

College of Computer and Information Science  
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## Research Interests

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My research interests lie within the field of Human-Computer Interaction, especially health-centered systems. My work is focused on Relational Agents and how the use of these agents can positively impact patient care. In particular, I am interested in how the use of these agents can improve patient activation – patients becoming more involved in their health – and patient-doctor communication.

## Education

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**Northeastern University**, Boston, MA (September 2006 - present)  
*Ph.D, Computer Science – expected completion 2012*  
*Master of Science, Computer Science – May 2008*

**Advisor:** Dr. Timothy Bickmore

**Coursework:** Advanced Algorithms, Artificial Intelligence, Empirical Research Methods, Graphics, Human-Computer Interaction, Intensive Computer Systems, Introduction to Database Systems, Principles of Programming Languages, Theory of Computation

**Augustana College**, Sioux Falls, SD (September 1998 – May 2002)  
*Bachelor of Arts, Computer Science and Spanish*  
*Cum Laude*

## Research Experience

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**Northeastern University**, Boston, MA (September 2006 - present)  
*Graduate Research Assistant, Human-Computer Interaction Lab*  
*Dr. Timothy Bickmore, Relational Agents Group*

- **A RCT to Reduce Cardiopulmonary Re-hospitalizations**
  - Project lead, designing and developing a “virtual nurse” to educate patients about self-care procedures before they leave the hospital
  - Conducted a field-study assessing the usability and acceptance of the system by patients
  
- **Tinker: A Relational Guide for the Boston Museum of Science**
  - Developed a Relational Agent system designed to interact with museum visitors
  - Project lead on system testing and implementation
  - Conducted a field study examining museum guests’ engagement and satisfaction with the system
  
- **Health Document Explanation by Relational Agents**
  - Conducted a study examining the role of gesture used by people explaining documents
  - Evaluated a model of document explanation by Relational Agents, conducting an empirical study with participants from varying degrees of health literacy
  
- **Medication Adherence in Young Adults with Schizophrenia Using Relational Agent Technology**
  - Developed and tested a Relational Agent system designed to assist patients with adherence to their medication regimen

**Augustana College**, Sioux Falls, SD (January 2000 – February 2001)  
*Dr. Daniel L. Swets*

- Installed and maintained Parallel Virtual Machine (PVM) – a cluster computing software package – in the Augustana parallel processing lab
- Designed, coded, tested and maintained Geographic Information System software for the PVM system
- Presented “Cluster Computing as a Means of Efficient Problem Solving“ at the South Dakota Student Research Session in Pierre, SD, February 2001

## Teaching Experience

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**Northeastern University**, Boston, MA

Fall 2006, Fall 2008

*Graduate Teaching Assistant*

*Dr. Timothy Bickmore, CS G170, Human-Computer Interaction*

- Graded and provided feedback on class assignments
- Provided mentorship for project teams designing user interfaces for older adults
- Coordinated user-testing of student projects by older adults at a local apartment complex

**Augustana College**, Sioux Falls, SD

September 2000 – May 2002

*Tutor – Department of Computer Science*

- Assisted students with program design and development
- Tested, debugged and graded programming assignments

## Publications

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Journals (Peer Reviewed):

- [J.5] Bickmore, T., Mitchell, S., Jack, B., Paasche-Orlow, M., Pfeifer, L., O'Donnell, J. (2010) Response to a Relational Agent by Hospital Patients with Depressive Symptoms. *Interacting with Computers, special issue on Mental Health*, 22(4), 289-298.
- [J.4] Bickmore, T., Puskar., K, Schlenk, E., Pfeifer, L., Sereika, S. (2010) Maintaining Reality: Relational Agents for Antipsychotic Medication Adherence. *Interacting with Computers, special issue on Mental Health*, 22(4), 276-288.
- [J.3] Bickmore, T., Pfeifer, L., Byron, D., Forsythe, S., Henault, L., Jack, B., Silliman, R., Paasche-Orlow, M. (2010). Usability of Conversational Agents by Patients with Inadequate Health Literacy: Evidence from Two Clinical Trials. *Journal of Health Communication*, 15, 197-210.
- [J.2] Bickmore, T., Pfeifer, L., and Paasche-Orlow, M. (2009). Using Computer Agents to Explain Medical Documents to Patients with Low Health Literacy. *Patient Education and Counseling*, 75 (3), 315-320.
- [J.1] Bickmore, T., Pfeifer, L., and Yin, L. (2008). The Role of Gesture in Document Explanation by Embodied Conversational Agents. *International Journal of Semantic Computing*. 2 (1), 47-70.

### Conference Full Papers (Peer Reviewed):

- [C.4] Pfeifer, L., and Bickmore, T. Is the Media Equation a Flash in the Pan? The Durability and Longevity of Social Responses to Computers. *Proceedings of the ACM SIGCHI Conference on Human Factors in Computing Systems (CHI)*, Vancouver, BC, May 2011.
- [C.3] Pfeifer, L., and Bickmore, T. Should Agents Talk Like, um, Humans? The Use of Conversational Fillers by Virtual Agents. *Intelligent Virtual Agents*. Amsterdam, The Netherlands, September 2009.
- [C.2] Bickmore, T., Pfeifer, L., and Jack, B. Taking the Time to Care: Empowering Low Health Literacy Hospital Patients with Virtual Nurse Agents. *Proceedings of the ACM SIGCHI Conference on Human Factors in Computing Systems (CHI)*, Boston, MA, April 2009.
- [C.1] Bickmore, T., Pfeifer, L., and Paasche-Orlow, M. Health Document Explanation by Virtual Agents. *Intelligent Virtual Agents*. Paris, France, September 2007.

### Conference Workshops and Posters (Peer Reviewed):

- [c.5] Pfeifer, L., Bickmore, T. (to appear) Longitudinal Remote Follow-Up by Intelligent Conversational Agents for Post-Hospitalization. *AAAI 2011 Spring Symposium on Artificial Intelligence and Health Communication*, Palo Alto, CA.
- [c.4] Pfeifer, L., and Bickmore, T. (2010) Designing Embodied Conversational Agents to Conduct Longitudinal Health Interviews *Intelligent Virtual Agents '10*, Philadelphia, PA.
- [c.3] Pfeifer, L., and Bickmore, T. (2009) Longitudinal Health Interviewing by Embodied Conversational Agents: Directions for Future Research. *AAAI 2009 Fall Symposium on Virtual Healthcare Interaction*, Washington D.C.
- [c.2] Bickmore, T. and Pfeifer, L., Schulman, D., Perera, S., Senanayake, C. and Nazmi, I. Public Displays of Affect: Deploying Relational Agents in Public Spaces. *CHI'08 Extended Abstracts*. Florence, Italy, April 2008.
- [c.1] Bickmore, T. and Pfeifer, L. Relational Agents for Antipsychotic Medication Adherence. *CHI 2008 Workshop on Technology in Mental Health*. Florence, Italy, April 2008.

## Invited Presentations:

- [I.3] Pfeifer, L. *Patient-Computer Interaction*. Presented at the Dot Diva Launch, Microsoft Research New England, Cambridge, MA, September 2010.
- [I.2] Pfeifer, L. *Virtual Nurse Agents for Hospital Discharge*. Presented at the Northeastern University Board of Trustees annual meeting. Boston, MA, May 2009.
- [I.1] Pfeifer, L. *Health Document Explanation by Relational Agents*. Presented at the New England Electronic-Media and Behavior Change Interest Group Quarterly Meeting. Newton, MA, October 2008.

## Industry Experience

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### **ProVation Medical – Wolters Kluwer Health**, Minneapolis, MN

July 2003 – August 2006

#### *Senior Technical Support Analyst*

- Provided technical support to database administrators, software administrators and users of ProVation software
- Taught day-long software administrator classes to new technical users of ProVation Software
- Managed a knowledgebase for the technical support group

### **MHC Software**, Burnsville, MN

August 2002 – July 2003

#### *Software Implementation Specialist*

- Provided implementation, training and technical support to users of Document Express™, a Windows-based laser printing software package
- Tested, tracked and verified the resolution of software defects

## Service

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### **Professional Membership**

- Association for Computing Machinery (ACM)
- Association for the Advancement of Artificial Intelligence (AAAI)
- International Association for Relationship Research (IARR)

### **University Service**

- CCIS Ph.D Recruitment Open House, Volunteer 2007-2010
- Augustana College Women in Computer Science, 2000-2002