

Xinyu Tang

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Education

- Ph.D. in Computer Science**, Texas A&M University, Expected Dec. 2007 (GPA: 4.0/4.0)
Ph.D. Topic: *Techniques for Modeling and Analyzing RNA and Protein Folding Energy Landscapes*
Academic advisor: Nancy M. Amato
- M.E. in Computer Science**, Zhejiang University, Apr. 2001 (GPA: 3.75/4.0)
- B.E. in Computer Science**, Univ. of Electronic Sci. & Tech. of China (UESTC), Jul. 1998
(GPA: 3.78/4.0)

Research Interests

Computational biology (bioinformatics), pattern analysis, molecular computation
Robotics, motion planning, computational geometry, computer graphics and animation.

Honors and Awards

- Graduate Student Research Excellence Award, Department of Computer Science, Texas A&M University, April 2007 (1 out of all graduate students)
- Graduate Teaching Academy (GTA) fellow, GTA certificate of completion, Texas A&M University, April 2007
- Travel Fellowship, Int. Conf. Comput. Molecular Biology (RECOMB), April 2004, San Diego, CA
- Excellent Student Leader Award, Zhejiang University, Hangzhou, China, July 1999
- Distinguished Graduate Award in 1998, Ministry of Information Industry of China, China, July 1998
(10 out of 4000 candidates)

Professional Experience

- Research Assistant**, Department of Computer Science, Texas A&M University, Fall 2001–present
(More information of my work can be found at: <http://parasol.tamu.edu/people/xinyut/>)
- Designed and implemented algorithms and a web server to analyze protein or RNA folding kinetics and predict their related functions by simulating the molecular motions
 - Designed and implemented efficient algorithms for difficult motion planning problems such as motion planning in complex environments or for high-dimensional constrained robots
 - Designed and implemented algorithms to generate animations for flocking and other group behaviors
 - Developed a web-based campus navigator incorporating multiple modes of transportation
 - Developed visualization and authoring tools for motion planning
- System Administrator**, Parasol Lab, Texas A&M University, Fall 2001–present

- Managed several UNIX systems, databases and our website <http://parasol.tamu.edu>
- Developed web-based applications for the group, the department, and the International Workshop on the Algorithmic Foundations of Robotics (WAFR) 2006.

Research Assistant, Dept. of Computer Science & Engineering, Zhejiang University, 1998 – 2001

- Designed and implemented a web management system to manage and visually share parts for computer aided design (CAD)
- Developed 3D parametric solid modeling library for CAD software

Lab instructor, State Key Lab of CAD/CG, Zhejiang University, 1999 – 2001

- Taught new lab members computer graphics and OpenGL programming

Software Engineer, Great Sky Co., Hangzhou, China, April. 2001 – Aug. 2001

- Developed commercial CAD software for interior design

Software Engineer (part time), Great Sky Co., Hangzhou, China, Sep. 1998 – April. 2001

- Developed commercial CAD software for 3D geometric and solid modeling
- Developed Management Information Systems (MIS)

Co-op Software Engineer, Jan-Tech Co., Hangzhou, China, Jan. 2000– Jun. 2000

- Developed commercial CAD software for steel structure design

Undergraduate Mentor, Dept. of Computer Science & Engineering, UESTC, China, 1997-1998

- Advised 30 freshmen regarding academic and other issues, organized their activities and established their student organization
- Taught 5 week introductory class on computer science, popular computer applications, basic computer operations and practice of programming

Publications in Refereed Journals and Conferences

- [1] Shawna Thomas, Xinyu Tang, Lydia Tapia, Nancy M. Amato, “Simulating Protein Motions with Rigidity Analysis”, To appear in *Journal of Computational Biology*, 2007.
- [2] Xinyu Tang, Bonnie Kirkpatrick, Shawna Thomas, Guang Song, Nancy M. Amato, “Using Motion Planning to Study RNA Folding”, *Journal of Computational Biology*, 12(6):862-881, Jul 2005.
- [3] Lydia Tapia, Xinyu Tang, Shawna Thomas, Nancy M. Amato, “Kinetics Analysis Methods For Approximate Folding Landscapes”, To appear in journal *Bioinformatics*, 2007. Also, in *International Conference on Intelligent Systems for Molecular Biology (ISMB)*, Vienna, Austria, Jul 2007. Acceptance ratio = 15%.
- [4] Xinyu Tang, Shawna Thomas, Nancy M. Amato, “Tools for Simulating and Analyzing RNA Folding Kinetics”, To appear in *Proc. Int. Conf. Comput. Molecular Biology (RECOMB)*, San Francisco, CA, Apr 2007. Acceptance ratio = 21%.
- [5] Xinyu Tang, Shawna Thomas, Nancy M. Amato, “Fast Enforcement of Closure Constraints”, To appear in *Proc. IEEE Int. Conf. Robot. Autom. (ICRA)*, Roma, Italy, Apr 2007. Acceptance ratio = 43%.
- [6] Shawna Thomas, Marco A. Morales A., Xinyu Tang, Nancy M. Amato, “Biasing Samplers to Improve Performance”, To appear in *Proc. IEEE Int. Conf. Robot. Autom. (ICRA)*, Roma, Italy, Apr 2007. Acceptance ratio = 43%.

- [7] Samuel Rodriguez, Xinyu Tang, Jyh-Ming Lien, Nancy M. Amato, “An Obstacle-Based Rapidly-Exploring Random Tree”, In *Proc. IEEE Int. Conf. Robot. Autom. (ICRA)*, pp. 895-900, Orlando, FL, May 2006. Acceptance ratio = 39%.
- [8] Shawna Thomas, Xinyu Tang, Lydia Tapia, Nancy M. Amato, “Simulating Protein Motions with Rigidity Analysis”, In *Proc. Int. Conf. Comput. Molecular Biology (RECOMB)*, p.394-409, Venice, Italy, Apr 2006. Acceptance ratio = 18%.
- [9] Xinyu Tang, Bonnie Kirkpatrick, Shawna Thomas, Guang Song, Nancy M. Amato, “Using Motion Planning to Study RNA Folding”, In *Proc. Int. Conf. Comput. Molecular Biology (RECOMB)*, p.252-261, San Diego, CA, Mar 2004. Acceptance ratio = 18%.
- [10] Min Tang, Xinyu Tang, Jinxiang Dong, “ A visual part library – GS-PM”, In *Computer Supported Cooperative Work in Design (CSCWD)*, p.203-206, London, Ont., Canada, Jul 2001.
- [11] Xinyu Tang, Min Tang, Jinxiang Dong, “ An Open Part Manage System Based on Feature ”, In *CAID&CD 2000 Proceedings*, p.371-374, HongKong, Nov, 2000.

Papers under Preparation

- [12] Xinyu Tang, Shawna Thomas, Nancy M. Amato, “Efficient Planning of Spatially Constrained Robot Using Reachable Distances”, will be submitted to *IEEE Transactions on Robotics*.
- [13] Xinyu Tang, Shawna Thomas, Lydia Tapia, David Giedroc, Nancy M. Amato “Simulating RNA Folding Kinetics on Approximated Energy Landscapes”, will be submitted to *Journal of Molecular Biology*.
- [14] Xinyu Tang, Shawna Thomas, Lydia Tapia, Nancy M. Amato, “Tools for Simulating and Analyzing RNA Energy Landscapes”, will be submitted to *Journal of Computational Biology*.

Technical Reports

- [15] Xinyu Tang, Shawna Thomas, Nancy M. Amato, “Efficient Planning of Spatially Constrained Robots Using Reachable Distances”, *Technical Report*, TR07-001, Parasol Laboratory, Department of Computer Science, Texas A&M University, Jan 2007.
- [16] Roger Pearce, Bryan Boyd, Xinyu Tang, Darla Haigler, Akhil Patel, Nancy M. Amato, “Supporting Path Planning Queries Incorporating Multiple Modes of Transportation using Layered Roadmaps”, *Technical Report*, TR06-014, Parasol Laboratory, Department of Computer Science, Texas A&M University, Oct 2006.
- [17] Lydia Tapia, Xinyu Tang, Shawna Thomas, Nancy M. Amato, “Roadmap-Based Methods for Studying Protein Folding Kinetics”, *Technical Report TR06-011*, Parasol Laboratory, Department of Computer Science, Texas A&M University, Oct 2006.
- [18] Jyh-Ming Lien, Samuel Rodríguez, Xinyu Tang, John Maffei, Daniel Corlette, Arnaud Masciotra, and Nancy M. Amato, “Composable Group Behaviors”, *Technical Report TR05-006*, Parasol Laboratory, Department of Computer Science, Texas A&M University, Sep 2005.
- [19] Xinyu Tang, “A Web-based Collaborative Computer Aided Design System”, *Master’s Thesis*, Department of Computer Science & Engineering, Zhejiang University, Feb 2001.

Book Chapter

- [20] Li Guanglin, Xinyu Tang et al., “Programming Design in PASCAL: A Reference for Self-study and a Preparation Guidance for Examinations”, *ISBN-81043-657-0/TP.263*, Press of UESTC, 1998. (Chinese. A college textbook in Computer Science Department at Sichuan University, Chengdu, China)

Student Research Mentoring

Mr. Bryan Boyd, CS Major, Summer 2006

Honorable Mention for Computing Research Association's Outstanding Undergraduate Award for 2007 (recognition for undergraduate students in North American universities who show outstanding research potential in the area of computing research)

Co-author on a paper submitted to ICRA 2007 as a result of the research mentoring

Ms. Darla Dawn Haigler, CS Major, Summer 2006

Co-author on a paper submitted to ICRA 2007 as a result of the research mentoring

Ms. Bonnie Kirkpatrick, CS Major, Summer 2002-2004

Currently a Ph.D. student at University of California, Berkeley

Recipient of NSF Graduate Research Fellowship

Co-author on a paper published in RECOMB 2004 as a result of the research mentoring

Ms. Min Fan, CS Major, Thesis 2001

Went to graduate school at Zhejiang University in 2001

Mr. Xuesong Chen, CS Major, Thesis 2000

Went to graduate school at Zhejiang University in 2001

Mr. Hao Liu, CS Major, Thesis 2000

Went to graduate school at Zhejiang University in 2000

Professional Activities

Reviewer, for journals (IEEE Transactions on Robotics and Automation, IEEE/ACM Transactions on Computational Biology and Bioinformatics, IEEE Transactions on Robotics, International Journal of Robotics Research, Journal of Royal Society), and conferences (IEEE International Conference on Robotics and Automation (ICRA), IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Robotics: Science and Systems conference (RSS), and IEEE International Parallel & Distributed Processing Symposium (IPDPS))

Member, Institute of Electrical and Electronics Engineers (IEEE), Association for Computing Machinery (ACM), International Society of Computational Biology (ISCB)

Professional Skills

Programming Languages: C/C++, Perl, Matlab, Python

User Interface, Graphics: Qt, OpenGL, MFC

Web and Database: MYSQL, PHP, Javascript

Operating Systems: UNIX (IRIX, Solaris, Linux), Windows

References

Available upon request