Heather Pon-Barry

Computer Science Department
Mount Holyoke College
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EDUCATION

Harvard University, Cambridge, MA
Ph.D. in Computer Science   **2013**
M.S. in Computer Science   **2009**

Stanford University, Stanford, CA
M.S. in Symbolic Systems   **2004**
B.S. in Symbolic Systems   **2003**

ACADEMIC POSITIONS

Mount Holyoke College
Associate Professor of Computer Science   **2020–present**
Clare Boothe Luce Assistant Professor of Computer Science   **2014–2020**

Arizona State University   **2013–2014**
Assistant Professor of Computer Science

INDUSTRY POSITIONS

Bosch Research and Technology Center, Palo Alto, CA   **2004–2006**
Research Associate

OTHER PROFESSIONAL APPOINTMENTS

Manning College of Information and Computer Sciences, University of Massachusetts Amherst   **2015–present**
Adjunct Associate Professor

AWARDS AND HONORS

Second Best Paper Award, New Curricula Track, SIGCSE 2019

Best Poster Presentation Award, IEEE Spoken Language Technology Workshop, 2014

FWA Outstanding Faculty Mentor Award Nominee, Arizona State University, 2014

Commencement Marshal, Harvard University, Graduate School of Arts and Science, 2013

Siebel Scholar, Class of 2013

Grace Hopper Celebration of Women in Computing Scholarship, 2011

National Science Foundation Graduate Research Fellowship, 2007

National Defense Science and Engineering Graduate Fellowship, 2007

Linguistic Society of America Institute Fellowship, 2007

GRANTS AND FUNDING

Development of Modular Curricular Assets for Tech Mentorship Initiative, Microsoft, 2020, $15,000. Audrey St. John (PI), Becky Wai-Ling Packard (co-PI), Heather Pon-Barry (co-PI).

CAREER: Dialogue Engagement for Educational Robots, National Science Foundation, IIS-1942955, 2020-2025, $522,923. Heather Pon-Barry (PI).

Workshop on Sociolectal and Dialectal Prosodic Variation, National Science Foundation, BCS-1749321, 2018-2019, $35,873 to University of Massachusetts Amherst. (Senior Personnel).

Sharing the MaGE Curricular Materials, Google Computer Science Education Award, 2018, $50,000. Heather Pon-Barry (PI), Audrey St. John (co-PI), and Becky Packard (co-PI).

Understanding the Influence of a Teachable Robot on STEM Skills and Attitudes, National Science Foundation, National Robotics Initiative, IIS-1637947, 2016-2019, $249,243 (total), $71,169 (Mount Holyoke portion). Heather Pon-Barry (Collaborative Lead for multi-institution grant; PI at Mount Holyoke).

MaGE (Megas and Gigas Educate): Growing Computer Science Capacity at Mount Holyoke College, Google Computer Science Capacity Award, 2015-2018, $483,861. Supplement, 2016: $26,500. Heather Pon-Barry (PI), Audrey St. John (co-PI), and Becky Packard (co-PI).

Computer Science Engagement Award, Google Education and University Relations Fund of Tides Foundation, 2015, $5,000. (Single PI).

REFEREED JOURNAL ARTICLES

Matthew Marge, Carol Espy-Wilson, Nigel G. Ward, Abeer Alwan, Yoav Artzi, Mohit Bansal, Gil Blankenship, Joyce Chai, Hal Daum&eacute, Debadeepta Dey, Mary Harper, Thomas Howard, Casey Kennington, Ivana Kruijff-Korbayov&aacute, Dinesh Manocha, Cynthia Matuszek, Ross Mead, Raymond Mooney, Roger K. Moore, Mari Ostendorf, **Heather Pon-Barry**, Alexander I. Rudnicky, Matthias Scheutz, Robert St. Amant, Tong Sun, Stefanie Tellex, David Traum, and Zhou Yu. Spoken Language Interaction with Robots: Recommendations for Future Research. *Computer Speech & Language, 71*, 2022, 101255.

Nichola Lubold, Erin Walker, and **Heather Pon-Barry**. Effects of Adapting to User Pitch on Rapport Perception, Behavior, and State with a Social Robotic Learning Companion. *User Modeling and User-Adapted Interaction, 31:* 35–73, 2021.

Heather Pon-Barry, Becky Wai-Ling Packard, and Audrey St. John. Expanding Capacity and Promoting Inclusion in Introductory Computer Science: A Focus on Near-Peer Mentor Preparation and Code Review. *Computer Science Education*, 27(1): 54–77, 2017.

Stephanie A. Borrie, Nichola Lubold, and **Heather Pon-Barry**. Disordered Speech Disrupts Conversational Entrainment: A Study of Acoustic-Prosodic Entrainment and Communicative Success in Populations with Communication Challenges. *Frontiers in Psychology*, 6, 2015.

Heather Pon-Barry and Stuart M. Shieber. Recognizing Uncertainty in Speech. *EURASIP Journal on Advances in Signal Processing*, vol. 2011, Article ID 251753, 2011.

Sebastian Varges, Fuliang Weng, and **Heather Pon-Barry**. Interactive Question Answering and Constraint Relaxation in Spoken Dialogue Systems. *Natural Language Engineering*, 15(1): 9–30, 2009.

Heather Pon-Barry, Karl Schultz, Elizabeth Owen Bratt, Brady Clark, and Stanley Peters. Responding to Student Uncertainty in Spoken Tutorial Dialogue Systems. *International Journal of Artificial Intelligence in Education*, 16(2): 171–194, 2006.

Heather Pon-Barry, Karl Schultz, Brady Clark, Elizabeth Owen Bratt, Stanley Peters, and David Haley. Contextualizing Reflective Dialogue in a Spoken Conversational Tutor. *Journal of Educational Technology & Society*, 8(4): 42–51, 2005.

REFEREED MAGAZINE ARTICLES

Heather Pon-Barry, Audrey St. John, Becky Wai-Ling Packard, and Chris Stephenson. Addressing the CS Capacity Challenge by Improving Undergraduate Peer Mentoring. *ACM Inroads,* 8(3): 43–47, 2017.

REFEREED CONFERENCE AND WORKSHOP ARTICLES

Nichola Lubold, Erin Walker, **Heather Pon-Barry**, and Amy Ogan. Comfort with Robots Influences Rapport with a Social, Entraining Teachable Robot. In Proceedings of the International Conference on Artificial Intelligence in Education, Chicago, Illinois, June 2019.

Heather Pon-Barry, Audrey St. John, Becky Wai-Ling Packard, and Barbara Rotundo. A Flexible Curriculum for Promoting Inclusion through Peer Mentorship. In Proceedings of the 50th ACM Technical Symposium on Computer Science Education (SIGCSE '19), February 2019. **[Second Best Paper Award]**

Ranjini Das and **Heather Pon-Barry**. Turn-Taking Strategies for Human-Robot Peer-Learning Dialogue. In Proceedings of the 19th Annual Meeting of the Special Interest Group on Discourse and Dialogue, Melbourne, Australia, July 2018.

Nichola Lubold, Erin Walker, **Heather Pon-Barry**, and Amy Ogan. Automated Pitch Convergence Improves Learning in a Social, Teachable Robot for Middle School Mathematics. In Proceedings of the International Conference on Artificial Intelligence in Education, London, UK, June 2018.

Nichola Lubold, Erin Walker, **Heather Pon-Barry**, Yuliana Flores, and Amy Ogan. Using Iterative Design to Create Efficacy-Building Social Experiences with a Teachable Robot. In Proceedings of the 13th International Conference on the Learning Sciences, London, UK, June 2018.

Tricia Chaffey, Hyeji Kim, Emilia Nobrega, Nichola Lubold, and **Heather Pon-Barry**. Dyadic Stance in Natural Language Communication with a Teachable Robot. In Proceedings of Human-Robot Interaction Companion, Chicago, Illinois, March 2018.

Nichola Lubold, Erin Walker, and **Heather Pon-Barry**. Effects of Voice-Adaptation and Social Dialogue on Perceptions of a Robotic Learning Companion. In Proceedings of Human-Robot Interaction, Christchurch, New Zealand, March 2016.

Nichola Lubold, **Heather Pon-Barry**, and Erin Walker. Naturalness and Rapport in a Pitch Adaptive Learning Companion. In Proceedings of the IEEE Automatic Speech Recognition and Understanding Workshop, Scottsdale, Arizona, December 2015.

Nichola Lubold, Erin Walker, and **Heather Pon-Barry**. Relating Entrainment, Grounding, and Topic of Discussion in Collaborative Learning Dialogues. In Proceedings of Computer Supported Collaborative Learning, Gothenburg, Sweden, June 2015.

Nichola Lubold and **Heather Pon-Barry**. A Comparison of Acoustic-Prosodic Entrainment in Face-to-face and Remote Collaborative Learning Dialogues. In Proceedings of the IEEE Spoken Language Technology Workshop, South Lake Tahoe, Nevada, December 2014. ***Best Poster Presentation Award***.

Nichola Lubold and **Heather Pon-Barry**. Acoustic-Prosodic Entrainment and Rapport in Collaborative Learning Dialogues. In Proceedings of the ICMI Workshop on Multimodal Learning Analytics, Istanbul, Turkey, November 2014.

Lydia Manikonda, **Heather Pon-Barry**, Subbarao Kambhampati, Eric Heckler, and David McDonald. Discourse Analysis of User Forums in an Online Weight Loss Application. In Proceedings of the ACL Joint Workshop on Social Dynamics and Personal Attributes, Baltimore, Maryland, 2014.

Fred Morstatter, Nichola Lubold, **Heather Pon-Barry**, Jurgen Pfeffer, and Huan Liu. Finding Eyewitness Tweets During Crises. In Proceedings of the ACL Workshop on Language Technology and Computational Social Science, Baltimore, Maryland, 2014.

Heather Pon-Barry, Stuart Shieber, and Nicholas Longenbaugh. Eliciting and Annotating Uncertainty in Spoken Language. In Proceedings of Language Resources and Evaluation Conference, Reykjavik, Iceland, 2014.

Heather Pon-Barry. Using Ambiguous Handwritten Digits to Induce Uncertainty. In Proceedings of 5th International Workshop on Emotion, Social Signals, Sentiment, and Linked Open Data, Reykjavik, Iceland, 2014.

Heather Pon-Barry and Arun Reddy Nelakurthi. Challenges for Robust Prosody-based Affect Recognition. In Proceedings of Speech Prosody, Dublin, Ireland, 2014.

Heather Pon-Barry and Stuart Shieber. Assessing Self-awareness and Transparency when Classifying a Speaker's Level of Certainty. In Proceedings of Speech Prosody 2010, Fifth International Conference, Chicago, Illinois, 2010.

Heather Pon-Barry and Stuart Shieber. Identifying Uncertain Words within an Utterance via Prosodic Features. In Proceedings of INTERSPEECH '09, pp. 1579–1582, Brighton, UK, 2009.

Heather Pon-Barry and Stuart Shieber. The Importance of Sub-utterance Prosody in Predicting Level of Certainty. In Proceedings of HLT-NAACL '09, pp. 105–108, Boulder, Colorado, 2009.

Heather Pon-Barry. Prosodic Manifestations of Confidence and Uncertainty in Spoken Language. In Proceedings of INTERSPEECH '08, pp. 74–77, Brisbane, Australia, 2008.

Heather Pon-Barry, Fuliang Weng, and Sebastian Varges. Evaluation of Content Presentation Strategies for an In-car Spoken Dialogue System. In Proceedings of INTERSPEECH '06, pp. 1930–1933, Pittsburgh, Pennsylvania, 2006.

Fuliang Weng, Sebastian Varges, Badri Raghunathan, Florin Ratiu, **Heather Pon-Barry**, Brian Lathrop, et al. CHAT: A Conversational Helper for Automotive Tasks. In Proceedings of INTERSPEECH '06, pp. 1061–1064, Pittsburgh, Pennsylvania, 2006.

Sebastian Varges, Fuliang Weng, and **Heather Pon-Barry**. Interactive Question Answering and Constraint Relaxation in Spoken Dialogue Systems. In Proceedings of the 7th SIGdial Workshop on Discourse and Dialogue, pp. 28–35, Sydney, Australia, 2006.

Stanley Peters, Elizabeth Owen Bratt, Brady Clark, **Heather Pon-Barry**, Karl Schultz. Intelligent Systems for Training Damage Control Assistants. In Proceedings of the Interservice/Industry Training, Simulation & Education Conference (I/ITSEC '04), Orlando, Florida, 2004.

Heather Pon-Barry, Brady Clark, Karl Schultz, Elizabeth Owen Bratt, and Stanley Peters. Advantages of Spoken Language in Dialogue-based Tutoring Systems. In Proceedings of the 7th International Conference on Intelligent Tutoring Systems (ITS '04), pp. 390–400, Maceió, Brazil, 2004. **Best of ITS 2004** (given to the top 5 papers).

Heather Pon-Barry, Brady Clark, Elizabeth Owen Bratt, Karl Schultz, and Stanley Peters. Evaluating the Effectiveness of SCoT: a Spoken Conversational Tutor. In Proceedings of the ITS 2004 Workshop on Dialog-based Intelligent Tutoring Systems, pp. 23–32, Maceió, Brazil, 2004.

Heather Pon-Barry, Brady Clark, Karl Schultz, Elizabeth Owen Bratt, and Stanley Peters. Contextualizing Learning in a Reflective Conversational Tutor. In Proceedings of the 4th IEEE International Conference on Advanced Learning Technologies (ICALT '04), pp. 236–240, Joensuu, Finland, 2004.

Karl Schultz, Brady Clark, **Heather Pon-Barry**, Elizabeth Owen Bratt, and Stanley Peters. SCoT: A Spoken Conversational Tutor. In Proceedings of the 19th National Conference on Artificial Intelligence (AAAI '04), San Jose, California, 2004.

Karl Schultz, Elizabeth Owen Bratt, Brady Clark, Stanley Peters, **Heather Pon-Barry**, and Pucktada Treeratpituk. A Scalable, Reusable Spoken Conversational Tutor: SCoT. In Proceedings of the AIED 2003 Workshop on Tutorial Dialogue Systems: With a View Towards the Classroom, pp. 367–377, Sydney, Australia, 2003.

Brady Clark, Elizabeth Owen Bratt, Oliver Lemon, Stanley Peters, **Heather Pon-Barry**, Zack Thomsen-Gray, and Pucktada Treeratpituk. A General Purpose Architecture for Intelligent Tutoring Systems. In Proceedings of the International CLASS Workshop on Natural, Intelligent and Effective Interaction in Multimodal Dialogue Systems, Copenhagen, Denmark, 2002.

Elizabeth Owen Bratt, Brady Clark, Zack Thomsen-Gray, Stanley Peters, Pucktada Treeratpituk, **Heather Pon-Barry**, Karl Schultz, David C. Wilkins, and David Fried. Model-Based Reasoning for Tutorial Dialogue in Shipboard Damage Control. In Proceedings of the ITS 2002 Workshop on Model Based Systems and Qualitative Reasoning for Intelligent Tutoring Systems, pp. 63–69, San Sebastian, Spain, 2002.

Brady Clark, John Fry, Matt Ginzton, Stanley Peters, **Heather Pon-Barry**, and Zack Thomsen-Gray. A Multimodal Intelligent Tutoring System for Shipboard Damage Control. In Proceedings of the International Workshop on Information Presentation and Multimodal Dialogue, pp. 121–125, Verona, Italy, 2001.

John Fry, Matt Ginzton, Stanley Peters, Brady Clark, and **Heather Pon-Barry**. Automated Tutoring Dialogues for Training in Shipboard Damage Control. In Proceedings of the 2nd SIGDIAL Workshop on Discourse and Dialogue, Aalborg, Denmark, 2001.

REFEREED CONFERENCE ABSTRACTS

Michael Ball, Justin Hsia, **Heather Pon-Barry**, Andrew DeOrio, and Adam Blank. Teaching TAs To Teach: Strategies for TA Training. In Proceedings of the 51st ACM Technical Symposium on Computer Science Education (SIGCSE '20). Association for Computing Machinery, New York, NY, USA, 477–478, March 2020.

Jeffrey Forbes, David Malan, **Heather Pon-Barry**, Stuart Reges, and Mehran Sahami. Scaling Introductory Courses Using Undergraduate Teaching Assistants. In Proceedings of the 2017 ACM SIGCSE Technical Symposium on Computer Science Education (SIGCSE '17). Association for Computing Machinery, New York, NY, USA, 657–658, March 2017.

Heather Pon-Barry, Audrey St. John, Becky Wai-Ling Packard, and Barbara Rotundo. Megas and Gigas Educate (MaGE): A Curricular Peer Mentoring Program. In Proceedings of the 47th ACM Technical Symposium on Computing Science Education (SIGCSE '16). Association for Computing Machinery, New York, NY, USA, 696, March 2016.

Lisa Kaczmarczyk, Alvaro Monge, Jeff Offutt, **Heather Pon-Barry**, and Suzanne Westbrook. You Should (And Can) Keep Diversity in Sharp Focus During the Enrollment Surge. In Proceedings of Research on Equity and Sustained Participation in Engineering, Computing, and Technology (RESPECT), Charlotte, North Carolina, August 2015.

REFEREED BOOK CHAPTERS

Brady Clark, Oliver Lemon, Alexander Gruenstein, Elizabeth Owen Bratt, John Fry, Stanley Peters, **Heather Pon-Barry**, Karl Schultz, Zack Thomsen-Gray, and Pucktada Treeratpituk. A General Purpose Architecture for Intelligent Tutoring Systems. In *Natural, Intelligent and Effective Interaction in Multimodal Dialogue Systems*. Dordrecht: Kluwer, 2005.

THESES

Heather Pon-Barry. Inferring Speaker Affect in Spoken Natural Language Communication. Ph.D. Thesis, School of Engineering and Applied Sciences, Harvard University, 2013.

Heather Pon-Barry. In Search of Bloom's Missing Sigma: Adding the Conversational Intelligence of Human Tutors to an Intelligent Tutoring System. Unpublished M.S. Thesis, Symbolic Systems Program, Stanford University, 2004.

INVITED TALKS

"Overview and Impact of the MaGE Program at Mount Holyoke", Institute for Diversity Sciences, University of Massachusetts Amherst, February 2019

"Spoken Dialogue Interaction with a Teachable Robot", CS Seminar, Union College, April 2018

"MaGE Training for Inclusive and Effective Peer Mentorship", NorthEast Consortium for Quantitative Literacy, March 2018

"Spoken Language in Human-Robot Interaction / MaGE Program", CSWomen, University of Massachusetts Amherst, April 2017

"Spoken Language in Human-Robot Interaction / MaGE Program", Computer Science Colloquium, Williams College, February 2016

"Sensing Speaker Affect in Conversational Dialogue", Computer Science Seminar, Smith College, March 2015

"Detecting Uncertainty in Spoken Language", Cognitive Science Colloquium, University of Colorado, March 2014

"Detecting Uncertainty in Spoken Language", Computer Science Seminar, University of Texas El Paso, Feb 2014

CONFERENCE ACTIVITY

Panel participant, "Physically Situated Dialogue" panel discussion, SIGDIAL 2018

Panel participant, "Partnering to Provide Solutions to CS Capacity Challenges with Google", SIGCSE 2018

Speaker, "Wrestling With Retention in the Face of Increasing CS Enrollments", NCWIT Summit 2017

Panel participant, "Scaling Introductory Courses Using Undergraduate Teaching Assistants", SIGCSE 2017

Panel participant, "New Tools and Solutions to Address the CS Capacity Crunch", SIGCSE 2017

Panel participant, "Surfacing Solutions to the Capacity Crunch", SIGCSE 2016

Panel participant, "You Should (And Can) Keep Diversity in Sharp Focus During the Enrollment Surge", RESPECT 2015

OTHER TALKS & PANELS

Discussant, "Making Robots Good People", CHI Salon, Amherst College, November 2021

Faculty Friday, Mount Holyoke College, October 2015

TEACHING

Mount Holyoke College

First-Year Seminar: Talking Robots	Fall 2021
Data Structures	Spring 2021, Fall 2020, Spring 2020
Natural Language Processing	Fall 2020, Fall 2019, Fall 2018, Spring 2017, Spring 2015
Introduction to Computer Science	Fall 2019
Advanced Object-Oriented Programming	Fall 2018, Fall 2016, Spring 2016, Fall 2015, Spring 2015, Fall 2014
Peer Mentor Training for MaGE (Megas and Gigas Educate)	Spring 2017, Fall 2016, Fall 2015
Artificial Intelligence	Fall 2014

Arizona State University

Introduction to Natural Language Processing	Fall 2013
Topics in Spoken Language Processing	Spring 2013

SERVICE

Committees and Reviewing

Program Committee: Convening of Center for Integrative Research in Computing and Learning Sciences (CIRCLS), 2021

Co-organizer: Experimental and Theoretical Advances in Prosody (ETAP) 4: Sociolectal and dialectal variability in prosody, 2018

Reviewer: Computer Speech and Language, Computer Science Education, Journal of Phonetics, ACM Inroads, ACL 2018, 2017 (Association for Computational Linguistics), COLING 2018 (Conference on Computational Linguistics); EMNLP 2017, 2015 (Empirical Methods in Natural Language Processing), ETAP 2018 (Experimental and Theoretical Advances in Prosody), HRI 2018 (Human-Robot Interaction); ICMI 2017 (International Conference on Multimodal Interaction), CHI 2019, 2013 (Conference on Human Factors in Computing Systems); NAACL 2019, 2018, 2013 (Conference of the North American Chapter of the Association for Computational Linguistics); SCiL 2019, 2018 (Society for Computation in Linguistics); SIGDIAL 2021, 2020 (Special Interest Group on Discourse and Dialogue), Speech Prosody 2016, 2014; AAAI 2015 (Conference on Artificial Intelligence); Workshop on Innovative Use of NLP for Building Educational Applications 2015, 2014, 2013

Panelist/Reviewer, National Science Foundation, 2021, 2020, 2018, 2017, 2015, 2014

Reviewer, Anita Borg Institute, 2014

Faculty Track Committee, Grace Hopper Celebration of Women in Computing, 2015

Mount Holyoke College

Committee on Appeals, 2020-2022

LITS Advisory Committee, 2018

Data Science Steering Committee, 2014–2016

PhD Advising

Co-chair, Nichola Lubold, Arizona State University, 2018

External committee member, Rick Freedman, University of Massachusetts Amherst, 2018

Advisory Boards

Academic Advisory Board, Data Science Development Program, MassMutual, 2015–2017

Online Education Advisory Council, Google, 2015–2016

Other

Co-director, Mentoring Program, Harvard Graduate Women in Science and Engineering, Harvard University, 2010–2012

Board member, Harvard Graduate Women in Science and Engineering, Harvard University, 2008–2012

Steering committee member, Mind, Brain, and Behavior Graduate Student Society, Harvard University, 2008–2010

Advising Fellow, Symbolic Systems Program, Stanford University, 2002–2003

COMMUNITY INVOLVEMENT

Judge and Mentor, HackHolyoke, 2019, 2018

Judge, HackUMass, 2018

Speaker, Girls in Tech Conference, Mount Holyoke College, 2017

Public lecture at SciTech Cafe, "Why doesn't Siri understand me?", Northampton, MA, June 2016

Grand Awards Judge, Intel International Science and Engineering Fair, 2013

Computer Science Education Week presentation on speech and language technologies, Xavier College Preparatory, Phoenix, AZ, 2013

PATENTS

Fuliang Weng and Heather Pon-Barry. Method and apparatus for organizing and optimizing content in dialog systems. European Patent number 1,772,854, September 2008

PROFESSIONAL MEMBERSHIPS

Association for Computational Linguistics (ACL)

Association for Computing Machinery (ACM)

International Speech Communication Association (ISCA)