

# Heather Pon-Barry

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## Education

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**Harvard University**, Cambridge, MA

Ph.D. in Computer Science, *expected in 2012*.

*Dissertation*: Inferring Speaker Affect in Spoken Natural Language Communication

*Advisor*: Stuart M. Shieber

M.S. in Computer Science, 2009.

**Stanford University**, Stanford, CA

M.S. in Symbolic Systems, concentration in Natural Language Technologies, 2004.

B.S. in Symbolic Systems, concentration in Artificial Intelligence, 2003.

## Fellowships and Awards

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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.

Applied Sciences Fellowship, School of Engineering and Applied Sciences, Harvard University, 2006.

## Previous Research Experience

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**Bosch Research and Technology Center**, Palo Alto, CA

*Research Intern/Research Associate*, “Driving Your Car with Conversational Language,”

Principal Investigator: Fuliang Weng, 2004–2006.

**Center for the Study of Language and Information**, Stanford University

*Research Assistant*, “Natural Language Interaction with Intelligent Tutoring Systems,”

Principal Investigator: Stanley Peters, 2001–2004.

**Advanced Telecommunications Research Institute (ATR)**, Kyoto, Japan

*Intern*, “Modeling and Analyzing Multimodal Communicative Behavior,” Principal

Investigator: Eric Bateson, Summer 2002.

## Teaching Experience

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Teaching Fellow, Computer Science 181: Intelligent Machines: Perception, Learning and Uncertainty, Harvard University and Harvard Extension School, 2010.

Teaching Fellow, Applied Math 101: Introduction to Probability and Statistics for Engineers, Harvard University, 2008.

Teaching Fellow, Computer Science 182: Intelligent Machines: Reasoning, Actions, and Plans, Harvard University, 2007.

Mentor for undergraduate students, Women in Science, Technology, Engineering and Mathematics Mentor Program, Harvard University, 2007–present.

Teaching Assistant, Engineering 50: Introduction to Materials Science, Stanford Japan Center, Kyoto, Japan, 2002.

## Refereed Publications

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

**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 the 10th Annual Conference of the International Speech Communication Association (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 Human Language Technologies: The 2009 Annual Conference of the North American Chapter of the Association for Computational Linguistics: Short Papers (NAACL '09)*, pp. 105–108, Boulder, Colorado, 2009.

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**. Prosodic Manifestations of Confidence and Uncertainty in Spoken Language. In *Proceedings of the 9th Annual Conference of the International Speech Communication Association (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 the 9th International Conference on Spoken Language Processing (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 the 9th International Conference on Spoken Language Processing (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.

**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.

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*. Edited by Niels Ole Bernsen, Laila Dybkjaer, and Jan van Kuppevelt. Dordrecht: Kluwer, 2005.

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.

## Other Publications

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**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.

## Patents

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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.

## Leadership Activities

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

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

Co-chair, student host committee for junior faculty search, School of Engineering and Applied Sciences, Harvard University, 2011.

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

Coordinator, Artificial Intelligence Research Group seminar series, Harvard University, 2007–2009.

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

## **Additional Education**

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Linguistic Society of America Summer Institute, Stanford University, CA, 2007.

CIRCLE Summer School on Intelligent Tutoring Systems. Carnegie Mellon University, Pittsburgh, PA, 2003.

Overseas Studies Program, Stanford Japan Center, Kyoto, Japan, 2002.

## **Memberships**

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Association for Computational Linguistics (ACL)

Association for Computing Machinery (ACM)

International Speech Communication Association (ISCA)