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# Shawna Thomas

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## Education

**Ph.D. in Computer Science**, Texas A&M University, College Station, TX 8/02 – 5/10  
Advisor: Nancy M. Amato.  
Research Focus: Robotic motion planning algorithms and their application to biology problems such as protein folding and RNA folding.

**B.S. in Computer Engineering**, Texas A&M University, College Station, TX 8/98 – 12/01  
3.97/4.00 GPA. Summa Cum Laude. University Undergraduate Research Fellow with Senior Honors Thesis.

## Professional Experience

### Instructional Assistant Professor

*Department of Computer Science and Engineering, Texas A&M University* 8/19 – Present  
Teaching various courses in Computer Science within the Department of Computer Science and Engineering. Developing course material, giving lectures, and assessing student learning through various types of assignments. Courses include CSCE 315: Programming Studio (Regular, Stacked Honors, and Study Abroad), CSCE 411: Design and Analysis of Algorithms (Regular), CSCE 482: Senior Capstone Design (Regular and Stacked Honors), and CSCE 491: Research (Honors).

### Undergraduate Advisor

*Department of Computer Science and Engineering, Texas A&M University* 8/21 – Present  
Providing faculty leadership of the undergraduate advising team, creating new advising processes and revising existing ones to operate at scale given the increasing numbers of undergraduate students in department programs, and serving as a liaison between the advising office and the department's undergraduate curriculum committee. Advising undergraduate students concerning their academic plans and progress through the degree programs offered by the Department of Computer Science and Engineering.

### ACUE Credential in Effective College Instruction

*Association of College and University Educators (ACUE)* 9/20 – 4/21  
Working across five comprehensive units of study, educators collaborate with peers, receive expert facilitation, and develop practices necessary to design an effective course, to establish a productive learning environment, to use active learning strategies, to promote higher order thinking, and to assess in ways that inform and promote deeper levels of learning. These courses prepare educators in all of the core competencies defined in ACUE's Effective Practice Framework and lead to a Certificate in Effective College Instruction awarded in collaboration with the American Council on Education.

### TEES Assistant Research Scientist

*Parasol Lab, Department of Computer Science and Engineering, Texas A&M University* 6/13 – 8/20  
Supervised research in robotic motion planning and applications to computational biology. In particular, developed techniques for sampling-based motion planning including specialized methods for constrained robots and algorithms for modeling protein transitions and ligand binding. Mentored students in their research, guided submissions for publication, developed research proposals, and organized group meetings.

### Consultant

*Digital Oral Care, 3M Company* 6/15 – 12/20  
Algorithm design and development to support 3M™ Clarity™ Aligners. Co-inventor for related patents (under review).

### Lecturer

*Department of Computer Science and Engineering, Texas A&M University* 1/19 – 5/19  
Taught CSCE 411: Design and Analysis of Algorithms, an undergraduate course in Computer Science.

### Postdoctoral Research Associate

*Parasol Lab, Department of Computer Science and Engineering, Texas A&M University* 6/10 – 5/13

Studied the folding and motion of molecules using motion planning techniques from robotics. In particular, developed new techniques for modeling protein transitions between two or more known target states. Supervised changes to the research group's common C++ code base.

### **Research Assistant**

*Parasol Lab, Department of Computer Science and Engineering, Texas A&M University* 1/02 – 5/10

Studied folding, motions, and kinetics of proteins and RNA using motion planning techniques from robotics. Refined existing techniques and developed a parallel implementation to facilitate the study of larger, more complex molecules. Expanded the types of experimental data to validate our simulations with by developing new analysis tools. Extended the implementation of two probabilistic roadmap algorithms (motion planning techniques) for journal submissions.

### **Teaching Assistant**

*Department of Computer Science, Texas A&M University* 6/07 – 8/07

Assisted Dr. Teresa Leyk in CPSC 211: Data Structures, an undergraduate course in the Department of Computer Science. Duties included administering 1 hour lab sessions twice a week, providing assistance during office hours to students, and grading labs and homework assignments.

### **Graduate Teaching Academy**

*Texas A&M University* 8/06 – 5/07

Participated in professional teaching development at Texas A&M University. The program included attending weekly seminars, developing a teaching statement, and classroom observation under the supervision of a faculty mentor.

### **Undergraduate Researcher**

*Department of Computer Science, Rice University* 6/01 – 8/01

Studied protein-protein interactions with Dr. Lydia Kavradi through the CRA Distributed Mentor Program. Applied motion planning techniques from robotics, specifically variations of probabilistic roadmap algorithms, to interactions between proteins. Proposed a new approach to interaction simulation and began implementation.

### **University Undergraduate Research Fellow**

*Department of Computer Science, Texas A&M University* 8/00 – 5/01

Developed a variation of the probabilistic roadmap algorithm using clearances. Published and presented the results in a Senior Honors Thesis. Awarded Best Senior Thesis and Best Presentation for the Computer Science Group.

### **Undergraduate Researcher**

*Department of Computer Science, Texas A&M University* 10/99 – 12/01

Worked on an adaptive version of the probabilistic roadmap algorithm. Published and presented a paper at the 2001 IEEE International Conference on Robotics and Automation in Seoul, Korea, May 2001. Continued the development of VIZMO, an interactive graphics software package that visualizes probabilistic roadmaps.

## **Teaching Practice**

**Teaching Interests:** active learning, promoting a community of scholars, inclusive teaching

### **CSCE 315: Programming Studio (Writing Special Designation Course)**

*Department of Computer Science and Engineering, Texas A&M University*

Intensive project-based learning course taken by Computer Science, Computer Engineering, and Computing students. Students participate in several month-long team projects, each emphasizing a different specialization and requiring development of deeper teamwork skills. As a writing special designation course, students also receive instruction and practice in technical writing on computing topics.

Fall 2022: In-Person Lectures and Labs  
Offered as Stacked Honors Course  
89 Students, 1 Lecture Section (3 Regular Lab Sections, 2 Honors Lab Sections), 2 TAs  
Innovations:

- Implemented authentic course projects and activities from prior study abroad course (small size) to large course at scale

- Summer 2022: In-Person Lectures and Labs  
Offered as Study Abroad Program  
17 Students, 1 Lecture Section (1 Regular Lab Section), co-taught with another instructor, no TAs  
Innovations:
- Developed study abroad program including course activities, industry/technical visits, and cultural visits to provide students with a global perspective
  - Redesigned course projects to be authentically embedded in the culture and location
  - Integrated use of online social annotation platform for course content where students can share annotations, comments, and questions about the reading and videos
  - Restructured course sessions and learning management system organization to support greater interaction and integration of lectures and labs
- Spring 2022: In-Person Lectures and Labs  
Offered as Stacked Honors Course  
79 Students, 1 Lecture Section (4 Regular Lab Sections, 1 Honors Lab Section), 2 TAs  
Innovations:
- Developed additional honors-specific activities for deeper exploration including field trips, guest speakers, and student creation of learning activities
- Fall 2021: In-Person Lectures and Labs  
161 Students, 2 Lecture Sections (6 Regular Lab Sections), 4 TAs  
Innovations:
- Created learning activities to develop students' empathy and foster inclusive communities, both for their collaborators and their clients/users
  - Integrated the design thinking process in project assignments to support student creativity and provide exposure to different perspectives
  - Deployed peer feedback, peer evaluation, and reflection within project teams to support effective collaboration
  - Curated updated video content for all course topics
  - Provided daily knowledge recall practice through low-stakes quizzes
- Spring 2021: Flipped with Hybrid Synchronous Lectures and Labs (due to COVID-19)  
Offered as Stacked Honors Course  
83 Students, 1 Lecture Section (4 Regular Lab Sections, 1 Honors Lab Section), 2 TAs  
Innovations:
- Developed honors-specific discussion activities for deeper exploration of course topics
- Fall 2020: Flipped with Hybrid Synchronous Lectures and Labs (due to COVID-19)  
180 Students, 2 Lecture Sections (8 Lab Sections), 4 TAs  
Innovations:
- Completely redesigned as a flipped course for online and hybrid instruction with support from the Engineering Studio for Advanced Instruction & Learning (ESAIL) and in collaboration with another faculty member
  - Created new video content and online engagement activities to be completed before lecture
  - Redesigned all in-class activities to support group work on hybrid teams (mixture of in-person and remote members) that reinforce course material and enable effective collaboration
  - Introduced frequent reflection and discussion activities to personalize and deepen learning

## **CSCE 482: Senior Capstone Design (Communication Special Designation Course)**

*Department of Computer Science and Engineering, Texas A&M University*

Project-based learning course that exercises the breadth of their degree taken primarily by Computer Science and Computer Engineering students with some students from Applied Math, Aerospace Engineering, and Mechanical Engineering. Students complete a semester-long project in teams of 3-6 that require significant design, integration, and teamwork. Some projects are industry sponsored. Students are mentored through the design process from problem identification and needs specification to deployment and experimental validation. As a communication special designation course, students also receive instruction and practice in both technical writing and oral presentations.

Spring 2023: In-Person Lectures and Labs

76 Students, 2 Lecture Sections (2 Lab Sections), 2 TAs

Innovations:

- Integrated communication and writing materials and modules from The University Writing Center into course
- Developed new ethics assignments that allow students to co-design ethics video content for use in future offerings and/or other courses in the curriculum

Spring 2022: In-Person Lectures and Labs

35 Students, 1 Lecture Section (1 Lab Section), 1 TA

Innovations:

- Embedded the design thinking process throughout course to support student creativity and solicitation of diverse perspectives
- Created learning activities to develop students' empathy and foster inclusive communities, both for their collaborators and their clients/users
- Restructured all major writing assignments to support an iterative approach to technical writing and provide frequent instructor and peer feedback
- Provided additional reflective activities, both individually and within project teams

Spring 2021: Synchronous Online Lectures and Labs (due to COVID-19)

26 Students, 1 Lecture Section (1 Lab Section), 1 TA

Innovations:

- Completely redesigned course to give more direct hands-on instruction throughout
- Introduced requirement of CITI training and IRB applications for deeper student understanding and appreciation of ethical issues in the discipline at large and in their particular project
- Gave students authentic opportunities to practice sharing their work with the broader community through participation in Student Research Week and Engineering Project Showcase
- Provided daily knowledge recall practice through low-stakes quizzes

Spring 2020: In-Person Lectures and Labs for First Half, Synchronous Online for Second Half (due to COVID-19)

Offered as Stacked Honors Course

30 Students, 1 Lecture Section (1 Lab Section), 1 TA

Innovations:

- Introduced reflective activities focusing on teamwork, peer review, and self assessment
- Provided greater scaffolding of larger assignments and created detailed rubrics for all course assignments and elements
- Pivoted second half of course to be synchronous online due to COVID-19 pandemic including facilitating safe completion of hardware projects

Fall 2019: In-Person Lectures and Labs  
20 Students, 1 Lecture Section (1 Lab Section), 1 TA  
Innovations:

- Created activities to build a community of learners including peer feedback during oral presentations
- Introduced active learning techniques to support engagement and discussion
- Created detailed rubrics for technical writing reports to improve transparency and consistency

### **CSCE 411: Design and Analysis of Algorithms**

*Department of Computer Science and Engineering, Texas A&M University*

Lecture course taken by Computer Science, Computer Engineering, and some Applied Math and Statistics students. Students are exposed to different algorithmic approaches for solving computation problems and gain practice judging which approach to apply in different situations.

Spring 2020: In-Person Lectures for First Half, Asynchronous Online for Second Half (due to COVID-19)  
99 Students, 1 Lecture Section, 2 Graders  
Innovations:

- Developed and conducted unique live demonstrations to help students connect abstract theoretical concepts with everyday ideas; provided a repository of such activities with detailed instructions as an instructional resource for other faculty in the department
- Designed new team project experiences for students to connect concepts and share with their peers
- Introduced individual reflection opportunities; provided anonymized results of student connections as an instructional resource for other faculty in the department
- Curated online resources for each algorithmic concept; provided curation as an instructional resource for other faculty in the department
- Redesigned second half of course to be asynchronous online due to COVID-19 pandemic including creation of new video content and online engagement activities

Spring 2019: In-Person Lectures  
57 Students, 1 Lecture Section, 1 TA, 1 Grader  
Innovations:

- Introduced active learning techniques in all lectures to engage students in course content

### **CSCE 491: Research (Honors)**

*Department of Computer Science and Engineering, Texas A&M University*

Mentored students through individual research projects on motion planning algorithms, one on collaboration between multiple human/robot arms and one on modeling allosteric interactions in protein-ligand binding. Students are exposed to a new research field, develop ideas for new algorithms, implement a proof of concept, and report their process and findings in an undergraduate research thesis or in a technical report.

Spring 2022: Synchronous Online  
1 Student, 1 Section, 0 TAs/Graders  
Fall 2021: Synchronous Online  
1 Student, 1 Section, 0 TAs/Graders  
Spring 2021: Synchronous Online  
1 Student, 1 Section, 0 TAs/Graders  
Fall 2020: Synchronous Online  
2 Students, 2 Section, 0 TAs/Graders

## **Honors and Awards**

**IDEATE Faculty Fellow**, *Center for Teaching Excellence, Texas A&M University*

Fall 2021 – Spring 2022

One of 5 faculty awarded from the Innovation and Design for Exploration and Analysis in Teaching Excellence (IDEATE) community for their commitment and enthusiasm to conduct excellent Scholarship of Teaching and Learning (SoTL) research.

**IEEE Frontiers in Education New Faculty Fellow**, *Institute of Electrical and Electronics Engineers (IEEE)* Fall 2021  
One of 5 junior faculty funded to attend the 2021 IEEE Frontiers in Education conference.

**Scaling Instructional Excellence for Student Success**, *National Association of System Heads/Association of College and University Educators (NASH-ACUE)* Fall 2020 – Spring 2021  
Selected to participate in a 25-week long course as part of a strategic initiative aimed to promote quality instruction and student success.

**Virtual Peer Teaching Fellows**, *Institute for Engineering Education and Innovation, Texas A&M University* Fall 2020  
Selected to participate in a pilot program to improve participant teaching and portfolios and develop a new model of peer evaluation.

**Virtual Teaching Assistant Institute Project**, *Center for Teaching Excellence, Texas A&M University* Summer 2020  
Selected to design online curriculum for the university-mandated Teaching Assistant Institute.

**Gateway Online Course Development Award**, *College of Engineering, Texas A&M University* Summer 2020  
Selected to develop an online course for a large gateway course that previously had only been taught in-person.

**Pre-Symposium Event for Teaching-Track Faculty**, *Computing Research Association - Education* March 2020  
Selected to attend a pre-symposium event to promote the professional development of teaching track faculty, held in conjunction with the Association for Computing Machinery's Special Interest Group on Computer Science Education (SIGSCE) Symposium.

**IBM Ph.D. Fellowship**, *IBM* Fall 2008 – Spring 2009

**IBM Fran Allen Ph.D. Fellowship**, *IBM* Fall 2007 – Spring 2008

**Graduate Assistance in Areas of National Need Fellowship**, *U.S. Department of Education* Fall 2006 – Spring 2007

**Philanthropic Educational Organization Scholar Award**, *P.E.O.* Fall 2005 – Spring 2006

**NSF Graduate Research Fellowship**, *National Science Foundation* Fall 2002 – Spring 2005

**CRA Distributed Mentor Program Award**, *Computing Research Association* Summer 2001

**University Undergraduate Research Fellow**, *Texas A&M University* Fall 2000 – Spring 2001

**Undergraduate Summer Research Grant**, *Texas A&M University* Summer 2000

**Astronaut Scholarship**, *Texas A&M University* Fall 2000 – Spring 2001

**Lechner Scholarship**, *Texas A&M University* Fall 1998 – Fall 2001

## Service and Professional Activities

### Leadership and Committee Service

#### **Faculty of Engineering Education Executive Committee**

*Institute for Engineering Education & Innovation, Texas A&M University*

8/21 – Present

Supporting the engineering education faculty community of practice at Texas A&M University by organizing events and speakers. Promoting awareness of and fundraising for the Engineering Education Faculty Group. The Faculty of Engineering Education consists of faculty from the College of Engineering and the College of Education that are passionate about the advancement of the research, innovation, teaching, and community of engineering education and educators.

#### **Faculty of Engineering Education Teaching Task Force**

*Institute for Engineering Education & Innovation,  
Texas A&M University*

Chair, 8/20 – 8/21  
Member, 11/19 – Present

Promoting evidence-based pedagogical methods among engineering faculty, increasing awareness of existing educational resources for professional development, and facilitating greater participation in these activities. The Faculty of Engineering Education consists of faculty from the College of Engineering and the College of Education that are passionate about the advancement of the research, innovation, teaching, and community of engineering education and educators.

### **Faculty and Student Advisory Board**

*Center for Teaching Excellence, Texas A&M University*

12/20 – Present

Invited faculty representative for the College of Engineering based on known interest and engagement in teaching and learning. Serving as a primary information resource about teaching and learning in my college and department and also as an advocate and advisor to the Center for Teaching Excellence.

### **Education Committee**

*IEEE Robotics and Automation Society*

Technical Education Program Co-Chair, 8/21 – Present

*Member Activities Board*

Member, 10/20 – Present

Supervised review of Technical Education Programs applications and made funding recommendations. Technical Education Programs, also known as “Seasonal Schools”, are sponsored by IEEE-RAS each year across the globe. Seasonal Schools are held in person, virtual or as a hybrid to make the programs available to the largest group of students possible.

### **Department of Computer Science and Engineering Advisory Committee**

*Department of Computer Science and Engineering, Texas A&M University*

8/20 – Present

Elected Academic Professional Track faculty representative on the department’s Advisory Committee. Advising the Department Head on matters relating to the academic mission and functional duties of the department, developing departmental by-laws.

### **Undergraduate Curriculum and ABET Committee**

*Department of Computer Science and Engineering, Texas A&M University*

8/21 – Present

Reviews proposed changes to the Computer Science undergraduate curriculum and coordinates with ABET.

### **Computer Engineering Coordinating Committee**

*Department of Computer Science and Engineering, Texas A&M University*

8/21 – Present

Reviews proposed changes to the Computer Engineering undergraduate curriculum and coordinates with ABET.

### **Undergraduate Admissions Committee**

*Department of Computer Science and Engineering, Texas A&M University*

8/21 – Present

Reviews candidates for admission into the Department of Computer Science and Engineering.

### **APT Faculty Search Committee**

*Department of Computer Science and Engineering, Texas A&M University*

8/21 – 5/22

Conducted faculty search for several Academic Professional Track faculty in both College Station and Galveston campuses and faculty search for the Director of the Department of Computer Science and Engineering Galveston campus.

### **Peer-Faculty Teaching Feedback Committee**

8/19 – 7/22

*Department of Computer Science and Engineering, Texas A&M University*

Facilitating departmental program to promote peer feedback on teaching among faculty and providing structure to peer feedback conversations among participating faculty pairs.

### **Grace Hopper Celebration of Women in Computing Scholarship Committee**

3/07 – 10/07, 3/08 – 10/08

*AnitaB.org*

Served on the scholarship committee by developing websites for scholarship application submissions to the 2007 and 2008 Grace Hopper Celebration of Women in Computing Conferences, the 2007 Richard Tapia Celebration of Diversity in Computing Conference, and Bridge Day 2007, for applicant reviewing by external academic and industrial professionals, for awarding scholarships to applicants by the committee, and for applicant acceptance/rejection of scholarships. The website also included automated email tools for notifying applicants and their references of deadlines and statuses.

### **Aggie Women in Computer Science, ACM-W Chapter, President**

8/02 – 10/04

*Department of Computer Science and Engineering, Texas A&M University*

Organized outreach events for women in computer science at Texas A&M University such as the Mentor Match-Up Party for our peer mentoring program and coffee breaks. Helped organize the annual Computer Science Awards Banquet and developed a selection committee for the student mentoring awards. Organized trip to the 2004 Grace Hopper Celebration of Women in Computing Conference for 23 of our members including 2 undergraduates.

**CSNet Advisory Committee** 6/04 – 8/04  
*Department of Computer Science and Engineering, Texas A&M University*  
 Served on the CSNet Advisory Committee as the graduate student representative to create the Computer Science Department’s new intranet and communication portal.

**Aggie Women in Computer Science, ACM-W Chapter, Distinguished Lecturer Co-Chair** 8/01 –7/02  
*Department of Computer Science and Engineering, Texas A&M University*  
 Managed Distinguished Lecture events including luncheons for the speaker with our members, department-wide receptions, and securing lecture rooms and equipment. Volunteered on “Girl Scouts Go To College Day” to lead a workshop teaching elementary age girls how to use the computer.

**Mentoring Activities**

**Academy for Future Faculty Mentor** 9/20 – 5/21  
*Texas A&M University*  
 Mentoring graduate student preparing for a teaching career by advising the student on development of teaching portfolio materials, facilitating classroom observations, and discussing best teaching practices.

**TAMUhack Faculty Advisor** 8/20 – 7/22  
*Department of Computer Science and Engineering, Texas A&M University*  
 Advising student organization in hosting one of the largest annual hackathons in Texas.

**Software Engineering Faculty Client** 1/20 – 5/20, 1/22 – 5/22  
*Department of Computer Science and Engineering, Texas A&M University*  
 Served as client and mentor for undergraduate team projects.

**Undergraduate Honors Thesis Mentor** 9/13 – 5/14, 9/18 – 5/19, 9/20 – Present  
 Mentored undergraduate students in research projects related to my work on motion planning and protein folding through organizing weekly meetings, selecting relevant work for them to read, and discussing their reading and research. All undergraduates participated in the University Undergraduate Research Fellows program.

**Undergraduate Distributed Mentor Project (DMP) Mentor** 6/02 – 8/02, 6/03 – 8/03, 6/06 – 8/06, 6/07 – 8/07, 8/14 – 8/14, 6/17 – 8/17  
 Mentored an undergraduate student in a 10-week research program sponsored by the Committee on the Status of Women in Computing Research (CRA-W) each summer. Their projects (simulating tryptophan fluorescence and incorporating Molecular Dynamics data into our simulations) were related to my thesis work on protein folding.

**Students Mentored**

*Doctoral Students*

Randy Brooks, Interdisciplinary Engineering Ph.D. Committee Member	Spring 2022 – Present
Robert Lightfoot, Interdisciplinary Engineering Ph.D. Committee Member	Fall 2020 – Present
Diane Uwacu, Research Mentor, Academy for Future Faculty Mentor	Summer 2015 – Spring 2022
Irving Solis, Research Mentor	Spring 2016 – Spring 2019
Troy McMahon, Research Mentor	Fall 2009 – Summer 2016
Chinwe Ekenna, Research Mentor	Fall 2008 – Spring 2016
Cindy (Hsin-Yi) Yeh, Research Mentor	Fall 2008 – Spring 2016
Sam Jacobs, Research Mentor	Fall 2007 – Fall 2013

*Master’s Students*

Yuno Min, Department of Computer Science and Engineering	Fall 2021 – Summer 2022
M.S. Committee Member	
Jacob Stanosheck, Department of Biological and Agricultural Engineering	Spring 2020 – Present
M.S. Committee Member	
Andrew Bregger, Research Mentor	Summer 2017 – Fall 2018
Timothy Ebinger, Research Mentor	Fall 2016 – Fall 2018
Saurabh Mishra, Research Mentor	Fall 2015 – Fall 2017
Matthew Bulluck, Research Mentor	Fall 2014 – Fall 2017
Shuvra Nath, Research Mentor	Fall 2010 – Summer 2013
Kasra Manavi, Research Mentor	Fall 2009 – Spring 2012



### *Undergraduate Students*

Thomas Cousins, Undergraduate Thesis Research Mentor	Fall 2021 – Spring 2022
Marc Riccione, Undergraduate Thesis Research Mentor	Fall 2020 – Spring 2021
Scott Steinhauer, CSCE 491 Research Mentor	Fall 2020
Everett Yang, Undergraduate Thesis Research Mentor	Fall 2017 – Spring 2020
James Motes, Research Mentor	Fall 2017 – Spring 2018
William Adams, Research Mentor	Fall 2017 – Spring 2018
Ben Smith, Research Mentor	Fall 2017 – Spring 2018
Ankit Ramchandani, CRA Undergraduate Distributed Mentor Project (DMP) Mentor	Summer 2017
Diane Uwacu, CRA Undergraduate Distributed Mentor Project (DMP) Mentor	Summer 2014
Aaron Lindsey, Undergraduate Thesis Research Mentor	Fall 2012 – Summer 2014
Manasi Vartak, CRA Undergraduate Distributed Mentor Project (DMP) Mentor	Summer 2007
Annette Stowasser, CRA Undergraduate Distributed Mentor Project (DMP) Mentor	Summer 2006
Bonnie Kirkpatrick, CRA Undergraduate Distributed Mentor Project (DMP) Mentor	Summer 2002, Summer 2003

### *High School Students*

Elise Hernandez, Communications Arts High School Mentor (San Antonio, TX)	Fall 2020 – Spring 2021
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### **Editorial Activities**

- Steering Committee Member**, *Transformational Teaching and Learning Conference (TTLC)*, 2023, 2022, 2021
- Program Committee Member**, *International Conference of the Learning Sciences (ICLS)*, 2023, 2022
- Program Committee Member**, *Computational Structural Bioinformatics Workshop (CSBW)*, 2021, 2018, 2014, 2013
- Associate Editor**, *IEEE Robotics and Automation Letters (RA-L)*, 2020, 2019, 2018
- Program Committee Member**, *IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, 2020, 2017
- Program Committee Member**, *International Workshop on Algorithmic Foundations of Robotics (WAFR)*, 2020, 2018
- Guest Editor**, *International Journal of Robotics Research, Special Issue (IJRR)*, 2019, 2018, 2017
- Guest Editor**, *Autonomous Robots, Special Issue (AURO)*, 2017
- Review Process Chair**, *International Symposium on Robotics Research (ISRR)*, 2017
- Review Process Co-Chair**, *Robotics: Science, and Systems Conference (RSS)*, 2016
- Web Chair**, *IEEE International Conference on Robotics and Automation (ICRA)*, 2015
- Program Committee Member**, *Wksp. on Motion Planning and Control of Robot Motion (MLPC)*, 2015
- Program Committee Member**, *Wksp. on Robotics Methods for Structural and Dynamic Modeling of Molecular Systems (RMMSW)*, 2014
- Associate Editor**, *IEEE International Conference on Intelligent Robot Systems (IROS)*, 2013

### **Reviewer for Conferences and Journals:**

AAAI Conference on Artificial Intelligence (AAAI), ACM Conference on Bioinformatics, Computational Biology and Biomedicine (BCB), ASEE Annual Conference ASEE Gulf-Southwest Conference Computational Structural Bioinformatics Workshop (CSBW), IEEE International Conference on Bioinformatics and Biomedicine (BIBM), IEEE International Conference on Robotics and Automation (ICRA), IEEE Frontiers in Education (FIE), IEEE Robotics and Automation Letters (RA-L), IEEE Signal Processing Letters, IEEE Transactions on Automation Science and Engineering (T-ASE), IEEE Transactions on Robotics (TRO), IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), International Conference of the Learning Sciences (ICLS), International Journal of Robotics Research (IJRR), International Workshop on the Algorithmic Foundations of Robotics (WAFR), Journal of Intelligent and Robotic Systems (JINT), Robotics and Autonomous Systems, Robotics: Science and Systems Conference (RSS), Workshop on Machine Learning in Planning and Control of Robot Motion (MLPC), Workshop on Robotics Methods for Structural and Dynamic Modeling of Molecular Systems (RMMSW)

### **Professional Society Memberships**

American Society for Engineering Education (ASEE)	2/20 – Present
Institute of Electrical and Electronics Engineers (IEEE)	3/14 – Present
IEEE Robotics and Automation Society (IEEE-RAS)	3/14 – Present
Association for Computing Machinery (ACM)	8/12 – Present

### **Publications in Refereed Journals and Conferences**

Mentored graduate students denoted with \* and mentored undergraduate students denoted with \*\*.

- [1] “Peer Feedback: Exploring What Hurts and What Helps.” Jacob Robbins, Shawna Thomas, Mahjabin Chowdhury, Jonan Phillip Donaldson, *2023 International Conference of the Learning Sciences (ICLS)*, June 2023, to appear.

- [2] “Collaborative Project-Based Learning through Design Thinking for Engaged Learning Framework in Multiple Disciplines.” Sean Kao, Jesus Ojeda Pacheco, Justin Thamsorn, Haley Williams, Shawna Thomas, Sushil Paudyal, Jonan Phillip Donaldson, in *Proc. of the American Educational Research Association (AERA) Annual Meeting*, April 2023, to appear.
- [3] “Peer Access Supports Community Values: A Social Network Analysis of Computer Science and Engineering Undergraduates.” Rachele Pederson, Megan Patterson, Shawna Thomas, in *Proc. of the American Educational Research Association (AERA) Annual Meeting*, April 2023, to appear.
- [4] “Lessons Learned: Faculty Watch Parties are a Powerful Approach to Foster Diversity and Inclusivity Discussions.” Malini Natarajarathinam, Michael Johnson, Lance White, Sara Amani, Samantha Ray, Larry Powell, Tracy Hammond, Shawna Thomas, Robert Lightfoot\*, Rachele Pedersen, J. Michael Moore, in *Proc. of the American Society for Engineering Education (ASEE) Annual Conference*, Minneapolis, MN, USA, August 2022.
- [5] “There and Back Again: Lessons Learned from Facilitated Faculty Discussions on the Move Online and then Back Face to Face.” Shawna Thomas, Tracy Hammond, Kristi Shryock, Randy Brooks\*, Donna Jaison, Lance White, Robert Lightfoot\*, in *Proc. of the American Society for Engineering Education (ASEE) Annual Conference*, Minneapolis, MN, USA, August 2022.
- [6] “Design Thinking as a Structure for Collaborative Project-based Learning in Multiple Disciplines.” Jonan Phillip Donaldson, Kati Stoddard, Summer Odom, Dawn Parker, Sushil Paudyal, Shawna Thomas, Kathrin Dunlap, Tazim Jamal, in *Proc. of the International Conference of the Learning Sciences (ICLS)*, edited by Clark Chinn, Edna Tan, Carol Chan, Yael Kali, Hiroshima, Japan: International Society of the Learning Sciences (ISLS). June 2022.
- [7] “The Power of the Pre-Course Survey for Course Launch, Addressing Concerns, and Developing Community.” Shawna Thomas, Randy Brooks\*, Robert Lightfoot\*, Proceedings of the ASEE Gulf-Southwest Annual Conference, March 2022.
- [8] “Convergence in Collaborative Course Design while Remaining Virtual.” Shawna Thomas, Robert Lightfoot\*, in *Proc. of the IEEE Frontiers in Education Conference (FIE)*, Lincoln, NE, USA, October 2021, pp. 1–8.
- [9] “A Virtual Community of Practice for Enhanced Teaching and Convergence to Strengthen Student Learning, Engagement, and Inclusion.” Tracy Hammond, Randy Brooks\*, Shawna Thomas, Charles W. Peak, Pauline Wade, Charles Patrick, Samantha Ray, Paul Taele, in *Proc. of the IEEE Frontiers in Education Conference (FIE)*, Lincoln, NE, USA, October 2021, pp. 1–8.
- [10] “Creating a Supportive Space for Teaching-Focused Faculty to Write About their Teaching.” Tracy Hammond, Shawna Thomas, Charles Patrick, Pauline Wade, Donna Jaison, Janie Moore, Lance White, Randy Brooks\*, Samantha Ray, Karen Rambo-Hernandez, Karan Watson, in *Proc. of the ASEE First-Year Engineering Experience (FYEE) Conference*, Virtual, August 2021.
- [11] “The Disconnect Between Engineering Students’ Desire to Discuss Racial Injustice in the Classroom and Faculty Anxieties.” Tracy Hammond, Samantha Ray, Paul Taele, Shawna Thomas, Karan Watson, Christine Stanley, Seth Polesley, in *Proc. of the American Society for Engineering Education (ASEE) Annual Conference*, Virtual, July 2021.
- [12] “The Development of a Texas A&M University Faculty of Engineering Education.” Tracy Hammond, Karan Watson, Samantha Ray, Robert Lightfoot\*, Drew Casey, and Shawna Thomas, Proceedings of the ASEE Gulf-Southwest Annual Conference, March 2021. (3rd Place for Best Faculty/Staff/Professional Paper)
- [13] “Using Guided Motion Planning to Study Binding Site Accessibility.” Diane Uwacu\*, Abigail Ren, Shawna Thomas, Nancy M. Amato, in *Proc. of the ACM Conference on Bioinformatics, Computational Biology and Health Informatics (BCB)*, Virtual, September 2020, Association for Computing Machinery: New York, NY, USA, Article 109, pp. 1–10.
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- [21] “A General and Flexible Search Framework for Disassembly Planning.” Timothy Ebinger\*, Sascha Kaden, Shawna Thomas, Robert Andre, Nancy M. Amato, Ulrike Thomas, in *Proc. of the IEEE International Conference on Robotics and Automation (ICRA)*, Brisbane, QLD, Australia, May 2018, pp. 3548–3555. (acceptance rate: 41%)
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- [25] “Adaptive Local Learning in Sampling Based Motion Planning for Protein Folding.” Chinwe Ekenna\*, Shawna Thomas, Nancy M. Amato, in *BMC Systems Biology*, 10(Suppl 2):49–68, August 2016.
- [26] “The Impact of Approximate Methods on Local Learning in Motion Planning.” Diane Uwacu\*, Chinwe Ekenna\*, Shawna Thomas, Nancy M. Amato, in *Proc. of the RSS Workshop on Robot Learning and Planning*, Ann Arbor, MI, USA, June 2016.
- [27] “Adaptive Local Learning in Sampling Based Motion Planning for Protein Folding.” Chinwe Ekenna\*, Shawna Thomas, Nancy M. Amato, in *Proc. of the IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, Washington, DC, USA, November 2015, pp. 61–68. (acceptance rate: 19%)
- [28] “Improved Roadmap Connection via Local Learning for Sampling Based Planners.” Chinwe Ekenna\*, Diane Uwacu\*, Shawna Thomas, Nancy M. Amato, in *Proc. of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Hamburg, Germany, October 2015, pp. 3227–3234. (acceptance rate: 46%)
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- [32] “Reachable Volume RRT.” Troy McMahon\*, Shawna Thomas, Nancy M. Amato, in *Proc. of the IEEE International Conference on Robotics and Automation (ICRA)*, Seattle, WA, USA, May 2015, pp. 2977–2984. (acceptance rate: 41%)
- [33] “Improving Decoy Databases for Protein Folding Algorithms.” Aaron Lindsey\*\*, Hsin-Yi (Cindy) Yeh\*, Chih-Peng Wu, Shawna Thomas, Nancy M. Amato, in *Proc. of the ACM Conference on Bioinformatics, Computational Biology and Health Informatics (BCB)*, Newport Beach, CA, USA, September 2014, Association for Computing Machinery: New York, NY, USA, pp. 717–724.
- [34] “Sampling-Based Motion Planning with Reachable Volumes: Application to Manipulators and Closed Chain Systems.” Troy McMahon\*, Shawna Thomas, Nancy M. Amato, in *Proc. of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Chicago, IL, USA, September 2014, pp. 3705–3712. (acceptance rate: 47%)
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- [40] “Adaptive Neighbor Connection for PRMs: A Natural Fit for Heterogeneous Environments and Parallelism.” Chinwe Ekenna\*, Sam Ade Jacobs\*, Shawna Thomas, Nancy M. Amato, in *Proc. of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Tokyo, Japan, November 2013, pp. 1249–1256. (acceptance rate: 43%)
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- [46] “A Scalable Method for Parallelizing Sampling-Based Motion Planning Algorithms.” Sam Ade Jacobs\*, Kasra Manavi\*, Juan Burgos, Jory Denny, Shawna Thomas, Nancy M. Amato, in *Proc. of the IEEE International Conference on Robotics and Automation (ICRA)*, St. Paul, MN, USA, May 2012, pp. 2529–2536. (acceptance rate: 40%)
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- [58] “Tools for Simulating and Analyzing RNA Folding Kinetics.” Xinyu Tang, Shawna Thomas, Lydia Tapia, Nancy M. Amato, in *Research in Computational Molecular Biology (RECOMB 2007)*, edited by T. Speed, H. Huang, Lecture Notes in Computer Science, vol 4453, Springer, Berlin, Heidelberg, April 2007, pp. 268–282. (acceptance rate: 21%)
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- [67] “A Path Planning-Based Study of Protein Folding with a Case Study of Hairpin Formation in Protein G and L.” Guang Song, Shawna Thomas, Ken A. Dill, J. Martin Scholtz, Nancy M. Amato, in *Proc. of the Pacific Symposium on Biocomputing (PSB)*, Lihue, HI, USA, January 2003, pp. 240–251.
- [68] “Customizing PRM Roadmaps at Query Time.” Guang Song, Shawna Miller<sup>1</sup>, Nancy M. Amato, in *Proc. of the IEEE International Conference on Robotics and Automation (ICRA)*, Seoul, Korea (South), May 2001, pp. 1500–1505. (acceptance rate: 65%)

### Teaching-Related Presentations, Panels, and Other Publications

- [69] “Pre-Course Survey for Reducing Day One Anxiety and Questions.” Randy Brooks\*, Shawna Thomas, *Texas Conference on Student Success*, College Station, TX, USA, October 2022.
- [70] “The Power of the Pre-Course Survey for Course Launch, Addressing Concerns, and Developing Community.” Randy Brooks\*, Shawna Thomas, *Transformational Teaching and Learning Conference (TTLC)*, Texas A&M University, May 2022.
- [71] “Quick-Fire Rotations for Discussions and Perspective Taking.” Shawna Thomas, Robert Lightfoot\*, *Transformational Teaching and Learning Conference (TTLC)*, Texas A&M University, May 2022.
- [72] “Creating Loud Classrooms: Sharing Ideas with Each Other on How to Foster Student-to-Student Interactions in Class.” Engineering Education Faculty Group Presentation, Institute for Engineering Education and Innovation, Texas A&M University, December 2021.
- [73] “Partners in Crime — Collaborative Course Development.” Shawna Thomas, Robert Lightfoot\*, *Transformational Teaching and Learning Conference (TTLC)*, Texas A&M University, May 2021.
- [74] “The Power of a Writing Community Group.” Tracy Hammond, Randy Brooks\*, Shawna Thomas, Robert Lightfoot\*, *Transformational Teaching and Learning Conference (TTLC)*, Texas A&M University, May 2021.
- [75] “Reimagining Diversity and Inclusion Activities: Raising Awareness through an Accessible Conversation about Key Contributions.” Shawna Thomas, Charles Peak, *Transformational Teaching and Learning Conference (TTLC)*, Texas A&M University, May 2021.
- [76] “Using Course Maps to Reimagine Course Design and Student Engagement.” Shawna Thomas, Robert Lightfoot\*, *Transformational Teaching and Learning Conference (TTLC)*, Texas A&M University, May 2021.
- [77] “A Virtual Community of Practice to Enhance Teaching to Strengthen Student Learning.” Tracy Hammond, Randy Brooks\*, Shawna Thomas, Charles W. Peak, Charles Patrick, Pauline Wade, *Transformational Teaching and Learning Conference (TTLC)*, Texas A&M University, May 2021.
- [78] “How to Systematically Improve Teaching, Start Conducting Engineering Education Research, and Engage in External Service Related to Engineering Education.” Engineering Education Faculty Group Panel Discussion, Institute for Engineering Education and Innovation, Texas A&M University, March 2021.

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<sup>1</sup>Former last name.

- [79] “Best Practices in Robotics Education: Perspectives from an IEEE RAS Women in Engineering Panel.” IEEE Robotics and Automation Magazine, vol 28, issue 1, March 2021, pp. 12–15.
- [80] “Tips and Tricks to Increase Student Engagement.” Invited Speaker at Engineering Studio for Advanced Instruction & Learning (ESAIL) Webinar, Texas A&M University, November 2020, December 2020, January 2021.
- [81] “Best Practices in Robotics Education.” Panel Organizer and Moderator, IEEE Robotics and Automation Society (IEEE-RAS) Women in Robotics Panel Discussion, December 2020.
- [82] “More of Juggling Chainsaws while Riding a Unicycle: Effectively Engaging In-Person and Remote Students.” Invited Speaker at Center for Teaching Excellence Workshop, Texas A&M University, September 2020.
- [83] “Creating and Implementing an Online Course Etiquette Appreciative Agreement: Recommendations and Insights for Updating Course Material and Social Expectations to Aid in the Transition to Online Learning During the COVID-19 Pandemic.” Tracy Hammond, Robert Lightfoot\*, Samantha Ray, Shawna Thomas, Engineering Education Faculty Technical Report, June 2020, <https://hdl.handle.net/1969.1/188237>.
- [84] “Writing Groups 101: Who, What, Why, When, Where, How.” Tracy Hammond, Robert Lightfoot\*, Shawna Thomas, Engineering Education Faculty Group Presentation, Institute for Engineering Education and Innovation, Texas A&M University, May 2020.