

Clifton Forlines - Curriculum Vitae

Contact Information

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Employment History

Senior Software Engineer
Feb. 2010-present

Draper Laboratory, Cambridge, MA.

- Conducts contextual interviews with sponsor organizations to identify gaps in existing tool sets and design improvements to organizational processes.
- Designs and evaluate user interfaces for device configuration and data analysis.
- Software team lead for a multi-device system including desktop and embedded components.
- Implements Java desktop applications that interface with configurable devices.
- Designs and implements GIS rapid prototypes for Android-based mobile devices.
- Collaborates with the company's product managers to identify funding opportunities and produce program applications.
- Designs novel data presentation solutions in the context of relevant work in the fields of infovis and visual analytics.

Research Scientist, Research Associate
July 2003-Feb. 2010

Mitsubishi Electric Research Laboratories, Cambridge, MA.

- Design and evaluate novel user interfaces and information presentation methods.
- Collaborate with MERL research teams to collect data from human subjects and conduct usability evaluations.
- Collaborate with the company's business units to design new consumer products and new product features.
- Produce written reports on research results and advanced development appropriate for publication in academic conferences.
- Collaborate with Intellectual Property department to produce patent applications covering research results.
- Manage research interns.

HCI Consultant
Dec. 2001-July 2003

Mitsubishi Electric Research Laboratories, Cambridge, MA.

- Collaborated with research teams to design and conduct usability evaluations of MERL projects.
- Detailed functional specifications for new consumer product features as well as provided an interactive prototype of the products' user interface.

- Research Intern**
Summer 2000
- Walt Disney Imagineering**, Glendale, CA.
- Interned for Alan Kay.
 - Designed and implemented improvements to Squeak, an open-source, platform-independent, media authoring environment.
 - Improved user interface's consistency, observed Los Angeles area elementary school children using Squeak, and designed a method for deploying students' work on the Internet.
- Research Programmer**
Aug. 1999-May 2000
- Carnegie Mellon University**, Pittsburgh, PA.
- Member of Randy Pausch's Stage3 User Interface Group.
 - Led design, development, and user testing of Alice99, an easy-to-use software application for authoring interactive 3D worlds on the WWW.
 - Designed and implemented novel user interfaces and interaction techniques.
 - Collaborated with a team of programmers, artists, and designers to create VR environments showcased at SIGGRAPH99.
- Research Assistant**
May 1998-May 1999
- Carnegie Mellon University**, Pittsburgh, PA.
- Member of a multi-disciplinary team of computer scientists and designers.
 - Built web-based educational software deployed at the Homewood Montessori School.
 - Employed iterative design strategies including prototyping, user testing, and revision.
- Art Director,
DiningWeb Project**
May 1996-May 1997
- Brysonweb Inc.**, Washington D.C.
- Responsible for linking together Washington DC area restaurants with new patrons.
 - Assisted sales department as a technical consultant.
 - Explained the details of design and web hosting to potential clients.
 - Designed and implemented client websites.

Education

- 2009** **Doctorate of Philosophy**
Department of Computer Science, University of Toronto
Advisor: Ravin Balakrishnan
- 2001** **Master of Science in Human-Computer Interaction**
School of Computer Science, Carnegie Mellon University
- 2001** **Master of Science in Entertainment Technology**
School of Computer Science, Carnegie Mellon University
- 1999** **Bachelors of Fine Arts in Industrial Design**
College of Fine Arts, Carnegie Mellon University

Skills

- HCI & Evaluation** User testing, human factors, contextual inquiry and design, heuristic evaluation, cognitive walkthrough, think-aloud studies, and rapid prototyping.
- Technical** Java, C#, C++, Visual Basic, HTML, and a variety of digital tools.
- Miscellaneous** Conference/workshop organization, intern management

Professional Society Memberships

- March 2004 – present** Association for Computing Machinery (ACM)
- March 2004 – present** Institute of Electrical And Electronics Engineers (IEEE) Computer Society

Refereed Journal and Full Conference Paper Publications

- MobileHCI 2010** Garrett Weinberg, Bret Harsham, Clifton Forlines, and Zeljko Medenica. 2010. **Contextual push-to-talk: shortening voice dialogs to improve driving performance.** In *Proceedings of the 12th international conference on Human computer interaction with mobile devices and services (MobileHCI '10)*. ACM, New York, NY, USA, 113-122.
- AVI 2010** Clifton Forlines and Kent Wittenburg. 2010. **Wakame: sense making of multi-dimensional spatial-temporal data.** In *Proceedings of the International Conference on Advanced Visual Interfaces (AVI '10)*, Giuseppe Santucci (Ed.). ACM, New York, NY, USA, 33-40.
- CHI 2009** Forlines, C. and Balakrishnan, R. 2009. **Improving visual search with image segmentation.** In *Proceedings of the 27th international Conference on Human Factors in Computing Systems (Boston, MA, USA, April 04 - 09, 2009)*. CHI '09. ACM, New York, NY, 1093-1102.
(best paper nominee)
- CHI 2009** Wigdor, D., Jiang, H., Forlines, C., Borkin, M., Shen, C. **The WeSpace: The Design, Development and Deployment of a Walk-Up and Share Multi-Surface Visual Collaboration System.** *To appear at CHI 2009.*
- TABLETOP 2008** Jiang, H., Wigdor, D., Forlines, C., Shen, C. **System design for the WeSpace: Linking personal devices to a table-centered multi-user, multi-surface environment.** *Horizontal Interactive Human Computer Systems, 2008. TABLETOP 2008. 3rd IEEE International Workshop on, Amsterdam, The Netherlands, October 1-3, 2008, 97-104*
- AVI 2008** Brandl, P., Forlines, C., Wigdor, D., Haller, M., and Shen, C. 2008. **Combining and measuring the benefits of bimanual pen and direct-touch interaction on horizontal interfaces.** In *Proceedings of the Working Conference on Advanced Visual interfaces (Napoli, Italy, May 28 - 30, 2008)*. AVI '08. ACM, New York, NY, 154-161.

- AVI 2008** Forlines, C. 2008. **Content aware video presentation on high-resolution displays.** In *Proceedings of the Working Conference on Advanced Visual interfaces* (Napoli, Italy, May 28 - 30, 2008). AVI '08. ACM, New York, NY, 57-64.
- CHI 2008** Forlines, C. and Balakrishnan, R. 2008. **Evaluating tactile feedback and direct vs. indirect stylus input in pointing and crossing selection tasks.** In *Proceeding of the Twenty-Sixth Annual SIGCHI Conference on Human Factors in Computing Systems* (Florence, Italy, April 05 - 10, 2008). CHI '08. ACM, New York, NY, 1563-1572.
- DIS 2008** Tse, E., Greenberg, S., Shen, C., Forlines, C., and Kodama, R. 2008. **Exploring true multi-user multimodal interaction over a digital table.** In *Proceedings of the 7th ACM Conference on Designing interactive Systems* (Cape Town, South Africa, February 25 - 27, 2008). DIS '08. ACM, New York, NY, 109-118.
- UIST 2007** Wigdor, D., Forlines, C., Baudisch, P., Barnwell, J., and Shen, C. 2007. **Lucid touch: a see-through mobile device.** In *Proceedings of the 20th Annual ACM Symposium on User interface Software and Technology* (Newport, Rhode Island, USA, October 07 - 10, 2007). UIST '07. ACM, New York, NY, 269-278.
- UIST 2007** Cao, X., Forlines, C., and Balakrishnan, R. 2007. **Multi-user interaction using handheld projectors.** In *Proceedings of the 20th Annual ACM Symposium on User interface Software and Technology* (Newport, Rhode Island, USA, October 07 - 10, 2007). UIST '07. ACM, New York, NY, 43-52.
- MULTIMEDIA 2007** Zwicker, M., Yea, S., Vetro, A., Forlines, C., Matusik, W., and Pfister, H. 2007. **Display pre-filtering for multi-view video compression.** In *Proceedings of the 15th international Conference on Multimedia* (Augsburg, Germany, September 25 - 29, 2007). MULTIMEDIA '07. ACM, New York, NY, 1046-1053.
- CHI 2007** Tse, E., Shen, C., Greenberg, S., and Forlines, C. 2007. **How pairs interact over a multimodal digital table.** In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (San Jose, California, USA, April 28 - May 03, 2007). CHI '07. ACM Press, New York, NY, 215-218.
- CHI 2007** Forlines, C., Wigdor, D., Shen, C., and Balakrishnan, R. 2007. **Direct-touch vs. mouse input for tabletop displays.** In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (San Jose, California, USA, April 28 - May 03, 2007). CHI '07. ACM Press, New York, NY, 647-656.
- CHI 2007** Wigdor, D., Shen, C., Forlines, C., and Balakrishnan, R. 2007. **Perception of elementary graphical elements in tabletop and multi-surface environments.** In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (San Jose, California, USA, April 28 - May 03, 2007). CHI '07. ACM Press, New York, NY, 473-482.

- CG&A September/October, 2006** Shen, C., Ryall, K., Forlines, C., Esenther, A., Vernier, F. D., Everitt, K., Wu, M., Wigdor, D., Morris, M. R., Hancock, M., and Tse, E. 2006. **Informing the Design of Direct-Touch Tabletops**. IEEE Comput. Graph. Appl. 26, 5 (Sep. 2006), 36-46.
- CG&A September/October, 2006** Ryall, K., Esenther, A., Forlines, C., Shen, C., Shipman, S., Morris, M. R., Everitt, K., and Vernier, F. D. 2006. **Identity-Differentiating Widgets for Multiuser Interactive Surfaces**. IEEE Comput. Graph. Appl. 26, 5 (Sep. 2006), 56-64.
- UIST 2006** Wigdor, D., Leigh, D., Forlines, C., Shipman, S., Barnwell, J., Balakrishnan, R., and Shen, C. 2006. **Under the table interaction**. In *Proceedings of the 19th Annual ACM Symposium on User interface Software and Technology* (Montreux, Switzerland, October 15 - 18, 2006). UIST '06. ACM Press, New York, NY, 259-268.
- UIST 2006** Forlines, C., Vogel, D., and Balakrishnan, R. 2006. **HybridPointing: fluid switching between absolute and relative pointing with a direct input device**. In *Proceedings of the 19th Annual ACM Symposium on User interface Software and Technology* (Montreux, Switzerland, October 15 - 18, 2006). UIST '06. ACM Press, New York, NY, 211-220.
- CSCW 2006** Forlines, C., Shen, C., Wigdor, D., and Balakrishnan, R. 2006. **Exploring the effects of group size and display configuration on visual search**. In *Proceedings of the 2006 20th Anniversary Conference on Computer Supported Cooperative Work* (Banff, Alberta, Canada, November 04 - 08, 2006). CSCW '06. ACM Press, New York, NY, 11-20.
- CollabTech 2006** Wigdor, D., Shen, C., Forlines, C., Balakrishnan, R., (2006). **Table-centric interactive spaces for real-time collaboration: solutions, evaluation, and application scenarios**. Proceedings of CollabTech 2006, July 2006. p. 9-15.
- AVI 2006** Tse, E., Shen, C., Greenberg, S., and Forlines, C. 2006. **Enabling interaction with single user applications through speech and gestures on a multi-user tabletop**. In *Proceedings of the Working Conference on Advanced Visual interfaces* (Venezia, Italy, May 23 - 26, 2006). AVI '06. ACM, New York, NY, 336-343.
- PERVASIVE 2006** Tse, E., Greenberg, S., Shen, C., and Forlines, C. 2007. **Multimodal multiplayer tabletop gaming**. Computers in Entertainment 5, 2 (Apr. 2007), 12.
- CHI 2006** Wigdor, D., Shen, C., Forlines, C., and Balakrishnan, R. 2006. **Effects of display position and control space orientation on user preference and performance**. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (Montréal, Québec, Canada, April 22 - 27, 2006). R. Grinter, T. Rodden, P. Aoki, E. Cutrell, R. Jeffries, and G. Olson, Eds. CHI '06. ACM, New York, NY, 309-318.
- HRI 2006** Sidner, C. L., Lee, C., Morency, L., and Forlines, C. **The effect of head-nod recognition in human-robot conversation**. In *Proceeding of the 1st ACM SIGCHI/SIGART Conference on Human-Robot interaction* (Salt Lake City,

Utah, USA, March 02 - 03, 2006). HRI '06. ACM Press, New York, NY, 290-296.

- TABLETOP 2006** Wu, M., Shen, C., Ryall, K., Forlines, C., Balakrishnan, R., **Gesture Registration, Relaxation, and Reuse for Multi-Point Direct-Touch Surfaces**, in *First IEEE International Workshop Proceedings of the Horizontal Interactive Human-Computer Systems, 2006. TableTop 2006*. (Adelaide, South Australia, 2006), pp 183-190.
- TABLETOP 2006** Everitt, K., Shen, C., Ryall, K., Forlines, C., **MultiSpace: Enabling Electronic Document Micro-mobility in Table-Centric, Multi-Device Environments**, in *First IEEE International Workshop Proceedings of the Horizontal Interactive Human-Computer Systems, 2006. TableTop 2006*. (Adelaide, South Australia, 2006), pp. 27-34.
- TABLETOP 2006** Ryall, K., Ringel Morris, M., Everitt, K., Forlines, C., Shen, C., **Experiences With and Observations of Direct-Touch Tables**, in *First IEEE International Workshop Proceedings of the Horizontal Interactive Human-Computer Systems, 2006. TableTop 2006*. (Adelaide, South Australia, 2006), pp 89-96.
- UIST 2005** Forlines, C., Balakrishnan, R., Beardsley, P., Baar, J.v. and Raskar, R., **Zoom-and-pick: facilitating visual zooming and precision pointing with interactive handheld projectors**. in *Proceedings of the 18th annual ACM symposium on User interface software and technology*, (Seattle, WA, USA, 2005), ACM Press, 73-82.
- UIST 2005** P.H., Harsham, B., Forlines, C., Leigh, D., Yerazunis, W., Shipman, S., Schmidt-Nielsen, B. and Ryall, K., **DT controls: adding identity to physical interfaces**. in *Proceedings of the 18th annual ACM symposium on User interface software and technology*, (Seattle, WA, USA, 2005), ACM Press, 245-252.
- INTERACT 2005** Forlines, C., Schmidt-Nielsen, B., Raj, B., Wittenburg, K. and Wolf, P., **A Comparison Between Spoken Queries and Menu-Based Interfaces for In-car Digital Music Selection**. in *Proceedings of Human-Computer Interaction - INTERACT 2005: IFIP TC13 International Conference*, (Rome, Italy, 2005), 536-549.
- GI 2005** Hancock, M. S., Shen, C., Forlines, C., and Ryall, K. 2005. **Exploring non-speech auditory feedback at an interactive multi-user tabletop**. In *Proceedings of the 2005 Conference on Graphics interface* (Victoria, British Columbia, 2005). ACM International Conference Proceeding Series, 41-50.
- IEEE CG&A 2005** Beardsley, P., Van Baar, J., Raskar, R., Forlines, C., **Interaction Using a Handheld Projector**, *IEEE Computer Graphics and Applications*, Volume 25 , Issue 1 (January 2005), pp. 39-43.
- CSCW 2004** Ryall, K., Forlines, C., Shen, C., and Morris, M. R. 2004. **Exploring the effects of group size and table size on interactions with tabletop shared-display groupware**. In *Proceedings of the 2004 ACM Conference on Computer Supported Cooperative Work* (Chicago, Illinois, USA, November

06 - 10, 2004). CSCW '04. ACM Press, New York, NY, 284-293.

- CHI 2004** Shen, C., Vernier, F. D., Forlines, C., and Ringel, M. 2004. **DiamondSpin: an extensible toolkit for around-the-table interaction**. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (Vienna, Austria, April 24 - 29, 2004). CHI '04. ACM Press, New York, NY, 167-174.
- ADCOG 2003** Forlines, C., Marks, J., Schmidt-Nielsen, B.: **Digi-Koi: A Game for Cell Phones**. In: *Proceedings of 2nd International Conference on Application and Development of Computer Games* (ADCOG 2003).
- SIGGRAPH 2003** Raskar, R., van Baar, J., Beardsley, P.A., Willwacher, T., Rao, S., and Forlines, C., **iLamps: Geometrically Aware and Self-Configuring Projectors**, *ACM Transactions on Graphics* (TOG), Volume 22, Issue 3, pp. 809-818.
- UIST 2003** Wittenburg, K., Forlines, C., Lanning, T., Esenther, A., Harada, S. and Miyachi, T., **Rapid serial visual presentation techniques for consumer digital video devices**. in *Proceedings of the 16th annual ACM symposium on User interface software and technology*, (Vancouver, Canada, 2003), ACM Press, 115-124.
- NIME 2002** Blaine, T., and Forlines, C., **JAM-O-WORLD: Evolution of the Jam-O-Drum Multi-player Musical Controller into the Jam-O-Whirl Gaming Interface**. in *Proceedings of the 2002 Conference on New Instruments for Musical Expression* (NIME-02), Dublin, Ireland, May 24-26, 2002.
- CSCW 2002** Shen, C., Lesh, N. B., Vernier, F., Forlines, C., and Frost, J. **Sharing and building digital group histories**. In *Proceedings of the 2002 ACM Conference on Computer Supported Cooperative Work* (New Orleans, Louisiana, USA, November 16 - 20, 2002). CSCW '02. ACM Press, New York, NY, 324-333.
- ICSLP 2002** Sidner, C.L., and Forlines, C., **Subset Languages for Conversing with Collaborative Interface Agents**, International Conference on Spoken Language Processing (ICSLP), September 2002.

Refereed Short Conference Paper and Journal Publications

- AVI 2008** Forlines, C. and Lilien, R. 2008. **Adapting a single-user, single-display molecular visualization application for use in a multi-user, multi-display environment**. In *Proceedings of the Working Conference on Advanced Visual interfaces* (Napoli, Italy, May 28 - 30, 2008). AVI '08. ACM, New York, NY, 367-371.
- AVI 2008** Matusik, W., Forlines, C., and Pfister, H. 2008. **Multiview user interfaces with an automultiscopic display**. In *Proceedings of the Working Conference on Advanced Visual interfaces* (Napoli, Italy, May 28 - 30, 2008). AVI '08. ACM, New York, NY, 363-366.

- CHI 2008** Jiang, H., Wigdor, D., Forlines, C., Borkin, M., Kauffmann, J., and Shen, C. 2008. **LivOlay: interactive ad-hoc registration and overlapping of applications for collaborative visual exploration.** In *Proceeding of the Twenty-Sixth Annual SIGCHI Conference on Human Factors in Computing Systems* (Florence, Italy, April 05 - 10, 2008). CHI '08. ACM, New York, NY, 1357-1360.
- UIST 2006** Forlines, C., Esenther, A., Shen, C., Wigdor, D., and Ryall, K. 2006. **Multi-user, multi-display interaction with a single-user, single-display geospatial application.** In *Proceedings of the 19th Annual ACM Symposium on User interface Software and Technology* (Montreux, Switzerland, October 15 - 18, 2006). UIST '06. ACM, New York, NY, 273-276.
- AVI 2006** Wigdor, D., Shen, C., Forlines, C., Balakrishnan, R. (2006). **Table-centric interactive spaces for real-time collaboration.** In *Proceedings of the 2006 International Working Conference on Advanced Visual Interfaces*. p. 103-107.
- UIST 2005** Forlines, C. and Shen, C. 2005. **DTLens: multi-user tabletop spatial data exploration.** In *Proceedings of the 18th Annual ACM Symposium on User interface Software and Technology* (Seattle, WA, USA, October 23 - 26, 2005). UIST '05. ACM Press, New York, NY, 119-122.
- INTERACT 2005** Forlines, C., Shen, C., Vernier, F. and Wu, M., **Under My Finger: Human Factors in Pushing and Rotating Documents Across the Table.** in *Proceedings of Human-Computer Interaction - INTERACT 2005: IFIP TC13 International Conference*, (Rome, Italy, 2005), 994-997.
- INTERACT 2005** Ryall, K., Esenther, A., Everitt, K., Forlines, C., Morris, M.R., Shen, C., Shipman, S. and Vernier, F., **iDwidgets: Parameterizing Widgets by User Identity.** in *Proceedings of Human-Computer Interaction - INTERACT 2005: IFIP TC13 International Conference*, (Rome, Italy, 2005), pp. 1124-1128.
- INTERACT 2005** Everitt, K., Shen, C., Ryall, K. and Forlines, C., **DocuBits and Containers: Providing e-Document Micro-mobility in a Walk-Up Interactive Tabletop Environment.** in *Proceedings of Human-Computer Interaction - INTERACT 2005: IFIP TC13 International Conference*, (Rome, Italy, 2005), 998-1001.
- CHI 2005** Forlines, C. Shen, C., and Buxton, B. **Glimpse: a novel input model for multi-level devices.** In *CHI '05 Extended Abstracts on Human Factors in Computing Systems* (Portland, OR, USA, April 02 - 07, 2005). CHI '05. ACM Press, New York, NY, 1375-1378.
- CHI 2005** Everitt, K., Shen, C., Ryall, K., and Forlines, C. 2005. **Modal spaces: spatial multiplexing to mediate direct-touch input on large displays.** In *CHI '05 Extended Abstracts on Human Factors in Computing Systems* (Portland, OR, USA, April 02 - 07, 2005). CHI '05. ACM Press, New York, NY, 1359-1362.
- CHI 2005** Shen, C., Hancock, M. S., Forlines, C., and Vernier, F. D., **CoR²Ds: Context-Rooted Rotatable Draggables for Tabletop Interaction.** In *CHI*

'05 *Extended Abstracts on Human Factors in Computing Systems*, (Portland, OR, USA, April 02 - 07, 2005). CHI '05. ACM Press, New York, NY, 1781-1784.

ICCE 2005 Divakaran, A., Forlines, C., Lanning, T., Shipman, S., and Wittenburg, K., **Augmenting Fast-forward and Rewind for Personal Digital Video Recorders**, International Conference on Consumer Electronics (ICCE), January 2005.

CSCW 2004 Ringel Morris, M., Ryall, K., Shen, C., Forlines, C., and Vernier, F. 2004. **Beyond "social protocols": multi-user coordination policies for co-located groupware**. In *Proceedings of the 2004 ACM Conference on Computer Supported Cooperative Work (Chicago, Illinois, USA, November 06 - 10, 2004)*. CSCW '04. ACM Press, New York, NY, 262-265.

HLT 2004 Divi, V., Forlines, C., van Gemert, J. V., Raj, B., Schmidt-Nielsen, B., Wittenburg, K., Woelfel, J., Wolf, P.; and Zhang, F. **A Speech-In List-Out Approach to Spoken User Interfaces**. In *Proceedings of Human Language Technology Conference (HLT 2004)* (Boston, Massachusetts May 2-7, 2004). Association for Computational Linguistics, 2004, 113-116.

CHI 2004 Ringel, M., Ryall, K., Shen, C., Forlines, C., and Vernier, F. 2004. **Release, relocate, reorient, resize: fluid techniques for document sharing on multi-user interactive tables**. In *CHI '04 Extended Abstracts on Human Factors in Computing Systems* (Vienna, Austria, April 24 - 29, 2004). CHI '04. ACM Press, New York, NY, 1441-1444.

HCI International 2003 Wittenburg, K., Lanning, T., Forlines, C., & Esenther, A. (2003) **Rapid serial visual presentation techniques for visualizing a third data dimension**. In *Proceedings of HCI International 2003* (June, Crete, GREECE), Lawrence Erlbaum, Vol. 4, pp. 810-814.

ACM SIGGRAPH Computer Graphics, May 2000 Pausch, R. and Forlines, C., **Alice: Model, Paint and Animate Easy-to-use Interactive Graphics for the Web**. *ACM SIGGRAPH Computer Graphics*, vol 34, no. 2, May 2000. pp. 42-43.

Professional Activities

Reviewer ACM CHI 2004-2011
ACM UIST 2006-2011
ACM CSCW 2004, 2006, 2008
ACM SigGraph 2008
IEEE InfoVis 2008
IEEE Vis 2008
ACM IUI 2006
Graphics Interface 2004, 2005, 2006
IEEE Journal of Computer Graphics & Applications
Journal of HCI
Handbook of Research on User Interfaces Design and Evaluation for Mobile Technology

- Program Committee** ACM CHI 2009, papers
ACM TEI 2008, papers
ACM UIST 2006, posters
- Organizing Committee** IEEE Tabletop 2009, tutorials co-chair
ACM ICMI 2009, local-arrangements chair
IEEE Tabletop 2008, finance chair
IEEE Tabletop 2007, general co-chair

Patents and Public Applications

- U.S. Patent 7,486,274** **Method for stabilizing and precisely locating pointers generated by handheld direct pointing devices** (with Ravin Balakrishnan)
- U.S. Patent 7,441,202** **Spatial multiplexing to mediate direct-touch input on large displays** (with Chia Shen, Kate Everitt, and Kathy Ryall)
- U.S. Patent 7,327,376** **Multi-user collaborative graphical user interfaces** (with Chia Shen and Frederic Vernier)
- U.S. Patent 7,292,269** **Context aware projector** (with Paul Beardsley and Ramesh Raskar)
- U.S. Patent 7,179,171** **Fish breeding toy for cellular telephones** (with Joseph Marks)
- U.S. Patent 7,139,006** **System and method for presenting and browsing images serially** (with Alan Esenther, Thomas Lanning, and Kent Wittenburg)
- U.S. Patent 6,764,185** **Projector as an Input and Output Device** (with Paul Beardsley, Dirk Brinkman, and Ramesh Raskar)
- allowed** **Context Aware Image Conversion Method and Playback System** (with Anthony Vetro)
- allowed** **Method and system for switching between absolute and relative pointing with direct input devices** (with Ravin Balakrishnan)
- pending** **Inverted direct touch sensitive input devices** (with Daniel Wigdor, Chia Shen, John Barnwell, and Sam Shipman)
- pending** **Method and system for adapting a single-client, single-user application to a multi-user, multi-client environment** (with Alan Esenther, Chia Shen, Daniel Wigdor, and Kathy Ryall)
- pending** **Control system for differentiating multiple users** (with Paul Dietz, Bret Harsham, Sam Shipman, Darren Leigh, Bill Yerazunis, Bent Schmidt-Nielsen, and Kathy Ryall)
- pending** **Method and system for manipulating graphical objects displayed on a touch-sensitive display surface using displaced pop-ups** (with Fred

Vernier, Chia Shen, and Mark Hancock)

- pending** **Spatial multiplexing to mediate direct-touch input on large displays** (with Chia Shen, Kate Everitt, and Kathy Ryall)
- pending** **Video presentation using compositional structures** (with Tom Lanning, Ajay Divakaran, Kadir Peker, Regunathan Radhakrishnan, and Ziyong Xiong)
- pending** **Method for editing graphics objects with multi-level input devices** (with Chia Shen)
- pending** **Conflict resolution for graphic multi-user interface** (with Meredith J. Ringel, Kathleen Ryall, Chia Shen, and Frederic Vernier)
- pending** **Hand gesture interaction with touch surface** (with Michael Wu, Chia Shen, and Kathleen Ryall)
- pending** **Method for rendering with composited images on cellular telephones** (with Joseph Marks)

Installations

- SIGGRAPH 2004: Emerging Technologies** **Interacting With Projections Using iLamp Projectors**, demonstration applications running on interactive handheld projectors.
- Ars Electronic Center**
Linz, Austria **Jam-O-Drum: CircleMaze** was invited to become part of the museum's permanent collection of interactive media. Gerfried Stocker, director of the Ars Electronica Center, cites the Jam-O-Drum as one of the museum's most popular exhibits.
- Zeum Youth Art & Technology Center**
San Francisco, CA. **Jam-O-World** Student lead for a team of graduate students from Carnegie Mellon's Entertainment Technology Center who developed two musical collaborative experiences for a one-year museum installation.
- SIGGRAPH 2001: Emerging Technologies** **CircleMaze**, an interactive musical game that encourages collaboration.
- SIGGRAPH '99: Emerging Technologies** **Building Virtual Worlds**, Virtual Reality demonstrations of worlds built using *Alice*.

Software Development

- Texas Instruments** Member of a six person graduate student team that designed and developed an application that led to **StudyCards**, a flashcard like study aid for use in non-math and science classes. Texas Instruments now includes StudyCards with most of their handheld graphing calculators.

Alice Alice is a 3D Authoring system for non-programmers. The focus of the **Alice project** is now to provide the best possible first exposure to programming for students ranging from middle school to college students.