor (9/18–12/18)

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 (ICSI), 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)

Consulting

3M Corporation, 2015–present.

Honors and Awards

AFS Distinguished Achievement Award for Research (University level), Texas A&M, 2018.

Fellow, Association for the Advancement of Artificial Intelligence (AAAI), 2018. For significant contributions to the algorithmic foundations of motion planning in robotics and computational biology and leadership in broadening participation in computing.

IEEE/RSJ International Conference on Intelligent Robots & Systems Distinguished Service Award, 2017.

IEEE Robotics and Automation Society Distinguished Service Award, 2017.

Fellow, Association for Computing Machinery (ACM), 2015. For contributions to robotics and leadership in broadening participation in computing.

Regents Professor, Texas A&M University System, 2015.

Distinguished Alumni Educator Award, Dept. Computer Science, Univ. Illinois, 2015

Best Paper Award Finalist, 24^{th} Int. Conf. Parallel Architectures and Compilation Techniques (PACT), 2015.

Named to Robohub 25 Women in Robotics You Need to Know About – 2015.

Best Paper Award, 29^{th} Int. Conf. on Supercomputing (ICS), 2015.

Award for Graduate Teaching Excellence (selected by students), Department of Computer Science and Engineering, Texas A&M University, 2015.

A. Nico Habermann Award, The Computing Research Association (CRA), 2014.

Conference Best Paper Award, 23^{rd} Int. Conf. Parallel Architectures and Compilation Techniques (PACT), 2014.

NCWIT Harrold and Notkin Research and Graduate Mentoring Award, 2014.

Fellow, American Association for the Advancement of Science (AAAS), 2013. For contributions to the algorithmic foundations of motion planning, computational biology, computational geometry, and parallel computing.

IEEE Hewlett-Packard/Harriet B. Rigas Award, 2013.

Betty M. Unterberger Award for Outstanding Service to Honors Education, Texas A&M, 2013.

ACM Distinguished Scientist, 2012.

AFS Distinguished Achievement Award for Teaching (University level), Texas A&M, 2011.

Fellow, Institute for Electrical and Electronics Engineers (IEEE), 2010. For contributions to the algorithmic foundations of motion planning in robotics and computational biology.

AFS Distinguished Achievement Award for Teaching (College level), Texas A&M, 2010.

E.D. Brockett Professor Award, College of Engineering, Texas A&M, 2010.

TEES Sr. Fellow, College of Engineering, Texas A&M, 2009.

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

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

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

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

Fellow, World Technology Network, 2005.

TEES Fellow Award, College of Engineering, Texas A&M University, 2004.

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

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 Fellow Award, College of Engineering, Texas A&M University, 2001.

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

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

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

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

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

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

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

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.

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

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

Bellcore One-Year-On-Campus (OYOC) Graduate Study Program, 1987–1988.

Professional Service and Activities

Journal Editorial Activities

Steering Committee Member, *IEEE Transactions on Haptics*, 2018–present.

Steering Committee Member, *IEEE Transactions on Medical Robotics and Bionics*, 2018–present.

Editorial Advisory Board Member, *Springer Tracts in Advanced Robotics (STAR) Series*, 2016–present.

Senior Editor, *IEEE Robotics and Automation Letters*, 2015–present.

Editor, *ROBOMECH Journal* (Springer Open), 2013–present.

Editorial Board Member, *Theory of Computing Systems (TCS)*, 2009–2018.

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

Editorial Board Member, *Journal of Computational Geometry* (http://jocg.org/), 2009–2011.

Editor, *Journal of Information Science and Engineering*, 2005–2011.

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

Member, NAE Grand Challenge Scholars Program Steering Committee, July 2017–present.

Chair, External Program Review, Department of Computer Science, University of North Carolina, Chapel Hill, November 2017.

Member, AnitaB.org Academic Advisory Council, 2015–present.

Member, Computer Science Department Advisory Board, Harvey Mudd College, 2012-present.

Review Board Member, Center for Graduate Education Initiative, JAIST (Japan Advanced Institute of Sci. and Tech.), Nomi, Ishikawa, Japan, 2010-present.

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), Co-Chair for IIS, CISE Directorate, October 2014; 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); Special Emphasis Panel (6/10).

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, 12/09, 3/11, 2/13, 4/16).

Professional Societies and Other Major Service Activities

American Association for the Advancement of Science (AAAS)

Member-at-Large (elected), Section Steering Group, Information, Computing and Communication (Section T), 2015-2019.

Association for Computing Machinery (ACM)

ACM Senior Member Selection Committee, member (2014-2016), chair (2017).

IEEE Robotics and Automation Society (IEEE RAS)

Vice President, Member Activities, IEEE RAS, 2018-2019.

Member (elected), IEEE RAS Administrative Committee (AdCom), 2009-2011, 2012-2014.

Chair (2016–present), Member (2014–2015), IEEE Robotics and Automation Technical Field Award Selection Committee.

Chair (2012-2017), Member (2009-2011), IEEE RAS Electronic Products and Services Board (EPSB). As Chair, responsible for contracting with and overseeing commercial enterprise to develop new website for the society, and to expand services supporting conferences, journals, technical communities, and member communities.

Member, IEEE RAS Fellows Evaluation Committee, 2010, 2012.

Member, IEEE RAS Steering Committee for Technical Programs (SCTP), 2009–2010, 2014–2015.

Member, IEEE RAS Women in Engineering Committee, 2016-2017.

IEEE Computer Society (IEEE CS)

Vice Chair, IEEE Fellows Evaluation Committee, Computer Society, 2018. Member, IEEE Fellows Evaluation Committee, Computer Society, 2010, 2012, 2013.

IEEE Sensor Council

Member, IEEE Fellows Evaluation Committee, Sensor Council, 2013.

Computing Research Association (CRA):

Member (elected), Board of Directors, 7/1/2014–6/30/2017, 7/1/2017–6/30/2020.

NCWIT (National Center for Women & Information Technology) Academic Alliance:

Advisory Committee (9/11–present).

Co-Chair (9/09–8/11). Major contributions included setting up current structure of the NCWIT AA in which the AA has a number of projects and the co-leaders of the projects are part of the AA executive committee, drafting bylaws that describe this structure and the 3 year co-chair rotation cycle.

CRA Committee on the Status of Women in Computing Research (CRA-W):

Co-Chair (10/14–10/17).

Steering Committee Member (9/11–present).

Board Member (9/00–present). Co-Director of the Distributed REU (DREU) Project (2000–present) and of the Distinguished Lecture Series (DLS) Project (8/08-8/13).

(DREU and DLS were jointly administrered by the CDC and CRA-W from 2008-2013.) DREU matches undergraduate women and undergraduate men from groups underrepresented in computing, including ethnic minorities and persons with disabilities, with a faculty mentor for a summer research experience at the faculty member's home institution. Since 2000, more than 600 undergraduates from 300 institutions and mentors from 100 host research universities have participated in DREU.

CRA Education Committee (CRA-E):

Committee Member, 11/11–present.

Coalition to Diversity Computing (CDC):

Committee Member, 9/08–7/16 (when CDC disbanded). The CDC (http://cdc-computing.org/) is co-sponsored by the IEEE, the ACM (Association for Computing Machinery), and the CRA, the three main professional societies in computing. Serve as CDC co-Director of DREU project (see description in CRA-W section above) since 2008.

Service on Conference Organizing and Program Committees

Chair (2012–present), Member (2009–present), Intern. Workshop on the Algorithmic Foundations of Robotics (WAFR) Steering Committee.

Board Member, Robotics Science and Systems (RSS) Foundation, 2015–2021.

General Co-Chair, International Symposium on Robotics Research (ISRR), Chile, 2017.

General Chair, Robotics: Science and Systems (RSS), MIT, Cambridge, MA, 2017.

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

Conference Co-Chair, WAFR 2014: Intern. Workshop on Algorithmic Foundations of Robotics (WAFR), Istanbul, Turkey, 2014.

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

Program Chair, Robotics: Science and Systems (RSS), 2016. Ann Arbor, MI, USA.

Program Chair, IEEE International Conference on Robotics and Automation (ICRA), 2015. Seattle, WA, USA.

Editor-in-Chief, Conference Review Board (formally called Conference Editorial Board), IEEE/RSJ Intern. Conf. of Intelligent Robots and Systems (IROS), 2011, 2012, 2013.

Program Co-Chair, ACM SIGGRAPH Motion in Games (MIG), 2014. Los Angeles, CA, USA.

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

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

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

Editor, IEEE Robotics and Automation Society Conference Editorial Board (CEB), 2006–2010.

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); Galveston, TX, 2011.

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 (GHC): Program Committee Chair for Invited Talks, 2004. Scholarship Committee Co-Chair, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015. Member of Academic Advisory Committee, 2006, 2010, 2012, 2013, 2016.

Program Committee Member:

- AAAI Conference on Artificial Intelligence (AAAI), 2015, 2017, 2018.
- Intern. Parallel & Distributed Processing Symp. (IPDPS), 2000, 2002, 2006, 2013, 2015, 2016, 2017, 2018.
- ACM SIGPLAN Symp. on Principles and Practices of Parallel Programming (PPoPP), 2009, 2017, 2018. External Review Committee, 2012, 2013, 2015.
- ACM Conf. on Bioinformatics, Computational Biology, and Bioinformatics (ACM BCB), 2012, 2014, 2015, 2016, 2017.
- Intern. Conf. on Parallel Architectures and Compilation Techniques (PACT), 2011, 2012, 2014, 2016.
- ACM Intern. Conference on Motion in Games (MIG), 2010, 2012, 2013, 2016.
- ACM Intern. Conf. on Supercomputing (ICS), 2011, 2012, 2013, 2014.
- CCC Challenges and Vision Workshop (held at RSS 2013) 2013.
- International Conf. on Computer Animation and Social Agents (CASA), 2008, 2010, 2011, 2012.
- IEEE International Workshop on High Performance Computational Biology (HiCOMB), 2012.
- Intelligent Autonomous Systems (IAS-12), 2012.
- Intern. Conf. on Research in Computational Molecular Biology (RECOMB), 2010, 2011.
- Intern. Symp. on Computer Architecture and High-Performance Computing (SBAC-PAD), 2010.
- IEEE Intern. Conf. on Robotics and Automation (ICRA), 2002, 2003, 2005, 2006. Senior Program Committee Member 2010, 2018.
- 2nd International Frontiers of Algorithmics Workshop (FAW), 2008, 2010.
- Robotics: Systems and Science (RSS), 2005, 2006, 2007, 2008, 2009.
- 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, 2016.
- 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 - Research (Selected)

- ICRA-X Speaker, IEEE International Conference on Robotics and Automation (ICRA), Brisbane, Australia, May 2018.
- Distinguished Lecture, George Mason University, February 2018.
- Plenary Speaker, Advances in Robotics 2017, Delhi, India, June 2017.
- Invited Speaker, XVII Spanish Meeting on Computational Geometry (EGC 2017), Alicante, Spain, June 2017.
- Maryland Robotics Seminar, U. Maryland, April 2017.
- Distinguished Lecture, U. Buffalo, November 2016.
- DREAMS Seminar, UC Berkeley, October 2016.
- Distinguished Lecturer, Harvey Mudd, November 2015.
- Keynote Speaker, *IEEE Intern. Conf. Intelligent Robots and Systems (IROS)*, Sept. 2014.
- Invited Plenary Talk, *Robotics: Science and Systems*, July 2014.
- ACM Distinguished Speaker, University of North Carolina at Charlotte, March 2014.
- ACM Distinguished Speaker, Clemson University, Furman Univerisity, Wofford University, February 2014.
- Keynote Presentation, Univ. New Mexico CS Student Conference (and ACM Distinguished Speaker), Univ. of New Mexico, March 2013
- ACM Distinguished Speaker, Colorado State University, March 2013
- ACM Distinguished Speaker, Univ. of North Texas, February 2013
- ACM Distinguished Speaker, UT Dallas, February 2013
- Dept. of Biology Graduate Seminar, Texas A&M, November 2012
- Genomics Speaking Event, Honors Student Council, Texas A&M, November 2012
- ACM Distinguished Speaker, Univ. Southern California, August 2012
- NSF Workshop on Algorithms in the Field (W8), DIMACS, May 2011.
- Distinguished Lecturer, UC Irvine, January 2011
- ACM Banquet Speaker, Lamar U., April 2010
- Invited Speaker, 3rd Intern. Workshop on Motion in Games (MIG), Zeist, The Nethlands, November 2010
- CMU-Pitt Computational Biology Seminar, March 2010
- Invited Speaker, 50 Years of Robotics Celebration, U. of Pennsylvania, December 2009
- Invited Speaker, CRA-W/CDC Workshop on Computatational 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 STEM Education, Diversity, Teaching, etc. (Selected)

– OurCS Keynote Speaker, Carnegie Mellon University, October 2017.

– CRA-W Grad Cohort, April 2010, April 2011, April 2012, April 2014, April 2015, April 2016, April 2017. A 1.5 day workshop for female graduate students in computer science and computer engineering.

– House STEM Education Caucus Briefing, Washington, DC, October 2015.

– Microsoft Research Diversity Seminar, Redmond, WA, April 2015.

– CRA-W Advanced Career Mentoring Workshop, November 2008, November 2012, June 2015. For female associate professors and advanced professionals in research labs.

– CRA-W Career Mentoring Workshop, 2003, 2005, 2015. For female advanced graduate students, assistant professors and junior professionals in research labs.

– CRA-W Mentoring Workshops, Grace Hopper Celebration of Women in Computing, October 2009, October 2010, November 2011, October 2012, October 2013, October 2014, October 2015, October 2016.

– Faculty Teaching Academy, Texas A&M University, February 2012.

– CDC Academic Career Mentoring Workshop, December 2007, April 2010. For underrepresented graduate students, assistant and associate professors.

– CRA-W/CDC Systems Research Mentoring Workshop, June 2008. For female and underrepresented undergraduate students.

– Grace Hopper Celebration of Women in Computing, October 2006.

– 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):

– Springer Nature Symposium on Life & Robotics - Understanding Humanity to Inspire Robots Designed to Assist Humans, Heidelberg, Germany, October 2017.

– Robotics Fiji Summit, Taveuni, Fiji, August 2017.

– Hilbert Symposium on Robotics, San Diego, February 2017.

– Microsoft Faculty Summit, Redmond, WA, July 2001, July 2002, July 2003, July 2008, July 2010, July 2013, July 2015, July 2016.

– Dagstuhl Seminar, Germany, September 2009, July 2016.

– Global Grand Challenges Summit, London, March 2013.

– 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 AAAI (Fellow), AAAS (Fellow), ACM (Fellow), IEEE (Fellow), SIAM, ISCB, and Sigma Xi.

Significant University Service and Community Outreach Activities

Director, Grand Challenge Scholars Program (GCSP), College of Engineering, Jan 2016–present. Developed proposal and serve as the Director of Texas A&M's NAE approved GCSP. This is a selective three-year program which culminates in an undergraduate thesis addressing some aspect of one of the Grand Challenges of Engineering.

Senior Director for Engineering Honors (EH) Program, College of Engineering, Texas A&M University, Sept 2014–present. Redesigned EH to engage all 14 departments in the college, obtaining buy-in from department heads, advisors, faculty and students. New program provides a more engaging experience, features tracks for each major and a faculty coordinator for each department, and a dorm. The number of students in the program (1700+) has increased 5-fold and the number of applications (2000+) has increased 10-fold since Fall 2014. The number of honors courses in the college has increased 5-fold to more than 145 in fall 2017, EH's monthly events attract 400-500 students, and an EH dorm was launched in Fall 2017 with more than 250 residents and 20 peer mentors.

Interim Department Head, Department of Computer Science and Engineering, Texas A&M University, Aug 2013–Aug 2014. During term as interim head, the department successfully recruited 5 tenure-track faculty members (2 full, 1 associate, 2 assistant) and 2 teaching-focused faculty, including the department's first professor of the practice. Other significant activities included: established departmental honors program; created collaboration and learning spaces; revitalized external advisory council and industrial affiliates program; increased department endowment by approximately 70%, more than doubling the number of endowed scholarships.

Faculty Ombudsperson, College of Engineering, Texas A&M University, Sept 2012–Aug 2013. Served as inaugural Faculty Ombudsperson for the college and helped define the position. The ombudsperson can serve as a source of confidential advice for faculty, can attend university-related meetings with or on behalf of the faculty member, and may, with the faculty member's permission, contact administrators (department head, dean, etc.) on their behalf.

Council of Principal Investigators (CPI), Texas A&M University, Sept 2007–2013. The CPI functions as a "senate" for all active externally funded researchers at the university.
- Past Chair, 2010-2011.
- Chair, 2009-2010.
- Interim Vice Chair, June – August, 2009.
- Executive Committee member 2007-2008, 2008-2009, 2011-2012, 2012-2013.
- Member (elected), Sept. 2007–Aug. 2010, Sept. 2011–Aug. 2013.

Chair, Alliance for Bioinformatics, Computational Biology, and Systems Biology (ABCS), Texas A&M University, Sept 2007–2013.

Director, 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:

Honors and Undergraduate Research Advisory Committee, Texas A&M University, Sept. 2011-present.

Texas Institute for Advanced Studies (TIAS): Administrative Committee, Texas A&M University, 2011–2013.

Vice Chancellor and Dean of College of Engineering Search Advisory Committee, 2010-2011.

Research Environment Council, Texas A&M University, 2009–2010.

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

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

Engineering Faculty Advisory Committee (EFAC): CSE 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 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). `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, 10–11, 11–12, 12–13, 14–15, 15–16, 16–17, 17–18.

Promotion & Tenure Committee (elected, 3 year terms), 1/05-12/07, 1/08-12/10, 1/11-8/13, 1/15-12/17.

Department Head Search Committee, 01-02, 10-11, 13-14.

Endowed Chair Search Committee, 01-02 (chair), 14-15 (chair), 15-16 (chair), 16-17 (chair), 17-18 (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, 10–14 (chair, computational science senior position search), 16–17.

Space Committee, 16-17 (co-chair), 17-18 (co-chair).

Graduate Assistantship & Scholarship Selection Committee, 04–05, 05–06, 06–07, 07–08, 08–09, 09–10, 10–11, 11–12.

Faculty & Staff Awards Committee, 97–98, 99–00, 14–15, 15–16.

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, 11-12, 12-13, 14-15, 15-16, 16-17, 17-18.

Web Advisory Committee, 98–99, 99–00 (co-chair), 00–01, 01-02, 02-03, 06-07.

Courses Taught

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

Undergraduate:
CSCE-221: Data Structures & Algorithms
CSCE-221H: Data Structures & Algorithms, Honors
CPSC-311: Analysis of Algorithms
CPSC-311H: Analysis of Algorithms, Honors
CPSC-433: Formal Languages and Automata Theory
CSCE-481: Seminar
ENGR-181: Engineering Honors Seminar I
ENGR-381: Engineering Honors Seminar II (legacy, phasing out)
ENGR-289: SPTP: Engineering Honors Mentoring & Team Building Seminar
ENGR-489: SPTP: Engineering Honors Leadership & Project Management Seminar

Postdoctoral Scholars and Students

Postdoctoral Scholars

– Dr. Shawna Thomas, 05/10–present (PhD, CS, Texas A&M Univ.).

– Dr. Samuel Rodriguez, 01/12–8/16 (PhD, CS, Texas A&M Univ.). First position: Assistant Professor, Texas Wesleyan University.

– Dr. Mauro Bianco, 10/07–8/10 (PhD, CS, Univ. Padova, Italy). First position: Scientist, Swiss National Supercoming Centre.

– Dr. Jennifer E. Walter, 1/01–8/01 (PhD, CS, Texas A&M, 12/00). Current position: Professor and Dept. Chair, 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.

Doctoral Students

Amato has graduated 21 PhD students (10 from underrepresented groups) as primary advisor or co-advisor (2 others as non-primary co-advisor), including 6 women (1 Hispanic, 1 Black), 3 Hispanic men, and 1 black male; 10 went to faculty positions, 8 went to industry or government research labs,

3 went to industry, and 2 are currently postdocs. She currently supervises 12 PhD students (7 from underrepresented groups) as primary advisor or co-advisor, including 3 women (1 Black) and 4 Hispanic men.

Graduated PhD students:

– Harshvardhan, Ph.D. 5/18. (Co-Advisor Lawrence Rauchwerger) "Algorithm-Level Optimizations for Scalable Parallel Graph Processing." IAMCS/KAUST Graduate Fellowship. PACT 2014 Best Paper Award. PACT 2015 Best Paper Award Finalist. First position: Software Engineer, Google.

– Jory Denny, Ph.D. 8/16. "Collaborative Motion Planning." NSF Graduate Research Fellowship, 2013-2016; Texas A&M Merit Fellowship, 2011-2012. First position: Assistant Professor, University of Richmond.

– Chinwe Ekenna, Ph.D. 8/16. "Improved Sampling Based Motion Planning Through Local Learning." Schlumberger Faculty of the Future Fellowship, 2012-2014. First position: Assistant Professor, University of Albany.

– Troy McMahon, Ph.D. 8/16. "Sampling Based Motion Planning with Reachable Volumes." First position: Postdoc, University of Michigan.

– Hsin-Yi (Cindy) Yeh, Ph.D. 5/16. "A Uniform Sampling Framework for Sampling Based Motion Planning and Its Applications to Robotics and Protein Ligand Binding." Texas A&M Diversity Fellowship. First position: Silicon Valley personal robotics startup.

– Olga Pearce, Ph.D. 12/14. "Load Balancing Scientific Applications." Association of Former Students (AFS) Fellowship, 2004-2006; GAANN Fellowship, 2005-2006; NSF Graduate Research Fellowship, 2006-2009; LLNL Lawrence Scholar Program (LSP) 2009–2014. First position: Computer Scientist, LLNL.

– Samson Ade Jacobs, Ph.D. 5/14. "A Scalable Framework for Parallelizing Sampling-Based Motion Planning Algorithms." IAMCS/KAUST Graduate Fellowship. Current position: Computer Scientist, LLNL.

– Ali-akbar Agha-mohammadi, Ph.D. 5/14. (Co-Advisor Suman Chakravorty) "Feedback-based Information Roadmap (FIRM): Graph-based Estimation and Control of Robotic Systems Under Uncertainty." Current position: Robotics Research Technologist III, JPL.

– Roger Pearce, Ph.D. 12/13. "Scalable Parallel Algorithms for Massive Scale-Free Graphs." GAANN Fellowship, 2006–2007; LLNL Lawrence Scholar Program (LSP) 2009–2013. First position: Computer Scientist, LLNL.

– Samuel Rodriguez, Ph.D. 5/12. "Roadmap-Based Techniques for Modeling Group Behaviors in Multi-Agent Systems." University Merit Fellowship, LSAMP Bridge to Doctorate Fellowship, 2004-2005; National Physical Sciences Consortium Fellowship, 2005-2010. Current position: Assistant Professor, Texas Wesleyan University.

– Gabriel Tanase, PhD. 12/10. (Co-advisor Lawrence Rauchwerger.) "The STAPL Parallel Container Framework." First position: Research Staff Member (RSM), IBM T.J. Watson Research Center, Yorktown Heights, New York.

– Shawna Thomas, PhD. 5/10, "Rigidity Analysis for Modeling Protein Motion," NSF PhD Fellowship, 2002-2005; Philanthropic Educational Organization Scholar Award, 2005-2006; GAANN Fellowship, 2006–2007; IBM PhD Fellowship, 2007-2009. First position: IAMCS-KAUST Postdoctoral Research Associate, Texas A&M University.

– 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. Current position: Associate Professor, University of New Mexico.

– Marco Morales, PhD. 12/07, "Metrics for Sampling-Based Motion Planning." Fulbright-Garcia Robles Fellowship, 2000-2004. Current Position: Associate Professor, Instituto Tecnologico Autonomo de Mexico (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: Associate 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: Associate 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.

Current PhD students:

– Mr. Francisco Coral, in progress. (Co-Advisor Lawrence Rauchwerger) CONaCYT Fellowship.

– Mr. Adam Fidel, in progress. (Co-Advisor Lawrence Rauchwerger) Texas A&M Diversity Fellowship. PACT 2014 Best Paper Award. PACT 2015 Best Paper Award Finalist.

– Ms. Mukulika Ghosh, in progress.

– Mr. Glen Hordemann, in progress. (Co-Advisor Lawrence Rauchwerger)

– Mr. Read Sandstrom, in progress.

– Mr. Irving Solis, in progress. CONaCYT Fellowship.

– Ms. Diane Uwacu, in progress.

Masters Students

Amato has supervised 24 masters students with thesis and 6 non-thesis masters students, including 8 women (1 Hispanic, 1 Black), 2 Hispanic males, and 1 Native American male; six of these students subsequently entered PhD programs. She currently supervises 3 masters students as primary advisor or co-advisor, including 1 black male.

Graduated masters students:

– Mr. Saurabh Mishra, M.S., May 2018.

– Mr. Matthew Bulluck, M.S., Dec. 2017.
– Mr. Junjie Shen, M.S., Dec. 2017. (Co-Advisor Lawrence Rauchwerger)
– Mr. Dielli Hoxha, M.S., May 2016. (Co-Advisor Lawrence Rauchwerger)
– Mr. Antal Buss, M.C.S., December 2015. (Co-Advisor Lawrence Rauchwerger) Colciencias-LASPAU (Fulbright) Scholarship, Colombia/USA. IAMCS/KAUST Graduate Fellowship.
– Mr. Vincent Marsy, M.S., August 2015. (Co-Advisor Lawrence Rauchwerger)
– Mr. Andrew Giese, M.S., May 2014.
– Mr. Tarun Jain, M.S., Dec. 2013.
– Mr. Aditya Mahadevan, M.S., Dec. 2013.
– Mr. Shuvra Nath, M.S., Dec. 2013.
– Mr. Nicolas Castet, M.S., May 2013. (Co-Advisor Lawrence Rauchwerger)
– Mr. Shishir Sharma, M.S., May 2013. (Co-Advisor Lawrence Rauchwerger)
– Mr. Bryan Boyd, M.S., December 2012.
– Ms. Mukulika Ghosh, M.S., August 2012.
– Mr. Kasra Manavi, M.S., May 2012.
– Mr. Robert Salazar, M.C.S., Dec. 2011.
– Mr. Xiabing Xu, M.S., Dec. 2010.
– Mr. Dawen Xie, M.S., Aug. 2007.
– Ms. Tao Huang, M.S., May 2007. (Co-Advisor Lawrence Rauchwerger)
– Mr. Akhil Patel, M.C.S. (non-thesis), May 2006.
– Ms. Aimee Vargas, M.S., Dec. 2005.
– Mr. Mark Mathis, M.S., Dec. 2000.
– Mr. Sujay Sundaram, M.S. (Mechanical Engineering), Dec. 2000. (Co-Advisor Reza Langari)
– Mr. Masi Sambasivam, M.S., Dec. 1999.
– Ms. Anna Zacchi, M.S., Dec. 1999.
– Ms. Linda Stewart, M.C.S. (non-thesis), May 1999.
– Mr. Jack Perdue, M.S., Dec. 1998.
– Ms. Renu Isaac, M.C.S. (non-thesis), Aug. 1998.
– Ms. Xiaoling Huang, M.C.S. (non-thesis), Dec. 1996.
– Ms. Lucia Dale, M.C.S. (non-thesis), Aug. 1996.
– Mr. Yan Wu, M.S., Dec. 1996.

Current masters students:

– Mr. Jarrett David, M.S., in progress.
– Mr. Tim Ebinger, in progress. Texas A&M Diversity Fellowship.
– Mr. Daniel Tomkins, M.S., in progress.

Undergraduate Research Projects Supervised

Amato has supervised more than 110 Texas A&M undergraduate researchers and non-Texas A&M student interns, including high school students, undergraduate and graduate students: 50 Texas A&M (TAMU) undergrads performing summer and academic year research projects and 60 non-TAMU research interns. A majority of the graduated students have gone on to graduate school, with many being

awarded prestigious fellowships, and some of them now being professors themselves and supervising undergraduate researchers themselves. A listing of most students can be found on Amato's research group pages, https://parasol.tamu.edu/groups/amatogroup/people.php. A few highlights are noted below.

- Dr. Bonnie Kirkpatrick. As an undergraudate at Montana State undergrad, Bonnie worked with Amato during the summers of 2002 and 2003 as part of the CRA-W DMP (now DREU) program. She worked on applying the PRM-based approach to RNA folding and was a co-author on a RECOMB 2004 paper. Bonnie went on to do her PhD (2011) at UC Berkeley with Dick Karp and then a postdoc with Anne Condon at UBC. She received a Goldwater Fellowship and an NSF Graduate Research Fellowship. She started as an assistant professor at the University of Miami in Fall 2013.
- Dr. Jory Denny, spring 2009–August 2016. University Undergraduate Fellow (2010-2011), NSF Graduate Research Fellowship (2013-2016), AFS University Merit Fellowship (2011-2013). As an undergraduate, Jory participated in two projects related to motion planning and co-authored multipl papers; he was named a finalist for the CRA Outstanding Undergraduate Research in 2010. Jory stayed on a Texas A&M for his doctoral studies and worked with Amato, and was supported in part by an NSF Graduate Research Fellowship. In addition to doing great research, he was an outstanding mentor and teacher. Jory was the main graduate student mentor of the high school Kensen Shi (see below). Jory graduated with PhD in August 2016 and started as an assistant professor at the University of Richmond in Fall 2016.
- Ms. Diane Uwacu, summer 2014, Fall 2015–present. As an undergraduate at Oklahoma Christian University, supported in part by a Rwandan Presidential Scholarship, Diane worked with Amato during summer 2014 as part of the CRA-W/CDC Distributed REU (DREU) program. During that summer, she contributed sufficiently to an ongoing research project to earn a position as co-author on a paper published in the IEEE/RSJ Int. Conf. on Intel. Robots and Systems (IROS). She joined Texas A&M as a PhD. student in Fall 2015 and is working with Amato.
- A number of Amato's students have been recognized in the annual national CRA (Computing Research Association) Outstanding Undergraduate Research Award competition, including: Aaron Lindsey (Finalist, 2015; Honorable Mention, 2014), Jory Denny (Finalist, 2011)
- Amato's students won the department undergraduate Research Award in 1999, 2000, 2001, 2002, 2006, 2011.

<u>High School Student Research Projects Supervised</u>

Amato has supervised 9 high school students since summer 2012. A few highlights are noted below:

- Kensen Shi (A&M Consolidated High School, summer 2012-present). Kensen won First Prize and a $100,000 college scholarship at the national-level *2012 Siemens Competition in Math, Science and Technology* held in Washington, D.C. in December 2012. He also placed 6th nationwide and won a $25,000 college scholarship in the *Intel Science Talent Search*. For the Siemens competition, he got to ring the closing bell on the NYSE and appeared in the Times Square banner and for the Intel competition he got to shake hands with President Obama. Kensen is also co-author on a paper published in the 2013 *IEEE Intern. Conf. on Robotics and Automation*, Karlsruhe, Germany, May 2013. Kensen started at Stanford University in Fall 2013 and is majoring in computer science.
- Daniel Latypov (The Woodlands College Park High School, summer 2012, summer 2013). Daniel started at Texas A&M in Fall 2013 and is majoring in computer science. He is participating in the University Honors program and the ACE Scholars Honors program in Computer Science and Engineering. He has been continuously participating in research with Amato and Rauchwerger since summer 2013.

– Leslie Escalante (Jimmy Carter Early High School, La Joya, TX, summer 2014). Leslie is currently attending Texas A&M and pursuing a bachelor's in computer science and participating in the Engineering Honors program.

Research Support

Research Grants

"Collaborative R&D in Support of LLN" (DE-AC52-07NA27344), *Lawrence Livermore National Laboratory*, PI: J. Morel, co-PIs: M. Adams, N. Amato, R. Arroyave, A. Benzerga, J.-L. Guermond, L. Rauchwerger, $1,500,000, 08/01/17–12/31/19.

"XPS: FULL: DSD: Asynchronous PDE Algorithms for Turbulent Flows as Exascale" (CCF-1439145), *The National Science Foundation*, PI: D. Donzis, Co-PIs: N. Amato, R. Bhattacharya, S. Girimaji, L. Rauchwerger, $850,000, 09/01/14–08/31/19.

"AF: Small: Motion Planning Techniques fro Protein Motion" (CCF-1423111), *The National Science Foundation*, PI: N. Amato, Co-PIs: L. Rauchwerger, S. Thomas, $416,000, 07/01/14–06/30/19.

"Center for Exascale Radiation Transport (CERT)," (DE-NA0002376), *Department of Energy, PSAAP II, Single-Discipline Center of Excellence for Academic Computational Science Partnerships*, PI: J. Morel, Co-PIs: M. Adams, L. Braby, R. McClarren, J. Ragusa, L. Rauchwerger, Co-Is: N.M. Amato, D. Bingham (SFU), T. Conroy (U. Regina), T. Manteuffel (U. Colorado), S. McCormick (U. Colorado), D. Perez-Nunez. $12,000,000, 10/01/13–08/31/19.

"SmartApps: Smart Applications for Multicores", *Samsung Global Research Outreach (GRO) program* PIs: L. Rauchwerger and N. Amato, $141,858, 09/01/12–03/31/14.

"RI: Small: Sampling Based Feedback Motion Planners" (RI-1217991), *The National Science Foundation*, PI: S. Chakravorty, Co-PI: N. Amato, $369,206, 09/01/12–07/31/16.

"EFRI-ODISSEI: Synthesizing Complex Structures from Programmable Self-Folding Active Materials" (EFRI-1240483), *The National Science Foundation*, PI: R. Malak, Co-PIs: E. Akleman, N. Amato, Dimitris Lagoudas, Daniel McAdams, $1,998,423, 08/01/12–07/31/19.

"Collaborative R&D in Support of LLNL Missions" (B575363), *Lawrence Livermore National Security*, PI: J. Morel, co-PIs: M. Adams, N. Amato, R. Arroyave, A. Benzerga, D.R. Boyle, T. Cagin, W.S. Charlton, S.S. Chirayath, J.-L. Guermond, R. McClarren, S.M. McDeavitt, B. Popov, L. Rauchwerger, M.J. Schuller, A. Solodov, R.E. Tribble, $2,448,000, 06/06/12–09/30/15.

"The Center for Exascale Simulations of Advanced Reactors (CESAR): A Nuclear Energy-based Co-Design Code Project" (DE-AC02-06CH11357), *The Department of Energy, PSAAP Program* PI: R. Rosner (U. Chicago), TAMU PI: M. Adams, TAMU Co-PIs: N. Amato, J. Morel, L. Rauchwerger, $20,000,000 ($1,500,000 TAMU), 09/01/11–08/31/16.

"Training Grant: Nutrition, Biostatistics and Bioinformatics, (NIH NCI, R25 CA090301-11)," *The National Institutues of Health* PI: R. J. Carroll (Statistics), Amato's role: investigator and mentor, $2,700,000, 07/1/11–06/30/16.

"Motion Planning Based Techniques for Modeling & Simulating Molecular Motions" (000512-0097-2009), *Texas Higher Education Coordinating Board (NHARP Program)*, PI: N. Amato, $150,000, 7/1/10–05/31/13.

"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, $504,000, 09/01/09–08/31/14.

"DC: Small: Collaborative Research: Shape Representation of Large Geometries via Convex Approximation" (IIS-0916053), *The National Science Foundation*, PIs: N. Amato (lead), J.-M. Lien (George Mason U.), $532,000 ($232,000 TAMU), 09/01/09–08/31/14.

"A Compositional Approach to Scalable Parallel Software" (CCF-0833199), *The National Science Foundation (HECURA Program)*, PI: L. Rauchwerger, co-PIs: N. Amato, B. Stroustrup, $1,327,412, 09/01/08–08/31/14.

"Motion Planning Based Techniques for Modeling & Simulating Molecular Motions" (CCF-0830753), *The National Science Foundation*, PI: N. Amato, co-PI: L. Rauchwerger, $434,000, 09/15/08–08/31/14.

"Support of Stockpile Stewardship Program" (B575366), *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, 09/09/08–06/30/12.

"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, 06/01/08–05/31/14.

"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), 04/15/08–08/31/13.

"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, $7,500,000, 9/1/07–8/31/12.

"Nutrition, Biostatistics and Bioinformatics Training Grant (NIH-CA-R25T-090301)," *The National Institutues of Health* PI: R. J. Carroll (Statistics), Amato's role: investigator and mentor, $2,427,495 (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.

"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.

"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, $500,000, 9/1/01–2/28/07.

"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.

"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.

"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.

"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.

"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.)

"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.

"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.)

Infrastructure, Travel, Fellowship, and Software Grants

"Doctoral Student Workshop on Algorithmic Foundations of Robotics" (IIS-1450655), PI: Nancy M. Amato, Co-PI: Samuel Rodriguez, $10,000, August 15, 2014 – July 31, 2015.

"Workshops to Engage Junior Faculty in Undergraduate Research" (CCF-1345291), *The National Science Foundation*, PI: Ran Libeskind-Hadas, Co-PIs: Nancy M. Amato, Andrew Bernat, $36,118, October 1, 2013 – September 30, 2015.

"FFATA: Student Travel Support for the 20th International Conference on Parallel Architecture and Compiler Techniques (PACT)" (CCF-1138543), *The National Science Foundation*, PI: Lawrence Rauchwerger, Co-PI: Nancy M. Amato, $12,000, July 1, 2011 – December 31, 2012.

"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" (CNS-0551685), *The National Science Foundation*, PI: V. Taylor, Co-PI: N. Amato, L. Rauchwerger $537,000, 5/15/06–10/31/13.

"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, 5/1/02–4/30/09.

"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.

Publications in Refereed Journals and Conferences

(Organized by topic: Computationational Biology, Robotics, High Performance Computing, Geometric Computing, Other Topics; most papers available at `http://parasol.tamu.edu/~amato/`)
Amato's advisees indicated by: high school students$^{\diamond}$, undergraduates†, graduate students‡, postdocs*.

Computational Biology

[1] Chinwe Ekenna‡, Shawna Thomas*, Nancy M. Amato, "Adaptive Local Learning in Sampling Based Motion Planning for Protein Folding," *BMC Systems Biology, BMC Series, Special Issue from IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, **10**(Suppl 2):49, pp. 165–179, August 2016.

[2] Hsin-Yi Yeh‡, Aaron Lindsey‡, Chih-Peng Wu‡, Shawna Thomas*, Nancy M. Amato, "Decoy Database Improvement for Protein Folding," Special Issue of *Journal of Computational Biology*, **22**(9), 2015, pp. 823–836.

[3] Chinwe Ekenna‡, Shawna Thomas*, Nancy M. Amato, "Adaptive Local Learning in Sampling Based Motion Planning for Protein Folding," *Proc. IEEE International Conference on Bioinformatics & Biomedicine (BIBM)*, 2015.

[4] Shawna Thomas*, Chinwe Ekenna‡, Hsin-Yi Yeh‡, Nancy M. Amato, "Rigidity Analysis for Protein Motion and Folding Core Identification," *Proc. AAAI Workshop on Artificial Intelligence and Robotics Methods in Computational Biology*, 2013.

[5] Shuvra Nath‡, Shawna Thomas*, Chinwe Ekenna‡, Nancy M. Amato, "Multi-Directional Rapidly Exploring Random Graphs (MRRG) for Protein Folding," *Proc. ACM Conf. on Bioinformatics, Computational Biology and Biomedicine (BCB)*, 2012.

[6] 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, **10**(1), 2010, pp. 53–68.

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[8] 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.

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[10] 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 [11].)

[11] 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.

[12] Shawna Thomas‡, Guang Song‡, Nancy M. Amato, "Protein Folding by Motion Planning," *Physical Biology*, **2**, November 2005, pp. S148–S155.

[13] 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 [14].)

[14] 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.

[15] Shawna Thomas‡ and Nancy M. Amato, "Parallel Protein Folding with STAPL," *Proc. 3rd IEEE International Workshop On High Performance Computational Biology (HiCOMB)*, April 2004.

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[17] 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 [19].)

[18] 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.

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[21] 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.

[22] 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.

[23] 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)

[24] Mukulika Ghosh‡, Shawna Thomas*and Nancy M. Amato, "Fast Collision Detection for Motion Planning using Shape Primitive Skeletons," *Proc. of the Workshop on Algorithmic Foundations of Robotics (WAFR)*, 2018, to appear.

[25] Troy McMahon‡, Odest Chadwicke Jenkins, Nancy M. Amato, "Affordance Wayfields for Task and Motion Planning", *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Madrid, Spain, October 2018.

[26] Ali-akbar Agha-mohammadi‡, Saurav Agarwal, Sung-Kyun Kim, Suman Chakravorty, Nancy M. Amato, "Simultaneous Localization and Planning for Physical Mobile Robots via Enabling Dynamic Replanning in Belief Space", *IEEE Transactions on Robotics (TRO)*, to appear.

[27] Read Sandstrom‡, Andrew Bregger†, Ben Smith†, Shawna Thomas*, Nancy M. Amato, "Topological Nearest-Neighbor Filtering for Sampling-based Planners", *Proc. of the 2018 IEEE International Conference on Robotics and Automation (ICRA)*, Brisbane, Australia, 2018.

[28] Timothy Ebinger‡, Sascha Kaden, Shawna Thomas*, Robert Andre, Ulrike Thomas, Nancy M. Amato, "A General and Flexible Search Framework for Disassembly Planning", *Proc. of the 2018 IEEE International Conference on Robotics and Automation (ICRA)*, Brisbane, Australia, 2018.

[29] Troy McMahon‡, Shawna Thomas*, Nancy M. Amato, "Sampling-Based Motion Planning with Reachable Volumes", *International Journal of Robotics Research (IJRR)*, **37**(7), 2018, pp. 779-817.

[30] Troy McMahon‡, Read Sandstrom‡, Shawna Thomas*, Nancy M. Amato, "Manipulation Planning with Directed Reachable Volumes", *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Vancouver, BC, September 2017.

[31] Jory Denny‡, Read Sandstrom‡, and Nancy M. Amato, "A General Region-Based Framework for Collaborative Planning," *Springer Proceedings in Advanced Robotics (SPAR): International Symposium on Robotics Research (ISRR) 2015)*, vol. 3, 2018.

[32] Jory Denny‡, Read Sandstrom‡, Andrew Bregger‡and Nancy M. Amato, "Dynamic Region-biased Rapidly-exploring Random Trees," *Proc. of the Workshop on Algorithmic Foundations of Robotics (WAFR)*, 2016.

[33] Samuel Rodriguez*, Marco Morales, Nancy M. Amato, "Multi-Agent Push Behaviors for Large Sets of Passive Objects," *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Daejeon, Korea, Oct. 2016.

[34] Mukulika Ghosh‡, Shawna Thomas*, Marco Morales, Samuel Rodriguez*, Nancy M. Amato, "Motion Planning Using Hierarchical Aggregation of Workspace Obstacles," *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Daejeon, Korea, Oct. 2016.

[35] Jory Denny‡, Jonathan Colbert◇, Hongsen Qin◇, Nancy M. Amato, "On the Theory of User-Guided Planning," *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Daejeon, Korea, Oct. 2016.

[36] Saurabh Mishra‡, Samuel Rodriguez*, Marco Morales, Nancy M. Amato, "Battery Constrained Coverage," *Proc. of the 2016 IEEE International Conference on Automation Science and Engineering (CASE)*, Fort Worth, TX, Aug. 2016.

[37] Mukulika Ghosh‡, Daniel Tomkins‡, Jory Denny‡, Samuel Rodriguez*, Marco Morales, Nancy M. Amato, "Planning Motions for Shape-Memory Alloy Sheets", *Origami 6: II: Technology, Art, Education*, American Mathematical Society, 2016, p. 501–511.

[38] Chinwe Ekenna‡, Diane Uwacu‡, Shawna Thomas*, Nancy M. Amato, "Improved Roadmap Connection via Local Learning for Sampling Based Planners," *Proc. of the 2015 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Hamburg, Germany, Oct. 2015, pp. 3227–3234.

[39] Troy McMahon‡, Shawna Thomas*, Nancy M. Amato, "Reachable Volume RRT", *Proc. of the 2015 IEEE International Conference on Robotics and Automation (ICRA)*, Seattle, May 2015.

[40] Sam Jacobs‡, Nancy M. Amato, "The Anatomy of a Distributed Motion Planning Roadmap," *Proc. of the 2014 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Chicago, Sept. 2014.

[41] Troy McMahon‡, Shawna Thomas*, Nancy M. Amato, "Sampling-Based Motion Planning with Reachable Volumes: Application to Manipulators and Closed Chain Systems," *Proc. of the 2014 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Chicago, Sept. 2014.

[42] Jory Denny‡, Read Sandstrom‡, Nicole Julian†, Nancy M. Amato, "A Region-Based Strategy for Collaborative Roadmap Construction," *Algorithmic Foundations of Robotics XI, Proceedings of the Eleventh Workshop on the Algorithmic Foundations of Robotics (WAFR 2014), Springer Tracts in Advanced Robotics*.

[43] Ali-akbar Agha-mohammadi‡, Saurav Agarwal, Aditya Mahadevan‡, Suman Chakravorty, Daniel Tomkins‡, Jory Denny‡, Nancy M. Amato, "Robust Online Belief Space Planning in Changing Environments: Application to Physical Mobile Robots," *Proc. of the 2014 IEEE International Conference on Robotics and Automation (ICRA)*, Hong Kong, May 2014.

[44] Jory Denny‡, Evan Greco†, Shawna Thomas*, Nancy M. Amato, "MARRT: Medial Axis Biased Rapidly-Exploring Random Trees," *Proc. of the 2014 IEEE International Conference on Robotics and Automation (ICRA)*, Hong Kong, May 2014.

[45] Andrew Giese‡, Daniel Latypov†, Nancy M. Amato, "Reciprocally-Rotating Velocity Obstacles," *Proc. of the 2014 IEEE International Conference on Robotics and Automation (ICRA)*, Hong Kong, May 2014.

[46] Troy McMahon‡, Shawna Thomas*, Nancy M. Amato, "Sampling-Based Motion Planning with Reachable Volumes: Theoretical Foundations," *Proc. of the 2014 IEEE International Conference on Robotics and Automation (ICRA)*, Hong Kong, May 2014.

[47] Kensen Shi◇, Jory Denny‡, Nancy M. Amato, "Spark PRM: Using RRTs Within PRMs to Efficiently Explore Narrow Passages," *Proc. of the 2014 IEEE International Conference on Robotics and Automation (ICRA)*, Hong Kong, May 2014.

[48] Hsin-Yi (Cindy) Yeh‡, Jory Denny‡, Aaron Lindsey‡, Shawna Thomas*, Nancy M. Amato, "UMAPRM: Uniformly Sampling the Medial Axis," *Proc. of the 2014 IEEE International Conference on Robotics and Automation (ICRA)*, Hong Kong, May 2014.

[49] Ali-akbar Agha-mohammadi‡, Suman Chakravorty, Nancy M. Amato, "FIRM: Sampling-based Feedback Motion Planning Under Motion Uncertainty and Imperfect Measurements," *International Journal of Robotics Research*, **33**(2), 2014, pp. 268-304.

[50] Jory Denny‡, Andrew Giese‡, Aditya Mahadevan‡, Arnaud Marfaing†, Rachel Glockenmeier†, Colton Revia†, Samuel Rodriguez*, Nancy M. Amato, "Multi-Robot Caravanning," *2013 IEEE/RSJ Intern. Conf. on Intelligent Robots and Systems (IROS)*, 2013.

[51] Jory Denny‡, Samuel Rodriguez*, Marco Morales, Nancy M. Amato, "Adapting RRT Growth for Heterogeneous Environments," *2013 IEEE/RSJ Intern. Conf. on Intelligent Robots and Systems (IROS)*, 2013.

[52] Cesar Rodriguez†, Jory Denny‡, Samson Ade Jacobs‡, Shawna Thomas*, Nancy M. Amato, "Blind RRT: A Probabilistically Complete, Distributed RRT," *2013 IEEE/RSJ Intern. Conf. on Intelligent Robots and Systems (IROS)*, 2013.

[53] Chinwe Ekenna‡, Samson Ade Jacobs‡, Shawna Thomas*, Nancy M. Amato, "Adaptive Neighbor Connection for PRMs, A Natural Fit for Heterogeneous Environments and Parallelism," *2013 IEEE/RSJ Intern. Conf. on Intelligent Robots and Systems (IROS)*, 2013.

[54] Samuel Rodriguez*, Andrew Giese‡, Nancy M. Amato, "Improving Aggregate Behavior in Parking Lots with Appropriate Local Maneuvers," *2013 IEEE/RSJ Intern. Conf. on Intelligent Robots and Systems (IROS)*, 2013.

[55] Samuel Rodriguez*, Yinghua Zhang, Nancy M. Amato, Nicholas Gans, "Optimizing Aspects of Pedestrian Traffic in Building Designs," *2013 IEEE/RSJ Intern. Conf. on Intelligent Robots and Systems (IROS)*, 2013.

[56] Ali-akbar Agha-mohammadi‡, Suman Chakravorty, Nancy M. Amato, "Graph-based Stochastic Control with Constraints: A Unified Approach with Perfect and Imperfect Measurements," Invited session on Stochastic Models, Control and Algorithms in Robotics, *American Control Conf. (ACC)*, 2013.

[57] Jory Denny‡, Kensen Shi◇, Nancy M. Amato, "Lazy Toggle PRM: A Single Query Approach to Motion Planning," *Proc. of the 2013 IEEE International Conference on Robotics and Automation (ICRA)*, Karlsruhe, Germany, May 2013, pp. 2407-2414.

[58] Sam Ade Jacobs‡, Nicholas Stradford‡, Cesar Rodriguez‡, Shawna Thomas*, Nancy M. Amato, "A Scalable Distributed RRT for Motion Planning," *Proc. of the 2013 IEEE International Conference on Robotics and Automation (ICRA)*, Karlsruhe, Germany, May 2013, pp. 5088-5095.

[59] Samuel Rodriguez‡, Andrew Giese‡, Nancy M. Amato, Saied Zarrinmehr, Firas Al-Douri, and Mark J. Clayton, "Environmental Effect on Egress Simulation," *Proc. of the 5th Intern. Conf. on Motion in Games (MIG)*, 2012, *Lecture Notes in Computer Science (LNCS)*.

[60] Ali-akbar Agha-mohammadi‡, Suman Chakravorty, Nancy M. Amato, "Sampling-based Non-holonomic Motion Planning in Belief Space via Dynamic Feedback Linearization-based FIRM," *2012 IEEE/RSJ Intern. Conf. on Intelligent Robots and Systems (IROS)*, 2012.

[61] Troy McMahon‡, Sam Jacobs‡, Bryan Boyd‡, Lydia Tapia, Nancy M. Amato, "Local Randomization in Neighbor Selection Improves PRM Roadmap Quality," *2012 IEEE/RSJ Intern. Conf. on Intelligent Robots and Systems (IROS)*, 2012.

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[65] Jory Denny‡, Nancy M. Amato, "The Toggle Local Planner for Probabilistic Motion Planning," *Proc. of the 2012 IEEE International Conference on Robotics and Automation (ICRA)*, Minneapolis, MN, May 2012.

[66] Sam Jacobs‡, Kasra Manavi‡, Juan Burgos†, Jory Denny‡, Shawna Thomas*, Nancy M. Amato, "A Scalable Method for Parallelizing Sampling-Based Motion Planning Algorithms," *Proc. of the 2012 IEEE International Conference on Robotics and Automation (ICRA)*, Minneapolis, MN, May 2012.

[67] Aditya Mahadevan‡, Nancy M. Amato, "A Sampling-Based Approach to Probabilistic Pursuit Evasion," *Proc. of the 2012 IEEE International Conference on Robotics and Automation (ICRA)*, Minneapolis, MN, May 2012.

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on Computer Animation and Social Agents (CASA), 2011, to be published in special issue of *Trans. on Edutainment* to appear.

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