Jennifer L. Cross

The Robotics Institute
Carnegie Mellon University
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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 *expected*

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

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., 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. (in press)

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.

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

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

Topic: Transdisciplinary Integration of Creative Robotics

Project Course: Mobile Robotics (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