

# Nichola Lubold

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## RESEARCH INTERESTS

Developing intelligent, personalized dialogue systems by incorporating adaptation to speech phenomena such as entrainment. Exploring application of adaptive dialogue in collaborative and educational systems with broader implications for human-computer and human-robot interaction.

## EDUCATION

**Arizona State University**, Tempe, AZ

Ph.D., Computer Science, 2013 – Aug 2018 (Expected), GPA: 3.8, GRE: 169 V / 163 Q / 4 A

**University of Notre Dame**, Notre Dame, IN

B.S., Computer Engineering, 2005 – 2008 (graduated in 3 years)

## PUBLICATIONS

**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.” *Proceedings of International Conference of the Learning Sciences, ICLS*. 2018. (In press).

Tricia Chaffey, Hyeji Kim, Emilia Nobrega, **Nichola Lubold**, and Heather Pon-Barry. “Dyadic Stance in Natural Language Communication with a Teachable Robot.” In *HRI '18 Companion: 2018 ACM/IEEE International Conference on Human-Robot Interaction*, March 2018.

**Nichola Lubold**. "Building Rapport through Dynamic Models of Acoustic-Prosodic Entrainment." *Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems*. ACM, 2017.

**Nichola Lubold**, Heather Pon-Barry, and Erin Walker. “Perceptions of Social Behavior in a Voice-Adaptative Robotic Learning Companion.” *ACM/IEEE International Conference on Human Robot Interaction (HRI)*. 2016.

**Nichola Lubold**, Heather Pon-Barry, and Erin Walker. “Naturalness and Rapport in a Pitch-Adaptive Learning Companion.” In *Automatic Speech Recognition and Understanding (ASRU), 2015 IEEE Workshop*. IEEE. 2015.

Stephanie 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.

**Nichola Lubold**, Erin Walker, and Heather Pon-Barry. “Relating Entrainment, Grounding, and Topic of Discussion in Collaborative Learning Dialogues.” In *Proceedings of the 11<sup>th</sup> International Conference on Computer Supported Collaborative Learning*, 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 Workshop on Spoken Language Technologies*, 2014.

**\* Awarded Best Poster Presentation at SLT 2014**

**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*, 2014.

Fred Morstatter, **Nichola Lubold**, Heather Pon-Barry, Jürgen Pfeffer, and Huan Liu. “Finding Eyewitness Tweets during Crises.” In *Proceedings of ACL Workshop on Language Technology and Computational Social Science*, 2014.

## FELLOWSHIPS & HONORS

Finalist, Adobe Research Fellowship	<b>2017</b>
NCWIT Collegiate Award, Honorable Mention	<b>2016</b>
Google Anita Borg Memorial Scholarship	<b>2015</b>
Grace Hopper Celebration Scholar	<b>2015</b>
National Science Foundation Graduate Research Fellowship, Honorable Mention	<b>2015</b>
Dean’s Fellowship, Ira A. Fulton Schools of Engineering <i>4 year fellowship, awarded to 4% of all ASU doctoral students</i>	<b>2013</b>
Six Sigma GreenBelt, General Electric	<b>2010</b>
Upsilon Pi Epsilon Honor Society, University of Notre Dame	<b>2008</b>
Engineering Honors Program, University of Notre Dame	<b>2008</b>

## WORK EXPERIENCE

**Data Science Intern** **Summer 2016**  
*Intuit*

- Developed tools to enable marketing and business analysts to utilize data science algorithms
- Analyzed opportunities for utilizing NLP to enhance software products

**Program Manager** **2011 – 2013**  
*GE Capital - Retail Bank*

- Managed cross-functional program focusing on service management and regulatory requirements
- Coordinated and lead to completion high-budget projects impacting entire IT organization, optimizing processes to meet regulatory requirements while reducing unnecessary expenditures

**Technology Project Manager** **2010 – 2011**  
*GE Capital - Retail Bank*

- Managed 10 wing-to-wing network and database enhancement projects
- Increased redundancy and implemented high-availability technologies

## **Information Technology Leadership Program**

**2008 – 2010**

*GE Capital*

- Completed four 6-month rotations in project management and software engineering, including leading life-cycle management, trading platform integrations, and divestiture activities

## **RESEARCH**

### **Research Assistant**

**2014 – Present**

*Arizona State University*

- Designed and built several adaptive spoken dialogue systems for robotic learning companions
- Planned and executed evaluations of two adaptive learning companions at the college and middle school level involving more than 150 participants
- Analyzed impact of adaptive dialogue in enhancing human-computer & human-robot interactions

Advisor: Erin Walker, CIDSE

### **Research Assistant**

**2013 – 2014**

*Arizona State University*

- Analyzed automatic detection of common ground and rapport in spoken language, exploring entrainment, a phenomenon of speech where speakers become more similar over time

Advisor: Heather Pon-Barry, CIDSE

### **Research Assistant**

**Jan. 2014 – Aug. 2014**

*Arizona State University*

- Conducted experiments investigating intelligent tutoring system applications for assisting middle school and high school math teachers in the classroom during collaborative activities.

Advisor: Kurt VanLehn, CIDSE

### **Research Assistant**

**2006 – 2008**

*University of Notre Dame*

- Investigated biometric algorithms and techniques for reducing false positives in fingerprint and iris pattern recognition

Advisor: Kevin W. Bowyer, Dept. of Computer Science & Engineering

## **TEACHING EXPERIENCE**

### **EPICS Mentor**

**2015 - Present**

*Arizona State University*

- FSE 104/494 – mentor students 1/week as a part of Engineering Projects in Community Service

### **Instructor**

**Fall 2014**

*Arizona State University*

- CSE 110 Introduction to Java – taught 117 students

### **Teaching Assistant**

**Fall 2013**

*Arizona State University*

- CSE 476 / 598 Introduction to Natural Language Processing

## **PRESENTATIONS**

### **Oral Presentations**

“Building Rapport through Dynamic Models of Acoustic-Prosodic Entrainment.” Doctoral Consortium, CHI 2017.

“Perceptions of Social Behavior in a Voice-Adaptative Robotic Learning Companion.” HRI, 2016.

“Entrainment and Rapport in Collaborative Learning Dialogues.” Third Multimodal Learning Analytics, ICMI 2014.

“The Validity of Fingerprint Recognition.” University of Notre Dame Undergraduate Scholar’s Conference, 2008.

### **Poster Presentations**

“Naturalness and Rapport in a Pitch-Adaptive Learning Companion.” ASRU, 2015.

“Relating Entrainment, Grounding, and Topic of Discussion in Collaborative Learning Dialogues.” Computer Supported Collaborative Learning, 2015.

“A Comparison of Spoken Dialogue in Face-to-Face and Remote Collaborative Learning Environments.” IEEE Spoken Language Technology Workshop, 2014.

“Finding Eyewitness’ Tweets During Crisis.” ACL Workshop on Language Technology and Computational Social Science, ACL, 2014.

## **MANUSCRIPTS**

**Validity of Fingerprint Recognition**, Senior Thesis, 2008  
Investigated improvements to latent print pattern recognition

## **COMMUNITY SERVICE**

Board member, Xavier College Preparatory Technology Board, 2014 – Present

Co-President, Women in Computer Science Society, 2014 – 2016

Volunteer Teacher, Junior Achievement, 2009 – 2012

Outreach Coordinator, GE Capital ITLP, 2008 – 2009

Reviewer for: NAACL (North American Chapter Association for Computational Linguistics), CHI (Computer-Human Interaction), HRI (Human-Robot Interaction), Speech Prosody, and ICWSM (International AAAI Conference on Weblogs and Social Media)

## **COMMUNITY MEMBERSHIP**

Association for Computational Linguistics, 2014

Institute of Electrical and Electronics Engineers, 2014

Women in Computer Science, ASU, 2013

Graduate Women’s Association, ASU, 2013

Association for Computing Machinery, 2013

The Society of Women Engineers, 2013

## **OTHER ACHIEVEMENTS**

ServiceNow Certified System Administrator, 2011

ITIL Foundations V3 (135538), 2011

## **COURSEWORK**

FALL 2013

CSE 571 – Artificial Intelligence

CSE 591 – Technologies for Online Learning Communities

CSE 790 – Reading and Conference

SPRING 2014

CSE 598 – Design and Analysis of Algorithms

CSE 598 – Intelligent Interactive Instructional Systems

CSE 790 – Reading and Conference

FALL 2014

PSY 531 – Multiple Regression

SPRING 2015

CSE 555 – Theory of Computation

PSY 530 – Intermed Statistics

FALL 2015

CSE 565 – Software Verification, Validation, and Testing

EDP 540 – Theoretical Views of Learning

SPRING 2016

CSE 566 – Software Project/Process/Quality Management

CSE 575 – Statistical Machine Learning

CSE 691 – Logical & Distributional Semantics of Natural Language

FALL 2016

CSE 572 – Data Mining

SHS 598 – Speech and Audio Processing and Perception

FALL 2017

GRD 791: Preparing Future Faculty & Scholars