

## Curriculum Vitae Sharoda A. Paul

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### RESEARCH INTERESTS

My research interests lie in the fields of computer-supported cooperative work, human-computer interaction, collaborative and social Web search, social computing, and healthcare informatics. I am interested in understanding collaborative information behavior and developing tools to enable people to collaboratively find, share, and make sense of information. I have studied collaborative information seeking and sensemaking in diverse fields such as healthcare and Web search.

### EDUCATION

**Ph.D. in Information Sciences and Technology** May 2010  
The Pennsylvania State University, University Park.  
Dissertation Title: Understanding Together: Sensemaking in Collaborative Information Seeking  
Advisor: Madhu Reddy, Ph.D.

**Bachelor of Engineering in Computer Science and Engineering** May 2004  
Birla Institute of Technology, India  
CGPA: 8.15/10 (Graduated First Class with Distinction)

### INDUSTRY EXPERIENCE

**Computing Innovation Postdoctoral Fellow** Sep 2010 – Present  
Palo Alto Research Center (PARC), Palo Alto, CA.  
Post-doc studying social computing with Ed Chi and Peter Pirolli in the Augmented Social Cognition group.

**Research Intern** Oct 2009 – Jan 2010  
Microsoft Research, Redmond, WA.  
Worked with Danyel Fisher and Kori Inkpen in the Visualization and Interaction for Business and Entertainment group to model collaborative sensemaking when using a collaborative table top search tool.

**Research Intern** Jun – Aug 2008  
Microsoft Research, Redmond, WA.  
Worked with Merrie Morris in the Adaptive Systems and Interaction group, to develop a sensemaking tool, CoSense, which helps users make sense of information found during collaborative Web search tasks.

**Software Developer Intern** May – Jul 2002  
Information Technology Department, Tata Steel, Jamshedpur, India  
I evaluated and recommended security tools for the company Intranet.

### PEER-REVIEWED PUBLICATIONS (Copies can be accessed at <http://www.personal.psu.edu/sap246> )

#### Journals

[J.4] Isenberg, P. Fisher, D., **Paul, S.A.**, Morris, M.R., Inkpen, K., and Czerwinski, M. (Submitted). Co-located Collaborative Visual Analytics Around a Tabletop Display. *IEEE Transactions on Visualizations and Computer Graphics*.

[J.3] **Paul, S.A.** and Morris, M.R. (2011). Sensemaking in Collaborative Web Search. To appear in *Human Computer Interaction* special issue on Sensemaking. Special Issue Eds. Daniel Russell and Peter Pirolli, 26(1), 38-71. (Impact factor 6.19)

[J.2] **Paul, S.A.**, Reddy, M., and deFlicht, C.J. (2010). A Systematic Review of Simulation Studies Investigating Emergency Department Overcrowding. *Simulation: Transactions on the Society for Modeling and Simulation International* Special Issue on *Modeling and Simulation in Healthcare*, 86(8-9), 559-571. (Impact factor 0.78)

[J.1] Reddy, M., **Paul, S.A.**, Abraham, J., McNeese, M.D., deFlicht, C.J., and Yen, J. (2009). Challenges to Effective Crisis Management: Using Information and Communication Tools to Coordinate Emergency Medical Services and Emergency Department Teams. *The International Journal of Medical Informatics*, 78(4), 259-269. (Impact factor 1.5) **2010 Diana Forsythe Award**

### Conference Full and Short Papers

[C.6] **Paul, S.A.**, Hong, L., and Chi, E.H. (2011). Is Twitter a Good Place for Asking Questions? Poster paper at the AAAI International Conference on Weblogs and Social Media (*ICWSM '11*).

[C.5] **Paul, S.A.** and Reddy, M. (2010). Understanding Together: Sensemaking in Collaborative Information Seeking. Proceedings of the *ACM Conference on Computer Supported Cooperative Work (CSCW '10)*, Savannah, GA. (Acceptance rate 20%). **Best paper nominee**

[C.4] **Paul, S.A.**, and Morris, M.R. (2009). CoSense: Enhancing Sensemaking for Collaborative Web Search. Proceedings of the *Conference on Human Factors in Computing Systems (CHI '09)*, Boston, MA. (Acceptance rate 24.5%) **Best paper nominee**

[C.3] **Paul, S.A.**, Reddy, M. and deFlicht, C.J. (2008). The Usefulness of Information and Communication Tools in Crisis Response. Proceedings of the *Fall Symposium of the American Medical Informatics Association (AMIA '08)*, Washington, D.C. (Acceptance rate 20%)

[C.2] **Paul, S.A.**, Reddy, M., and deFlicht, C.J. (2008). Information and Communication Tools as Aids to Collaborative Sensemaking. In *Extended Abstracts of the ACM SIGCHI Conference on Human Factors in Computing Systems (CHI '08)*. (Acceptance rate 38%)

[C.1] Zhu, S., Abraham, J., **Paul, S.A.**, Reddy, M., Yen, J., Pfaff, M., and deFlicht, C.J. (2007). RCAST-MED: Applying Intelligent Agents to Support Emergency Medical Decision Making Teams. *Proceedings of the 11th Artificial Intelligence in Medicine Conference (AIME '07)*, Amsterdam, the Netherlands. (Acceptance rate 20%)

### Workshops, Posters, Panels, Videos

[W.11] **Paul, S.A.**, Hong, L., and Chi, E.H. (2011). What is a Question? Crowdsourcing Tweet Categorization. Position paper at the *CHI 2011 workshop on Crowdsourcing and Human Computation*.

[W.10] Sarcevic, A., **Paul, S.A.**, Hilligoss, B., and Scupelli, P. (2011) Assessing the Practical Impacts of Healthcare Research. Panel at *iConference 2011*, Seattle, WA.

[W.9] **Paul, S.A.**, and Reddy, M.C., (2010) A Framework for Sensemaking in Collaborative Information Seeking. Position paper at the *2<sup>nd</sup> International Workshop on Collaborative Information Seeking* at the *ACM Conference on Computer Supported Cooperative Work (CSCW '10)*, Savannah, GA.

[W.8] **Paul, S.A.**, Reddy, M.C., Jansen, B.J., and Foster, J. (2009) Workshop proposal for the Collaborative Information Behavior workshop at the *ACM Conference on Supporting Group Work (GROUP '09)*, Sanibel Island, FL.

[W.7] Bernstein, M, André, P., Luther, K., Solovey, E.T., Poole, E.S., **Paul, S.A.**, Kane, S., and Grudin, J. (2009). CHistory. In the CHI Video Showcase at the *Conference on Human Factors in Computing Systems (CHI '09)*, Boston, MA. **Golden Mouse Award for the Best Entertaining Video.**

[W.6] **Paul, S.A.** and Morris, M.R. (2009). Understanding and Supporting Sensemaking in Collaborative Web Search. Position paper presented at the *Sensemaking* workshop at the *Conference on Human Factors in Computing Systems (CHI '09)*, Boston, MA. (Acceptance rate 66%)

[W.5] **Paul, S.A.**, Reddy, M.C., and deFlicht, C.J. (2008). Collaborative Sensemaking: A Field-Study in the Emergency Department. Position paper at the *Sensemaking* workshop at the *Conference on Human Factors in Computing Systems (CHI '08)*, Florence, Italy. (Acceptance rate 50%)

[W.4] **Paul, S.A.**, Reddy, M.C., deFlicht, C.J. (2008). Supporting Collaborative Sensemaking in the Emergency Department. Poster presented at the *Third Annual iConference*, Los Angeles, CA.

[W.3] **Paul, S.A.**, Reddy, M.C., Abraham, J. (2007). Collaborative Sensemaking during Emergency Crisis Response: How do ICTs Help? Poster presented at the *ACM SIGGROUP Conference on Supporting Group Work (GROUP '07)*, Sanibel Island, FL.

[W.2] Purao, S., **Paul, S.A.**, and Smith, S. (2007). Understanding Enterprise Integration Project Risks: A Focus Group Study. Workshop paper presented at the *18th International Conference on Databases and Expert Systems Applications (DEXA '07)*, Regensburg, Germany.

[W.1] Zhu, S., Abraham, J., **Paul, S.A.**, Reddy, M.C., Yen, J., Pfaff, M., and deFlicht, C.J. (2007). RCAST-MED: Applying Intelligent Agents to Support Emergency Medical Decision Making Teams. Poster presented at the *2nd North East Student Colloquium on Artificial Intelligence (NESCAI '07)*, Ithaca, NY.

## NON-PEER-REVIEWED PUBLICATIONS

[N.3] **Paul, S.A.**, Reddy, M., and deFlicht, C. (2009). Understanding Together: Collaborative Sensemaking in Emergency Care. In Proceedings of the *4<sup>th</sup> Annual IST Graduate Symposium*, University Park, PA.

[N.2] **Paul, S.A.** (2007). Emergency Response Information Systems: Emerging Trends and Technologies. *American Medical Informatics Association Student Working Group News*, 4(3), 4-6.

[N.1] Mitra, P., Purao, S., Bagby, J.W., Umopathy, K., and **Paul, S.A.** (2005). An Empirical Analysis of Development Processes for Anticipatory Standards, NET Institute Working Paper No. 05-18. Available online at: <http://ssrn.com/abstract=850524>

## PRESENTATIONS

### 2011

- Is Twitter a Good Place for Asking Questions? Characterizing Social Q&A on Twitter. Presentation at the *Augmented Social Cognition* group at PARC, Palo Alto, CA.
- Studying Collaborative Information Behavior in a Hospital ED. Panel presentation at the *iConference 2011* panel on Assessing the Practical Impacts of Healthcare Research, Seattle, WA.

### 2010

- Collaborative Information Seeking and Sensemaking. Invited talk at the *USER* group at IBM, Almaden.

- Understanding Together: Sensemaking in Collaborative Information Seeking. Presented at the *Intelligent System Lab Dialog* at the Palo Alto Research Center, Palo Alto, CA.
- Understanding Together: Sensemaking in Collaborative Information Seeking. Paper presented at *CSCW 2010*, Savannah, GA.
- Towards a Model of Collaborative Information Seeking. Presented to the *Visualization in Business and Entertainment* group, Microsoft Research, Redmond, WA.

## 2009

- CoSense: Enhancing Sensemaking for Collaborative Web Search. Presented at CHI 2009, Boston, MA.
- Understanding and Supporting Sensemaking for Collaborative Web Search. Presented at the *Sensemaking* workshop at CHI 2009, Boston, MA.
- Being Social on the Internet. Presented in the IST 440W course on *IST Integration* taught by Shaun Knight.
- Understanding Together: Collaborative Sensemaking in Emergency Care. Presented at the 4<sup>th</sup> Annual IST Graduate Symposium, Penn State University, University Park, PA.

## 2008

- The Usefulness of Information and Communication Technologies in Crisis Response. Presented at the *Fall Symposium of the American Medical Informatics Association (AMIA '08)*, Washington, D.C.
- The Usefulness of Information and Communication Technologies in Crisis Response. Invited talk for IST 501 course on *IST Integration* taught by C. Lee Giles. College of IST, Penn State University, University Park, PA.
- CoSense: Collaborative Sensemaking Using SearchTogether. Presented at the *HCI Intern Lunch Talks series*, Microsoft Research, Redmond, WA.
- Collaborative Sensemaking: A Field Study in an Emergency Department. Presented at the *Sensemaking* workshop at CHI 2008, Florence, Italy.
- Supporting Collaborative Sensemaking in an Emergency Department. Presented at the Doctoral Colloquium of the Third Annual i-conference, Los Angeles, CA.

## 2007

- Collaborative Sensemaking: A Field Study in an Emergency Department. Presented in IST 525 course on *Computer Supported Cooperative Work* taught by Mary Beth Rosson. College of IST, Penn State University, University Park, PA.
- The Role of Information and Communication Technologies in Alleviating Emergency Department Overcrowding. Presented at *Connections 2007 Doctoral Consortium*, Philadelphia, PA.

## RESEARCH EXPERIENCE

### Research Associate

*R-CAST MED: Supporting Collaborative Clinical Decision-Making in Multidisciplinary Patient Care Teams*

May – Aug 2010

College of IST and Hershey Medical Center, Penn State University, UP.

I conducted knowledge elicitation interviews and focus groups with healthcare providers in a hospital emergency department to understand collaborative clinical decision making for building an intelligent agent-based clinical decision support system.

### Research Assistant

*Penn State Partnership to Transform Hospital Emergency Care*

Jan – Dec 2007

College of IST and Hershey Medical Center, Penn State University, UP.

In this collaborative project with the Department of Industrial Engineering, I conducted observations, interviews and surveys to examine how systems theories and information and communication tools can improve quality of care in the emergency department.

*Using R-CAST to Support Emergency Medical Decision-Making Teams* May – Dec 2006  
College of IST and Hershey Medical Center, Penn State University, UP.  
I conducted focus groups with emergency medical services and emergency department staff at the Hershey Medical Center to examine the role of technology in disaster response.

*An Empirical Analysis of Development Processes for Anticipatory Standards* Jun 2005 – Jan 2006  
College of IST, Penn State University, UP.  
I performed content analysis of Web Services standards developed by the World Wide Web Consortium to gain an understanding of the process of development of anticipatory standards.

*Identifying Risks and Resolution Strategies for Systems Integration Projects* May – Dec 2005  
College of IST, Penn State University, UP.  
I conducted focus groups at a local organization in State College, PA to examine perception of risks and risk resolution strategies for large-scale information systems implementation projects.

## TEACHING EXPERIENCE

**Instructor**, WISE Camp 2007: Information Technology as a Gateway to the World June 2007  
Women in Sciences and Engineering Institute, Penn State University, UP.  
I conducted a cross-cultural project involving high school girls from the US and India. We introduced the students to technology careers and opportunities and helped them share their experiences by collaborating using wikis and blogs. The project wiki is at <http://wise2007.pbwiki.com/>

**Teaching assistant**, the College of IST, Penn State University, UP.  
IST 440W: IST Integration – Fall 2006, Spring 2009  
IST 331: Organization and Design of Information Systems – User and System Principles, Spring 2007  
IST 311: Object Oriented Design and Software Applications – Spring 2006  
IST 301: Information and Organizations – Fall 2007 and Fall 2008  
IST 240: Introduction to Computer Languages – Fall 2004 and Spring 2005

## AWARDS

- Computing Innovation Fellowship 2010 (Acceptance rate 11%).
- AMIA Diana Forsythe Award 2010.
- Google Graduate Researchers in Academia of Diverse backgrounds (GRAD) Forum 2010.
- Best paper nominee, CSCW 2010. (top 10% of papers nominated)
- Best paper nominee, CHI 2009. (top 10% of papers nominated)
- Golden Mouse Award for Best Entertaining Video, CHI 2009.
- Doctoral Consortium, iConference 2008.
- Doctoral Colloquium, The Fall Symposium of the American Medical Informatics Association (AMIA) 2008 (declined, could not participate due to conflict with CSCW 2008)
- Travel grant from the College of IST to attend the iConference 2008 in Los Angeles, CA.
- Travel grant from the College of IST to attend CHI 2008 in Florence, Italy.
- Women in Sciences and Engineering Institute grant (\$3400) for teaching summer camp 2007.

## PROFESSIONAL SERVICE

### *Program Committees*

- ACM Conference on Human Factors in Computing Systems (CHI 2011)
- Grace Hopper 2011 Birds of a Feather Selection Committee
- Workshop on Interdependent Networks: Quality, Influence, and Evolution in Social and Information Networks (WIN 2011)
- ACM Conference on Group work (GROUP 2010)

### ***Affiliations***

- Member of the Association for Computing Machinery (ACM).
- Member of BayCHI (Bay Area ACM Special Interest GROUP on CHI)

### ***Reviewer***

INTERACT

International Journal of Medical Informatics

IEEE Computer Graphics and Applications ACM SIGCHI Conference on Human Factors in Computing Systems (CHI)

ACM International Conference on Supporting Group Work (GROUP)

ACM Conference on Computer Supported Cooperative Work (CSCW)

International Conference of Information Systems (ICIS)

Annual i-Conference of the i-Schools

### ***Student Volunteer***

CHI 2008

CSCW 2008

CHI 2009

GROUP 2009

### ***Others***

- Coordinator for the PARC Intelligent Systems Lab weekly Dialog, Spring 2011.
- Panelist in the ‘Alumni discussion and career panel’ at the IST Graduate Symposium 2010.
- Co-organizer of GROUP 2009 workshop on Collaborative Information Behavior.
- Session chair for session on “hospitals” at CHI 2009, Boston, MA
- Member, Diversity Committee, College of IST, Penn State University, Fall 2006 - present.
- Member, Graduate Website Development Committee, Graduate Students in IST (GIST), May–Aug 2005.
- Reviewer, Diana Forsythe Award for Qualitative Methods in Medical Informatics, 2006 and 2007.

### **TECHNICAL SKILLS**

Programming: C, C++, C#, Java, LISP, PROLOG, SQL, PHP, MySQL.

Operating systems: Windows, Unix/Linux, OS X.

Qualitative analysis packages: ATLAS, NVivo.

Others: EndNote, MATLAB, Minitab, SQL Server, Microsoft Visual Studio.

### **REFERENCES**

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The Pennsylvania State University,

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Meredith Ringel Morris, Ph.D.

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Microsoft Research,

Redmond, WA – 98052.

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