Jennifer L. Cross

The Robotics Institute
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RESEARCH INTERESTS

- Human-robot interaction with a focus on educational applications of robotics
- Diversity and accessibility in robotics, engineering and computer science education
- Teacher and student robotic empowerment, technological fluency, and computational thinking
- Mixed-methods evaluation of educational robotics interventions

EDUCATION

Ph.D. in Robotics 2017
Carnegie Mellon University, Pittsburgh, PA
Dissertation: Creative Robotic Systems for Talent-Based Learning
Advisor: Illah Nourbakhsh
Committee: Mitchel Resnick, Jack Mostow, and Aaron Steinfeld

M.S. in Robotics 2013
Carnegie Mellon University, Pittsburgh, PA
Advisor: Illah Nourbakhsh

B.S. in Electrical and Computer Engineering 2010
Franklin W. Olin College of Engineering, Needham, MA
Member of Olin College's fifth graduating class

AWARDS & HONORS

Program for Interdisciplinary Education Research Fellow 2011 – 2017
Department of Education - Institute of Education Sciences

Graduate Research Fellowship Program Fellow 2011 – 2014
National Science Foundation

Best Paper Award 2013
IEEE Integrated STEM Education Conference

Honorable Mention Award 2017
ACM CHI Conference on Human Factors in Computing Systems

Olin College Merit Scholarship 2006 – 2010
Franklin W. Olin College of Engineering

Carnegie Science Center Awards for Excellence 2005
Carnegie Science Center, Pittsburgh, PA

PUBLICATIONS

Hsu, Y.-C., Cross, J., Leiter, L., Grode, R., Dille, P., and Nourbakhsh, I. (2018). Community-Empowered Air Quality Monitoring System. In Proceedings of 2018 ACM CHI Conference on Human Factors in Computing Systems, Montréal, Canada. (in review)

Cross, J., Hamner, E., Zito, L., and Nourbakhsh, I. (2017). Student Outcomes from the Evaluation of a Transdisciplinary Middle School Robotics Program. *In Proceedings of 2017 IEEE Frontiers in Education Conference (FIE)*, Indianapolis, Indiana.

Hamner, E., Zito, L., Cross, J., Tasota, M., Dille, P., Fulton, S., Johnson, M., Nourbakhsh, I., and Schapiro, J. (2017). Development and Results from User Testing of a Novel Robotics Kit Supporting Systems Engineering for Elementary-Aged Students. *In Proceedings of 2017 IEEE Frontiers in Education Conference (FIE)*, Indianapolis, Indiana.

Hsu, Y.-C., Dille, P., Cross, J., Dias, B., Sargent, R., and Nourbakhsh, I. (2017). Community-Empowered Air Quality Monitoring System. *In Proceedings of 2017ACM CHI Conference on Human Factors in Computing Systems*, Denver, Colorado. (Honorable Mention Award)

Cross, J., Hamner, E., Zito, L., Nourbakhsh, I., and Bernstein, D. (2016). Development of an Assessment for Measuring Middle School Student Attitudes towards Robotics Activities. *In Proceedings of 2016 IEEE Frontiers in Education Conference (FIE)*, Erie, Pennsylvania.

Cross, J., Hamner, E., Zito, L., and Nourbakhsh, I. (2016). Engineering and Computational Thinking Talent in Middle School Students: a Framework for Defining and Recognizing Student Affinities. *In Proceedings of 2016 IEEE Frontiers in Education Conference (FIE)*, Erie, Pennsylvania.

Hamner, E., Zito, L., Cross, J., Slezak, B., Mellon, S., Harapko, H., and Welter, M. (2016). Utilizing Engineering to Teach Non-Technical Disciplines: Case Studies of Robotics within Middle School English and Health Classes. *In Proceedings of 2016 IEEE Frontiers in Education Conference (FIE)*, Erie, Pennsylvania.

Hamner, E., Cross, J., Zito, L., Bernstein, D., and Mutch-Jones, K. (2016). Training Teachers to Integrate Engineering into Non- Technical Middle School Curriculum. *In Proceedings of 2016 IEEE Frontiers in Education Conference (FIE)*, Erie, Pennsylvania.

Bernstein, D., Mutch-Jones, K., Hamner, E., and Cross, J. (2015). Robots and Romeo and Juliet: Studying Teacher Integration of Robotics into Middle School Curricula. Paper presented at the 2016 Annual Meeting of the American Educational Research Association (AERA), Washington, DC.

Cross, J., Hamner, E., Bartley, C., and Nourbakhsh, I. (2015). Arts & Bots: Application and Outcomes of a Secondary School Robotics Program. *In Proceedings of 2015 IEEE Frontiers in Education Conference (FIE)*, El Paso, Texas.

Cross, J. and Hamner, E. (2014). Identifying and Cultivating Diverse STEM Talent through Creative Robotics. *In Proceedings of 2014 American Society for Engineering Education (ASEE) Annual Conference and Exposition*, Indianapolis, Indiana.

Cross, J., Bartley, C., Hamner, E., and Nourbakhsh, I. (2013). A Visual Robot-Programming Environment for Multidisciplinary Education. *In Proceedings of 2013 IEEE International Conference on Robotics and Automation (ICRA*), Karlsruhe, Germany.

Hamner, E. and Cross, J. (2013). Arts & Bots: Techniques for distributing a STEAM robotics program through K-12 classrooms. *In Proceedings of the 2013 IEEE Integrated STEM Education Conference (ISEC)*, Princeton, NJ. (Best Paper Award)

Brown, H. B., Nourbakhsh, I., Bartley, C., Cross, J., Dille, P., Schapiro, J., and Styler, A. (2012). ChargeCar Community Conversions: Practical, Electric Commuter Vehicles Now! *In Proceedings of the 2012 IEEE International Electric Vehicle Conference (IEVC)*, Greenville, SC.

Mathews, J. D., Briczinski, S. J., Malhotra, A., and Cross, J. (2010). Extensive Meteoroid Fragmentation in V/UHF Radar Meteor Observations at Arecibo Observatory. *Geophysical Research Letters*, 37(4).

TEACHING

Principles of Human Robot Interaction (16-867) 2015 & 2017
Guest Lecturer, Carnegie Mellon University
Topic: Robotics & Education

New Literacies for Educational Leadership (EDL 730) 2017
Guest Lecturer, Miami University, Oxford, OH
Topic: Integrating Instructional Technology

Human Robot Interaction (16-467) 2016
Guest Lecturer, Carnegie Mellon University
Topic: Experimental Design in Human Robot Interaction

Methods & Materials for Elementary Teachers (EDUC 460) 2015
Guest Lecturer, West Liberty University, West Liberty, WV
Topic: Transdisciplinary Integration of Creative Robotics

Mobile Robotics Project Course (Summer Academy for Math and Science) 2014
Course Instructor, Carnegie Mellon University

Systems Engineering (16-650) 2012
Teaching Assistant, Carnegie Mellon University

Educational Robotics for the Classroom (16-651) 2011
Guest Lecturer, Carnegie Mellon University
Topic: Robot Programming with the CREATE Lab Visual Programmer

OUTREACH & SERVICE

K-12 Teacher Professional Development Workshops 2011 – 2017
Workshop Leader, Various locations including: Pittsburgh, PA; Marshall, WV; Bristol, UK; and others
Topic: Integrating Arts & Bots Robotics into Classrooms
Audience: Teachers in K-12 Schools
Over 200 teachers have participated in workshops to date

Integrating the E in STEM Workshop Series 2016
Workshop Leader, Erie, PA
Topic: Transdisciplinary Integration of Creative Robotics for Identification of Student STEM Affinities
Audience: K-12 Educators

OurCS: Opportunities for Undergraduate Research in Computer Science 2013 & 2015
Graduate Organizer, Carnegie Mellon University
Audience: Women in Undergraduate Computer Science Programs

Robotics Institute Ph.D. Admissions Committee 2012 – 2014

Women@SCS Creative Technology Nights 2012 – 2014
Workshop Leader, Carnegie Mellon University
Topic: Robot Programming with Scratch
Audience: Middle School Aged Women

Women@SCS Computer Science Roadshows 2011 – 2013
Graduate Student Presenter, Carnegie Mellon University
Audience: K-12 Students and Educators

MENTORING

Master's Thesis Committee
Xunjie Zhang, Carnegie Mellon University 2017
Matthew Bernstein, Carnegie Mellon University 2012

Ph.D. Qualifiers Committee
Yen-Chia Hsu, Carnegie Mellon University 2015
Eleanor Avrunin, Carnegie Mellon University 2014

PROFESSIONAL ACTIVITIES & MEMBERSHIPS

Future Faculty Program 2011 – 2017
Eberly Center for Teaching Excellence and Educational Innovation, Carnegie Mellon University

Women@SCS 2010 – 2017
School of Computer Science, Carnegie Mellon University

American Society for Engineering Education 2013 – 2017

IEEE 2012 – 2017

Society of Women Engineers 2007 – 2017