

# Angelique M. Taylor

Computer Science and Engineering  
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**Education**                      **Ph.D., Computer Science and Engineering**                      December 2020  
University of California San Diego, San Diego, CA                      (*Expected*)  
Advisor: Dr. Laurel D. Riek

**Research Interests:** Robotics, Artificial Intelligence, Computer Vision, and Human-Robot Interaction

**B.S., Electrical Engineering**                      May 2015  
University of Missouri, Columbia, MO

**B.S., Computer Engineering**                      May 2015  
University of Missouri, Columbia, MO

**A.S., Engineering Science**                      May 2012  
Saint Louis Community College at Florissant Valley, Saint Louis, MO

**Awards and Honors**      National Science Foundation (NSF) Graduate Research Fellowship                      2016  
Google Anita Borg Memorial Scholarship                      2016  
National GEM Consortium Associate Fellow                      2016

National Women in IT Collegiate Award                      2019  
ROSCON 2018 Diversity Scholarship                      2018  
UC San Diego Computer Science and Engineering Doctoral Award for Excellence in Service/Leadership                      2018  
Arthur J. Schmitt Leadership Fellowship in Science and Engineering                      2016  
Grace Hopper Celebration of Women in Computing (GHC) Scholarship                      2017  
F.A.N.C.Y Teen Girls Expo Community Impact Award                      2017

Human-Robot Interaction Student Volunteer Travel Grant                      2018  
National GEM Consortium Travel Grant                      2016  
National Society of Blacks in Computing Travel Grant                      2016  
Toyota Technological Institute in Chicago Midwest Robotics Travel Grant                      2016

University of Missouri College of Engineering Diversity Scholar                      2014  
Eta Kappa Nu, Electrical and Computer Engineering Honor Society                      2013-18  
Increase Scholarship, NSF, University of Missouri                      2012  
University of Missouri Dean's List                      2012-15  
NSF STEM Scholarship, Saint Louis Community College, Saint Louis, MO                      2010  
Saint Louis Community College Dean's List                      2009-12

**Publications**                      **Refereed Conference and Workshop Publications**

9. **Taylor, A.** and Riek, L.D. (2018). "Robot-Centric Human Group Detection." In Proc. of Social Robots in the Wild, Workshop at the 13th Annual ACM/IEEE International Conference on Human-Robot Interaction (HRI).
8. **Taylor, A.** and Riek, L.D. (2018). "Robot-Centric Human Group Detection." In Proc. of Social Robots in the Wild, Workshop at the 13th Annual ACM/IEEE International Conference on Human-Robot Interaction (HRI).

7. Chan, D., **Taylor, A.**, and Riek, L.D. (2017). “Faster Robot Perception Using Salient Depth Partitioning”. Proceedings of the 2017 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS). pp. 1-6.
6. **Taylor, A.** and Riek, L.D. (2016) “Robot Perception of Human Groups in the Real World: State of the Art”. In Proceedings of the AAAI Fall Symposium on Artificial Intelligence in Human-Robot Interaction (AI-HRI).
5. Lobzhanidze, A., Gentry, P., **Taylor, A.**, Zeng, W. (2013) “Mainstream Media vs. Social Media for Trending Topic Prediction – An Experimental Study”. In 2013 IEEE 10th Consumer Communications and Networking Conference (CCNC), pp 729-732, Las Vegas, Nevada.

#### **Refereed Abstracts and Posters**

4. **Taylor, A.** and Riek, L.D. (2018). “Group Perception Methods to Support Human-Robot Teaming.” Southern California Robotics Symposium (SRC).
3. **Taylor, A.** and Riek, L.D. (2017) “Robot Affiliation Perception for Social Interaction”. In Proc. of Robots in Groups and Teams Workshop at Computer-Supported Cooperative Work (CSCW). pp. 1-4.
2. **Taylor, A.** and Riek, L.D. (2017) “Robot Perception of Social Engagement Using Group Joint Action”. In Proceedings of the 7<sup>th</sup> Annual Joint Action Meeting (JAM).
1. **Taylor, A.**, Du, X., Chen, C., Zare, A. (2014) “Context Dependent Target Detection”, Computational Intelligence Society Poster Competition, University of Missouri, Columbia.

#### **Research Experience**

##### **Graduate Research Assistant**

*Robot-Centric Detection and Tracking of Human Groups* 2018

- Developed an unsupervised human group detection algorithm.
- Developed an unsupervised human group tracking algorithm in Python using Google’s TensorFlow library.

*Robot-Centric Detection of Human Groups* 2017-18

- Developed an unsupervised human group detection algorithm. This algorithm used egocentric RGB-D data to detect and cluster people into groups using a real-world dataset where the robot is in motion and people are in motion.
- Conducted a data labeling study by acquiring a real-world dataset from a mobile robot in a public park. Then, I managed a team of annotators whom labeled the data. Thereafter, I validated the labeled and used them to evaluate the performance of the group detection algorithm.

*RoboCup@Home2017* 2017

- Designed a robot controller that enables a Toyota Human Support Robot (HSR) to autonomously deliver groceries from a table to a cupboard.
- Each shelf of the cupboard had a different category of objects on it, so the robot had to place objects on the shelf matching the category of that object.

- Used Simultaneous Localization and Mapping (SLAM) to enable HSR to navigate from the cupboard to the table.
- Used a state-of-the-art object recognition algorithm (YOLO) to detect different objects on the table and cupboard.

*A Biologically Inspired Salient Region Filter for High-Fidelity Robotic Perception* 2016

- Performed a data collection and labeling study for a novel salient region proposal algorithm, which was used for pedestrian detection.
- Recruited student annotators to label bounding boxes around pedestrians in RGB images.
- Used an open-sourced video annotation tool, vatic, to collect annotations for evaluating pedestrian detection algorithms.

**Undergraduate Research Assistant**

Advisor: Dr. Alina Zare 2014-15

*Seabed Classification Using Local Binary Patterns (LBP)*

- Objective: Classify sonar imagery into sea grass, sand ripple, hard packed sand, and shadow.
- Used k-NN Classifier to evaluate performance an LBP as a texture feature in sonar imagery.
- Discovered that LBP is a sufficient texture feature but can be enhanced to improve classification accuracy.
- Gained experience writing a research proposal, survey paper, and research paper.

Advisor: Dr. Alina Zare 2013-14

*Machine Learning Techniques for Handheld Subsurface Object Detection*

- Autonomously partitioned input SONAR imagery into different sea-bed types such as sea-grass, sand ripple, rock, and others using Fuzzy C-Means Clustering.
- Tested texture features and their parameter settings to find an effective set of features to use to partition input SONAR imagery.

Advisor: Dr. Wenjun Zeng 2012-13

*Mainstream Social Media for Trending Topic Prediction – An Experimental Study*

- Discovered mainstream media could significantly improve trend detection in social media.
- Adapted topic modeling tool Online Latent Dirichlet Allocation to parse RSS feeds from news sources rather than parsing Wikipedia articles as it did previously.

**Supervisees**

**University of California San Diego**

Joymaneeet Kaur (B.S., Computer Science and Engineering)	2019
Wesley Xiao (B.S., Computer Science and Engineering)	2019
Per Antoine Carlsen (M.S., Computer Science and Engineering)	2018-19
Elyas Obbad (B.S., Engineering and Applied Science)	2018
Ziwen Zeng (B.S., Cognitive Science)	2018
Renu Singh (B.S., Computer Science)	2017-18

	Astha Mehta (B.S., Cognitive Science)	2017
<b>Teaching Experience</b>	<b>University of California San Diego</b> <i>Teaching Assistant</i> Introduction to Human-Robot Interaction	2018
	<b>The Boeing Company, EA-18G &amp; EW Electronic Warfare</b> <i>Software Intern</i> <ul style="list-style-type: none"> <li>▪ Developed MATLAB scrips that validated the conversion of Joint Mission Planning System settings to displays in EA-18G aircraft.</li> <li>▪ Elicited requirements for new teamcenter site for the Next Generation Jammer team.</li> <li>▪ Designed and implemented a new process to review internal and external customer request for changing requirements documentation for the EA-18G Next Generation Jammer.</li> </ul>	2015
<b>Professional Experience</b>	<b>The Boeing Company, Phantom Works, Strategic Development and Experimentation, Technology and Operations</b> <i>Software Intern</i> <ul style="list-style-type: none"> <li>▪ Developed test-driven software that integrated Boeing’s Battle Management Optimization Services into Boeing’s SimGen virtual simulation mission planning tool using C++ and Python.</li> <li>▪ Developed a parser for an analytical framework for network enhanced files using an agile development process.</li> </ul>	2014
	<b>The Boeing Company, F-15 Mission Systems</b> <i>Software Intern</i> <ul style="list-style-type: none"> <li>▪ Developed a test suit to evaluate the performance enhancements across several multi-core architectures.</li> <li>▪ Developed software to evaluate the performance of F-15 flight Recorder in Ada programming language.</li> </ul>	2013
	<b>Paladyn. Journal of Behavioral Robotics. <i>Reviewer</i></b>	2019
<b>Academic Service</b>	<b>Robotics: Science and Systems (RSS). <i>Reviewer</i></b>	2019
	<b>IEEE Transactions on Robotics (T-RO). <i>Reviewer</i></b>	2019
	<b>The 21<sup>st</sup> ACM Conference on Computer-Supported Cooperative Work and Social Computing and Social Computing (CSCW). <i>Reviewer</i></b>	2018
	<b>13<sup>th</sup> Annual ACM/IEEE International Conference on Human-Robot Interaction (HRI). <i>Reviewer</i></b>	2017
	<b>26<sup>th</sup> IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN). <i>Reviewer</i></b>	2017
	<b>Graduate Student Recruiter of Prospective Faculty</b>	2017
	<b>Affective Computing and Intelligent Interaction (ACII). <i>Reviewer</i></b>	2017

	Conference on Human-Robot Interaction (HRI). <i>Reviewer</i>	2017
	AAAI Fall Symposium on Artificial Intelligence in Human-Robot Interaction (AI-HRI). <i>Reviewer</i>	2016
	IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS). <i>Reviewer</i>	2016
<b>Departmental Service</b>	<ul style="list-style-type: none"> <li>▪ Visit Day Co-Lead</li> <li>▪ Department Visit Day Robotics Group Lead</li> <li>▪ Graduate Student Recruiter of Prospective Faculty</li> </ul>	<p style="text-align: right;">2018-2019 2017 2017</p>
<b>Outreach</b>	<p><b>Blue Heart Foundation Workshop Speaker, San Diego, CA, 2017</b></p> <ul style="list-style-type: none"> <li>▪ This organization provides mentoring, professional development, and college preparation to male high school students in the local San Diego area.</li> <li>▪ Gave to talk to male high school students about why they should pursue STEM fields, how they can prepare for a STEM career, and why robotics is an exciting field to work in.</li> </ul> <p><b>F.A.N.C.Y Teen Girls Expo, San Diego, CA, 2017-2018</b></p> <ul style="list-style-type: none"> <li>▪ This event uplifts, motivates, and empowers over 200 teen girls between the ages of 11-17 throughout San Diego County.</li> <li>▪ Participated in a panel discussion about how to prepare for a career in STEM, how to be successful, and about my own experiences in the field.</li> <li>▪ Provided demonstrations of the Fetch robot giving selfies to students and Turtlebots' following students and playing music.</li> <li>▪ Raised external funding to support transportation of robots to the F.A.N.C.Y event.</li> </ul> <p><b>Code Success @ NSBE Mentor, 2017</b></p> <ul style="list-style-type: none"> <li>▪ Mentored an undergraduate Code Success@NSBE Scholar by giving advice on how to prepare for graduate school and how to be successful in graduate school.</li> </ul> <p><b>Notre Dame National Robotics Week Event, 2016</b></p> <ul style="list-style-type: none"> <li>▪ Developed an autonomous robot that played space-invaders and tracked child participants' positions during an interactive game.</li> </ul> <p><b>University of Notre Dame Hispanic Engineers and Scientists STEM Carnival, 2015</b></p> <ul style="list-style-type: none"> <li>▪ Interactively demonstrated "follower" and "maze escape" algorithms on a robot</li> </ul> <p><b>The Urban League, Saint Louis Section, REACH Mentor, 2015</b></p> <ul style="list-style-type: none"> <li>▪ Mentored and taught students how to develop an android mobile application</li> </ul> <p><b>National Society of Black Engineers, Collegiate Mentor, 2012-2015</b></p> <ul style="list-style-type: none"> <li>▪ Mentored three students throughout undergraduate career and met with them on a regular basis for academic counsel.</li> </ul> <p><b>University of Missouri College of Engineering, Ambassador, 2013-2014</b></p> <ul style="list-style-type: none"> <li>▪ Conducted campus tours and participated in several outreach activities.</li> </ul>	

**Accredited Board of Engineering and Technology (ABET) Symposium Volunteer, 2012**

**Professional  
Affiliations &  
Leadership**

UC San Diego Graduate Robotics Association <i>President (2018-2019)</i>	2016-Present
Black Graduate Student Association	2016
American Association of University Women	2016-Present
Association for Women in Science, University of Notre Dame	2016
Eta Kappa Nu, Electrical and Computer Engineering Honor Society, University of Missouri, Vice President (2013-2015) University of California San Diego	2013-Present
National Society of Black Engineers, University of Missouri <i>Vice President (2013-2015)</i> <i>Community Service Chairperson (2012-2013)</i>	2012-15
Institute of Electrical and Electronic Engineers, University of Missouri	2012-15
Society of Women Engineers, University of Missouri (2012-2015), University of Notre Dame (2015-Present)	2012-16
STEM Club, <i>Saint Louis Community College</i> <i>Community Service Chairperson</i>	2010-12

**Press**

Featured in UC San Diego Jacobs School of Engineering	2017
Featured in UC San Diego Television	2018

**Invited Meetings**

Facebook Vivid in Research Event	2018
National GEM Consortium 40 <sup>th</sup> Annual Conference	2016
Microsoft Research (MSR) Faculty Summit	2016
National Society of Blacks in Computing Conference	2016
Facebook's Women in Research Lean In Workshop	2016
Toyota Technological Institute in Chicago Midwest Robotics Workshop	2016