

Last update: Jan 31 2017

## CURRICULUM VITAE

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## PERNILLA QVARFORDT

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## SUMMARY

Cognitive Scientist, Interaction Designer, and Human-Computer Interaction Researcher passionate about deep understanding of users to inform product design

Skilled in creating meaningful user studies, qualitative and quantitative user research methods, eye tracking analysis, making sense of data and connecting results to improved user interface designs

Enjoys hands-on prototyping and problem solving in multi-disciplinary teams

## POSITIONS

### Current

**Senior Research Scientist**, FX Palo Alto Laboratory (FXPAL), *June 2013-current*

At FXPAL I'm conducting user centered research in the areas of multimodal interaction, collaboration, information seeking and eye tracking.

*Significant research projects*

**Interest detection from eye gaze (current):** Information extracted from our eye gaze can indicate if we are interested in the particular objects we look at. In this project, we modeled users' interest of particular photos while browsing a photo collection from interaction events and gaze data. This project involved building an HTML-based photo browser, user data collection, and development of statistical interest models using machine learning. I'm the project lead and am involved in all parts of the project, from coding the photo browsers, to planning data collection and interest modeling.

**Visualizations for session-based search (2012-2015):** To support search activities over extended time periods, we explored various visualization methods for keeping track of already seen search results, such as the query pre-view widget in Querium (Qvarfordt *et al.*, 2013) and SearchPanel (Qvarfordt *et al.*, 2014). We also developed a method for extracting search tactics from user action recorded in search logs of session-based search (He *et al.*, 2016). My role in this project was contributing to the interaction design (primarily SearchPanel) and conducting user studies, and data analysis.

## Previous

**Research scientist**, FX Palo Alto Laboratory (FXPAL), *June 2005-2013*

### *Significant research projects*

**Assisted visual search (2009-2011)**: Visual search is an error prone task, in particularly in cluttered images such as satellite images or medical images. This project explored if eye tracking data can be used to direct user's attention towards uninspected areas of an image (Qvarfordt *et al.* 2010; Qvarfordt, in press). I was project lead and involved with all parts of its implementation. Press coverage at:

<https://www.newscientist.com/article/mg20627546.100-making-the-most-of-a-second-look/>

**Presence Awareness, MyUnity (2009-2010)**: To better support communication, we designed a system, myUnity, to provide presence information to a workplace. myUnity used multiple presence sensors to detect various presence states, such as "in office," "in a call", "at computer at home" etc. With my colleagues, I conducted an investigation of communication patterns in a small business environment (Turner *et al.* 2010). I was interaction design lead for redesigning myUnity to scale to larger organizations (2010) and implemented parts of the UI in C#.

**Collaborative exploratory search (2007-2009)**: The focus of this project was to user interfaces to support search where multiple users collaborate around a search need. We designed and evaluated a system for doing video search where two searchers took different roles in order to cover as much of the search space as possible (Pickens *et al.*, 2008, SIGIR best paper award; Golovchinsky, Qvarfordt & Pickens, 2009). My role was to contributing to the interaction design and user evaluation.

**Distributed Intelligent Conference Environment, DICE (2005-2008)**: When focused on communicating ideas and meeting new people, users often confronted by conference rooms with a bewildering tangle of cables, remote controls and switches. In the DICE project, we designed a conference room environment that would be simple and easy to control for any user (Back *et al.* 2009; Golovchinsky *et al.* 2009). I conducted interviews and observational studies of meeting room practices before and after implementation of DICE, and I worked on the interaction design for the in-room controller and was interaction design lead on the pre-meeting desktop tool.

**"Doktorandtjänst" (Ph. D. position)**, Department of Computer and Information Science, Linköping University, Sweden, also affiliated with the Graduate School for Human-Machine Interaction, Linköping and Stockholm, Sweden, *October 1998-October 2004*.

**Visiting Researcher**, IBM Almaden Research Center, *December 2002-June 2004*.

**Visiting Researcher**, Laboratoire de Recherche en Informatique (L.R.I.), Université Paris-Sud, France, *June 2002-September 2002*

**Elected Member of the City Council**, Linköping, Sweden, *1994—2002*

Linköping is the fifth largest city in Sweden that offer a range of services to its citizens (elderly care, k-12 education, sports and cultural activity, social services, etc.). The city council needs to balance the need with resources available to make informed decisions.

**Lecturer in Interaction Design**, Department of Computer and Information Science, Linköping University, *July 1999-February 2001*

Designed and developed the Interaction Design Course at Linköping University. The course is taught in a studio format to Cognitive Science students with interest and skills in design. The aim of the course is to develop the students' design sensitivity and skills. Special emphasis of the course is on usability, usefulness, and user oriented methods.

**Intranet Developer**, City of Linköping, Sweden, *June-August 1995 and April-August 1996*

During my time as Intranet Developer for the City of Linköping I assessed users' needs and restrictions by interviews and card sorting and observation of civil servants and politicians. Based on the analysis, I designed two websites for two different organizations in the City of Linköping.

**Amateur Theater Instructor**, Unga Örnar, Linköping, Sweden, *September 1993-February 1994*

I instructed children (7-10 years) to express themselves through theater and improvisation. The children came from low-income areas in Linköping with a lot of immigrants. With the kids I created plays that reflected their reality based on classical theater. I also organized theater festivals with plays by the children and invited theater groups. I continued the job on a volunteer basis when my funding ran out.

## EDUCATION

**Ph. D.**, November 2004, Computer Science (Human-Computer Interaction), Linköping University, Sweden

**"Fil. Lic"**. (Licentiate of Philosophy), 2003, Computer Science, Linköping University, Sweden

**M.A.**, 1998, Cognitive Science, Linköping University, Sweden

Diploma in Amateur Theater Instruction, 1993, Brunnsvik Folkhögskola, Ludvika, Sweden

## SKILLS

Over the years I have used a variety of research and development methods and techniques. These range from use/user analysis, user interface design methods, prototype development and programming, as well as formal scientific methods such as experimental design, statistical analysis, discourse analysis (from audio or video recordings), Wizard of Oz studies, survey, interview and field studies. My choice of method is driven by the kinds of situation or research problem that is being addressed. I do not believe that one method is superior to others, often combinations get you better answers than a single method.

While at Linköping University, Sweden, I taught a university interaction design class in a design study for three years as well as classes in Human-Computer Interaction to

engineering, cognitive science and system development students. Although my projects as research scientist does not always include interaction design, I take every opportunity to work on my design skills and exploring new applications and interaction design methods.

### **Analytical**

Statistical analysis (ANOVA, clustering, machine learning algorithms, etc.), SPSS, R and RStudio, discourse analysis, survey design

### **Computing**

Javascript, Java, C# and C++, Python, Perl, Lisp, MySQL, Adobe Illustrator, Photoshop, DreamWeaver, and FrameMaker. I have developed a variety of computing tools and experimental interaction systems for my research in the past, including two eye-tracker augmented multimodal interactive systems —RealTourist and iTourist (C++), a web browser, iBrowser (C#), that automatically detects regions of interest, synchronizes and logs user generated data with eye tracking events, and iBrowser Visualizer (Java) that takes logs generated by iBrowser, detects fixations, visualize and export data for further analysis.

I have used a range of eye trackers in my research, primarily Tobii X120, EyeTribe, GazePoint GP3 (remote eye trackers) and PupilLab (wearable eye tracker).

### **Language**

Swedish (native), English (fluent), French (intermediate).

## **ACADEMIC EXPERIENCE AND ACTIVITIES**

### *Academic Activities*

**Lecturer in Interaction Design and Human-Computer Interaction**, as well as master thesis supervisor in the same areas, Linköping University, *July 1999-September 2002*

**Member of the Education Board for the Cognitive Science Program**, Linköping University, Sweden, responsible for curriculum development in Interaction Design and Human-Computer Interaction, *August 1999-June 2002*

**Teaching assistant in Artificial Intelligence**, August-October 1996, January-March 1997, August-October 1998

### *Conference Committees*

Associate Chair for the 2017 ACM Conference on Human-Factors in Computing Systems (CHI), 2016

General Chair for ACM Symposium on Eye Tracking Research and Applications (ETRA), 2014 and 2016

Steering committee member of the ACM Symposium on Eye Tracking Research and Applications (ETRA), *2015-current*

Steering committee member for the International Workshop on Pervasive Eye Tracking and Mobile Eye-based Interactions (PETMEI), 2014- *current*

Papers Chair for ACM Symposium on Eye Tracking Research and Applications (ETRA), 2012

Member of the Program Committee of the International Workshop on Pervasive Eye Tracking and Mobile Eye-based Interactions (PETMEI), 2011-2015

Member of the Program Committee of the ACM Symposium on Eye Tracking Research and Applications (ETRA), 2008, 2010

Member of the Program Committee of the 8<sup>th</sup> International Conference on Multimodal Interfaces, (ICMI'06), 2006

Member of the International Program Committee of Tenth IFIP TC13 International Conference on Human-Computer Interaction (INTERACT), 2005

Member of the organizing committee of the Third Swedish Symposium on Multimodal Interaction, 1999, Linköping, Sweden

Reviewer for the journals: ACM Transaction on Interactive Intelligent Systems, ACM Transaction on Human-Computer Interaction, ACM Transaction on Information Systems, IEEE Transactions on Interactive Intelligent Systems Transaction on Multimedia, IET Signal Processing, Interacting with Computers, International Journal of Human Computer Studies, Universal Access in the Information Society, Interdisciplinary Journal on Spatial Cognition and Computation; and for the Conferences: ACM Conference on Human-Factors in Computing Systems (CHI), ACM User Interface Software and Technology Symposium (UIST), acm conference on Intelligent User Interfaces (IUI) and ACM Symposium on Eye Tracking Research and Application (ETRA).

#### Supervised Master Theses

**Bas Sijtsma (2015)**. Tweetviz: Presenting Automatically Analyzed Tweets for the Extraction of Business Intelligence. MA thesis, University of Amsterdam. (with Dr. Francine Chen and Dr. Frank Nack)

**Gelius, Henrik (2003)**. Computer-supported collaboration using Pick-and-Drop interaction on handheld computers. MA thesis, LIU-KOGVET-D-03/04—se, Linköping University, Sweden

**Gauffin, Lina (2002)**. Web Credibility—investigating trust in electronic commerce. MA thesis, LIU-KOGVET-D-02/19— se, Linköping University, Sweden

**Andersson, Petronella (2002)**. User's reactions to interactive agents when their visual and verbal expressions do not match, MA thesis, LIU-KOGVET-D-02/20—se, Linköping University, Sweden

**Bäckvall, P., Mårtensson, P (2000)**. Designing navigation on small displays. MA thesis, LIU-IDA-D-00/9— se, Linköping University, Sweden

**Gustavsson, Martin (2000)**. Designing a multimodal system for a culturally diverse user group. MA thesis, LIU-KOGVET-D-0028— se, Linköping University, Sweden

**Gällerdal, Helena (2000).** Complementing rup with user centered design methods. MA thesis, LIU-KOGVET-D-0035— se, Linköping University, Sweden

**Hübsch, Zoltan (2000).** Electronic golf course guide on a handheld computer. MA thesis, LITH-IDA-EX-00/90, Linköping University, Sweden

## CITIZENSHIP

Swedish

US Green Card

## CIVIC SERVICE AND VOLUNTEER WORK

In-classroom volunteer (English centers, art class and ABC reader), Meyerholz Elementary School, Cupertino, CA. 2012—current

Member of the Consultancy Board, City of Linköping, Sweden, 1998—2002

Member of the Cultural and Recreational Activities Committee, City of Linköping, Sweden, 1996-1998

Board member of the Swedish Social-democratic Students Association, responsible for its foreign aid program, including traveling to Thailand, Burma (Myanmar) and India to meet with Burmese students and plan strategies for working towards democracy in Burma (1 year), 1995—1997

Member of the Social Service Committee, City of Linköping, Sweden, 1994—1996

Sound technician for an outdoor theater play, “Inga från Bölets ängar,” Axvalla Folkhögskola, Skara, Sweden, June—July 1991

Theater instructor, actor and light technician in an amateur theater group. I instructed both children and adults in acting and improvisation. I toured with a smaller group of amateur actors performing improvisations skits. I wrote a couple of plays that we performed on commission. Skövde Arbetar Teater, Skövde, Sweden, 1990—1992

## PUBLICATIONS

### Journal articles

1. Jiyin He, Pernilla Qvarfordt, Martin Halvey, Gene Golovchinsky. Beyond actions: Exploring the discovery of tactics from user logs. In *Information Processing & Management*, vol. 52, issue 6, Nov. 2016, pp. 1200–1226.  
<http://dx.doi.org/10.1016/j.ipm.2016.05.007>
2. Scott Carter, Pernilla Qvarfordt, Matthew Cooper, Ville Mäkela. 2015. Creating Tutorials with Web-Based Authoring and Heads-Up Capture. *IEEE Pervasive Computing*,

vol.14, no.3, pp.44-52, July-Sept. DOI: 10.1109/mprv.2015.59  
<http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7140682&isnumber=7140646>

3. Gene Golovchinsky, Pernilla Qvarfordt, Jeremy Pickens, 2009. Collaborative Information Seeking. In *Computer*, vol.42, no.3, pp.47-51, March  
DOI: 10.1109/MC.2009.73  
<http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=4803888&isnumber=4803870>

### Book chapters

4. Qvarfordt, Pernilla. In Press. Gaze Informed Multimodal Interfaces. *Handbook on Multimodal / Multisensor Interfaces*, Eds. Sharon Oviatt, Bjorn Schuller, and Phil Cohen. acm Books / Morgan Claypool
5. Qvarfordt, Pernilla and Shumin Zhai. 2009. Gaze-Aided Human-Computer and Human-Human Dialogue. *Handbook of Research on Socio-Technical Design and Social Networking Systems*. IGI Global, 2009. 529-543. Web. 28 Sep. 2015. DOI: 10.4018/978-1-60566-264-0.ch035
6. Maribeth Back, Gene Golovchinsky, Pernilla Qvarfordt, Tony Dunnigan, John Boreczky, Scott Carter, and Bill van Melle, B. (2009). Designing an easy-to-use executive conference room system. *Designing User Friendly Augmented Environments*, Ed. Lahlou, Saadi. Springer-Verlag, New York. DOI: <http://dx.doi.org/10.1145/1518701.1518856>

### Refereed Conference Papers

7. Bas Sijtsma, Pernilla Qvarfordt, and Francine Chen. 2016. Tweetviz: Visualizing Tweets for Business Intelligence. In *Proceedings of the 39th International acm sigir conference on Research and Development in Information Retrieval (SIGIR '16)*. ACM, New York, NY, USA, 1153-1156. DOI: <http://dx.doi.org/10.1145/2911451.2911470>
8. Diako Mardenbegi and Pernilla Qvarfordt. 2015. Creating gaze annotations in head mounted displays. In *Proceedings of the 2015 ACM International Symposium on Wearable Computers (ISWC'15)*. ACM, New York, NY, USA, 161-162. DOI: 10.1145/2802083.2808404  
<http://doi.acm.org/10.1145/2802083.2808404>
9. Pernilla Qvarfordt, Simon Tretter, Gene Golovchinsky, and Tony Dunnigan. 2014. SearchPanel: Framing Complex Search Needs. In *Proceedings of the 37th international ACM SIGIR Conference on Research & Development in Information Retrieval (SIGIR'14)*. ACM, New York, NY, USA, 495-504. DOI:10.1145/2600428.2609620  
<http://doi.acm.org/10.1145/2600428.2609620>
10. Pernilla Qvarfordt, Gene Golovchinsky, Tony Dunnigan, and Elena Agapie. 2013. Looking ahead: query preview in exploratory search. In *Proceedings of the 36th International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR '13)*. ACM, New York, NY, USA, 243-252. DOI:10.1145/2484028.2484084  
<http://doi.acm.org/10.1145/2484028.2484084>

11. Elena Agapie, Gene Golovchinsky, and Pernilla Qvarfordt. 2013. Leading people to longer queries. In *Proceedings of the sigchi Conference on Human Factors in Computing Systems (CHI'13)*. ACM, New York, NY, USA, 3019-3022. DOI: 10.1145/2470654.2481418 <http://doi.acm.org/10.1145/2470654.2481418>
12. Jun Shingu, Eleanor Rieffel, Don Kimber, Jim Vaughan, Pernilla Qvarfordt, Kathleen Tuite. 2010. Camera pose navigation using Augmented Reality, In *9th IEEE International Symposium on Mixed and Augmented Reality (ISMAR'10)*, pp.271-272, 13-16 Oct. 2010, DOI: 10.1109/ismar.2010.5643602 <http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=5643602&isnumber=5643527>
13. Thea Turner, Pernilla Qvarfordt, Jacob T. Biehl, Gene Golovchinsky, and Maribeth Back. 2010. Exploring the workplace communication ecology. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '10)*. ACM, New York, NY, USA, 841-850. DOI: 10.1145/1753326.1753449 <http://doi.acm.org/10.1145/1753326.1753449>
14. Pernilla Qvarfordt, Jacob T. Biehl, Gene Golovchinsky, and Tony Dunningan. 2010. Understanding the benefits of gaze enhanced visual search. In *Proceedings of the 2010 Symposium on Eye-Tracking Research & Applications (ETRA '10)*. ACM, New York, NY, USA, 283-290. DOI: 10.1145/1743666.1743733 <http://doi.acm.org/10.1145/1743666.1743733>
15. Gene Golovchinsky, Pernilla Qvarfordt, Bill van Melle, Scott Carter, and Tony Dunningan. 2009. DICE: designing conference rooms for usability. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI'09)*. ACM, New York, NY, USA, 1015-1024. DOI: 10.1145/1518701.1518856 <http://doi.acm.org/10.1145/1518701.1518856>
16. Jeremy Pickens, Gene Golovchinsky, Chirag Shah, Pernilla Qvarfordt, and Maribeth Back. 2008. Algorithmic mediation for collaborative exploratory search. In *Proceedings of the 31st annual international ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR '08)*. ACM, New York, NY, USA, 315-322. DOI: 10.1145/1390334.1390389 <http://doi.acm.org/10.1145/1390334.1390389>
17. John Adcock, Jeremy Pickens, Matthew Cooper, Lisa Anthony, Francine Chen and Pernilla Qvarfordt. 2007. FXPAL Interactive Search Experiments for TRECVID 2007. In *Proceedings of TREC Video Retrieval Evaluation 2007*.
18. Pernilla Qvarfordt, David Beymer, and Shumin Zhai. 2005. RealTourist—A Study of Augmenting Human-Human and Human-Computer Dialogue with Eye-Gaze Overlay. In *Proceedings of INTERACT'2005, IFIP Conference on Human-Computer Interaction*. Springer, pp. 767-780.
19. Pernilla Qvarfordt and Shumin Zhai. 2005. Conversing with the user based on eye-gaze patterns. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '05)*. ACM, New York, NY, USA, 221-230. DOI: <http://dx.doi.org/10.1145/1054972.1055004>



20. Pernilla Qvarfordt, Arne Jönsson, and Nils Dahlbäck. 2003. The role of spoken feedback in experiencing multimodal interfaces as human-like. In *Proceedings of the 5th international conference on Multimodal interfaces (ICMI '03)*. ACM, New York, NY, USA, 250-257. DOI: <http://dx.doi.org/10.1145/958432.958478>
21. Aseel Berglund, and Pernilla Qvarfordt. 2003. Error resolution strategies for interactive television speech interfaces. In *Proceedings of INTERACT'2003, IFIP Conference on Human-Computer Interaction*. pp. 105-112.
22. Pernilla Qvarfordt. 2003. Spoken feedback in multimodal interaction: effects on user experience of qualities in interaction. In P. Paggio, K. Jokinen, and A. Jönsson (Eds.) *Proceedings of the 1st Nordic Symposium on Multimodal Communication*, CST Working papers, Report no. 6, September 2003, pp. 21-34.
23. Jonas Lundberg, Aseel Ibrahim, David Jönsson, Sinna Lindquist, and Pernilla Qvarfordt. 2002. "The snatcher catcher:" an interactive refrigerator. In *Proceedings of the second Nordic conference on Human-computer interaction (NordiCHI '02)*. ACM, New York, NY, USA, 209-212. DOI: <http://dx.doi.org/10.1145/572020.572047>
24. Pernilla Qvarfordt and Lena Santamarta. 2000. A First-Personness Approach to Co-operative Multimodal Interaction. In T. Tan, Y. Shi, and W. Gao (Eds.) *Advances in Multimodal Interfaces – ICMI 2000*. Lecture Notes in Computer Science, 1948. Berlin; Springer. pp. 650-657
25. Patrick Bäckvall, Per Mårtensson, and Pernilla Qvarfordt. 2000. Using fisheye for navigation on small displays. In *Proceedings of First Nordic Conference on Computer-Human Interaction, NordiCHI*, Stockholm, Sweden
26. Pernilla Qvarfordt and Arne Jönsson. 1999. Evaluating the Dialogue Component in the Gulan Educational System. In *Proceedings of EUROSPEECH'99*, Budapest, Hungary, 1999, pp. 643-646
27. Nils Dahlbäck, Annika Flycht-Eriksson, Arne Jönsson and Pernilla Qvarfordt. 1999. An Architecture for Multi-Modal Natural Dialogue Systems. In *Proceedings of ESCA Tutorial and Research Workshop (ERTW) on Interactive Dialogue in Multi-Modal Systems*, Germany, 1999. pp. 53-56
28. Lars Ahrenberg, Nils Dahlbäck, Annika Flycht-Eriksson, Arne Jönsson, Pernilla Qvarfordt, Lena Santamarta, and Lena Strömbäck, L. 1999. Towards Multimodal Natural Language Interfaces for Information Systems-the LinLin Approach. In *Proceedings of the 4th International Conference on Applications of Natural Language to Information Systems*, Klagenfurt, Austria. pp. 139-144.
29. Pernilla Qvarfordt, and Arne Jönsson. 1998. Effects on Using Speech in Timetable Information System for the WWW. In *Proceedings of the International Conference on Spoken Language Processing (ICSLP'98)*, Sidney, Australia. pp. 1635-1638.

30. Pernilla Qvarfordt. 1997. Förväntningar på förändrad kommunikation vid införandet av ett intranät. (Expectation of changed communication when introducing an Intranet). In *Proceedings of the STIMDI'97 Conference*, Linköping, Sweden. pp. 63-66. In Swedish

## Theses

31. Pernilla Qvarfordt. 2004. *Eyes on Multimodal Interaction*. Linköping Studies in Science and Technology, Dissertation No. 893, Ph. D. Thesis, Linköping University, Sweden. ISBN 91-85295-30-2.
32. Pernilla Qvarfordt. 2003. *User experience of spoken feedback in multimodal interaction*. Linköping Studies in Science and Technology, Thesis No. 1003, Fil. Lic Thesis. Linköping University, Sweden. ISBN 91-7373-606-6.
33. Pernilla Qvarfordt. 1998. *Usability of Multimodal Timetables: Effect of Different Levels of Domain Knowledge on Usability*. MA thesis, LIU-KOGVET-D-0004—se, Linköping University, Sweden

## PATENTS

1. Qvarfordt, Pernilla. *Detecting user activities from eye tracking data and mouse and keyboard interaction*. U.S. Patent 9,256,785, issued Feb 9, 2016.
2. Qvarfordt, Pernilla “Classifying user activities using eye fixation clustering, fixation features, and regions of interest”, U.S. Patent No. 9,384,420. 5 July 2016.
3. van Melle, Bill, Tony Dunnigan, Gene Golovchinsky, Scott Carter and Pernilla Qvarfordt. *Method and system for controlling a space based on media content*. U.S. Patent 9,177,285
4. Kimber Don, and Pernilla Qvarfordt. *Detecting user activities from eye tracking data and mouse and keyboard interaction*. U.S. Patent 9,131,147
5. Golovchinsky, Gene, John Steven Boreczky, William J. Van Melle, Maribeth Joy Back, Anthony Eric Dunnigan, and Pernilla Qvarfordt. *System and method for coordination of devices in a presentation environment*. U.S. Patent 8,909,702
6. Biehl, Jacob, Thea Turner, Pernilla Qvarfordt, Tony Dunnigan, Bill van Melle and Gene Golovchinsky. *An automatic system for providing a composite presence state through the combination of many single-channel sensor and data feeds*. U.S. Patent 8,838,684
7. Golovchinsky, Gene, Scott Carter, Tony Dunnigan, Pernilla Qvarfordt, Bill van Melle. *Method and system for audience access to presenter’s content*. U.S. Patent 8,775,939
8. Qvarfordt, Pernilla, Eleanor G. Rieffel, and David M. Hilbert. *Motion and interaction based CAPTCHA*. U.S. Patent No. 8,601,538, issued 3 Dec. 2013.

9. Golovchinsky, Gene, Pernilla Qvarfordt and Jacob Biehl. *Improving target acquisition accuracy through augmented views*. U.S. Patent 8,311,279
10. Qvarfordt, Pernilla, Gene Golovchinsky, and Maribeth Joy Back. *Method and system for modifying non-verbal behavior for social appropriateness in video conferencing and other computer mediated communications*. U.S. Patent No. 8,243,116, issued 14 Aug. 2012.

## INVITED TALKS

(excluding regular conference paper presentations)

“Using eye tracking to inform visual search” NASA Ames Research Laboratory, January 18, 2010

“Eyes on Multimodal Interaction” Microsoft Research, Redmond, usa, January 25, 2005

“Med ögonen på multimodal interaktion” (Eyes on Multimodal Interaction) 10 year anniversary of the Cognitive Science Studying program at Linköping University, Public Library of the city of Linköping, Sweden, December 5, 2004 (in Swedish)

“Eyes on Multimodal Interaction” Tsinghua University, Beijing, China, November 5, 2004

“Everything or Nothing—Users’ experience of a multimodal timetable system”, IBM Almaden Research Center, San Jose, usa, January 8, 2003

“Quality of use and design” with Mattias Arvola, Linköping local chapter of UPA, Linköping, Sweden, November 30, 2000

“Design and usability of multimodal interfaces”, Santa Anna IT Research Institute, Linköping, Sweden, November 29, 2000

“Multimodal interaction in timetables for local buses”, The 2nd Workshop of the Nordic Interactive Multimedia Research School, Media Lab, University of Art and Design Helsinki, Finland, May 28-30, 1999

“The efficiency of a multimodal timetable information system for users with different domain knowledge”, The Second Swedish Symposium on Multimodal Communication, Lund University, Sweden, October 16-17, 1998

## HONORS AND AWARDS

Honorable mention, 2013, ACM Conference on Human Factors in Computing Systems (CHI), for “Looking ahead: query preview in exploratory search” (top 5% submissions to CHI 2013)

Best Paper Award, 2008, ACM SIGIR conference, for “Algorithmic Mediation for Collaborative Exploratory Search”

Runner up, 1998 best thesis award, Department of Computer and Information Science, Linköping University, Sweden (ranked top three among around 200 theses)

## REFERENCES

Available upon request