Kimiko Ryokai

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Appointment University of California Berkeley (Jan 2007 – present)

Berkeley, CA

Assistant Professor, School of Information and Berkeley Center for New Media

Education

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Cambridge, MA

Doctor of Philosophy in Media Arts and Sciences, June 2005

Thesis: World as Palette: Painting with Personal Objects and Movements. Presents a new paradigm and working prototype system for creating complex audio-visual art with elements extracted from immediate physical environment. Describes interaction techniques, technology, and evaluation of the tools in the context of creative learning with personally meaningful materials.

Master of Science in Media Arts and Sciences, June 1999

STATE UNIVERSITY OF NEW YORK AT STONY BROOK

Stony Brook, NY

Bachelor of Arts, Double major in Linguistics and Psychology, Magna Cum Laude, May 1997

Teaching

University of California Berkeley

Berkeley, CA

Theory and Practice of Tangible User Interfaces: Spring & Fall 2011, Fall 2009, 2008, and 2007. A 4-unit studio course explores the theoretical framework of tangible user interfaces through a series of design examples and hands-on physical computing exercises with prototyping boards and various sensors and actuators.

Technologies for Creative Thinking and Learning: Spring 2012, 2009, & 2008. A 3-unit seminar course explores issues on designing and evaluating technologies that support creativity and learning. The class covers theories of creativity and learning, implications for design, as well as a survey of new educational technologies such as works in computer supported collaborative learning, "digital manipulatives," and immersive learning environments.

Interface Aesthetics: Fall 2011, Spring 2009, 2008, and 2007. A 2-unit semester seminar covers visual design basics (e.g., color, layout, typography, iconography) as well as new interface metaphors beyond desktops (e.g., for mobile devices and computationally enhanced environments).

MIT MEDIA LABORATORY

Cambridge, MA

Guest Lecturer, Tangible User Interfaces: Fall 2004. Instructor: Hiroshi Ishii. Gave lecture on tangible interfaces for storytelling and creative learning.

Teaching Assistant, Tangible User Interfaces: 2003-2004. Instructor: Hiroshi Ishii. Prepared reading materials, lab assignments, and demonstrations and reviewed lab solutions. Assisted in grading all student materials.

Keio University Tokyo, Japan

Guest Lecturer, Design Language: Fall 2004. Gave lectures on emotionally engaging interfaces and a case study of I/O Brush.

La Universidad de Verano Campus TI

Valencia, Spain

Guest Lecturer, Tangible Interfaces for Collaborative Learning: Summer 2004. Gave lecture and workshops on design of tangible interfaces.

Tufts University Somerville, MA

Guest Lecturer, Technologies of the Self: Spring 2002. Gave lecture on story listening systems.

Work Experience

IDEO (Sep 2005 – Dec 2006)

San Francisco, CA

Interaction Design and Human Factor Specialist: Lead human factor researcher on people's expectations and habits on video-based entertainment on mobile devices. Designed a number of video-based applications for mobile phones.

MIT MEDIA LABORATORY (Sep 1997 – Aug 2005)

Cambridge, MA

Research Assistant: Project lead on SAM, a three-year NSF funded effort to develop an animated conversational storyteller for children. Managed a team of three to five researchers and programmers in developing the system and running a number of empirical studies including a three-month longitudinal study at local schools. • Project lead on the two-year-long I/O Brush exhibition at the Ars Electronica

Center in Linz, Austria. Software and hardware development lead with a team of three programmers. • Gave over fifty presentations to executives and researchers from the Media Lab sponsors including Intel, Microsoft, IBM, Mitsubishi, Motorola, Disney, IDEO, NSF, and US Department of Education. • Teaching assistant and guest lecturer for Prof. Ishii's Tangible Interfaces graduate course for 2003 and 2004. • Twelve publications in the area of technologies for creative learning and storytelling and one US patent pending.

MATTEL (Nov 2004 – May 2005)

El Segundo, CA

Student Research Engineer: Carried out technology transfer responsibilities to extend the I/O Brush technologies into low-cost versions for Mattel's commercial products.

HEWLETT-PACKARD (May 2004 – May 2005)

Corvallis, OR

Student Research Engineer: Carried out technology transfer responsibilities to extend the design and technologies of I/O Brush for HP's new user interfaces.

HALLMARK (Feb 2004 – May 2005)

Kansas City, MI

Student Research Engineer: Provided research and technology consultation for Hallmark's Gifts Innovation Team to formulate ideas and designs for their new Treasure Keeping products.

Y.CREATIVE (Jun - Aug 2000)

Tokyo, Japan

Student Research Designer: Designed and built prototypes for preschool toys at a start-up toy company in Tokyo. Presented the prototypes and ideas to major international toy companies.

LEGO FUTURA (Jun - Jul 1998)

Boston, MA

Student Research Engineer: Provided educational and design consultation for, and built prototypes for the LEGO's storytelling lines designed especially for girls.

SHINGAKUSYA (Jul - Aug 1998)

Tokyo, Japan

Student Research Engineer: Designed and built prototypes of tangible interface designed for second graders to learn multiplication table and geography.

Publications

Journal Articles

- Ryokai, K., Agogino, A.M. (in press) Off the Paved Paths: Exploring Nature With a Mobile Augmented Reality Learning Tool. International Journal of Mobile Human Computer Interaction. IGI Global.
- Ryokai, K., Farzin, F., Kaltman, E., Niemeyer, G. (in press). Assessing Multiple Object Tracking in Young Children Using a Game. *Educational Technology Research and Development*. Springer.
- Ryokai, K., Agogino, A.M., Oehlberg, L. (2012). Mobile Learning with the Engineering Pathway Digital Library. *International Journal of Engineering Education*. Vol. 28, No. 5, pp. 1119–1126, 2012.
- Ryokai, K., Vaucelle, C., Cassell, J. (2003). "Virtual Peers as Partners in Storytelling and Literacy Learning" *Journal of Computer Assisted Learning* 19(2): 195-208.
- Cassell, J. and Ryokai, K. (2001). "Making Space for Voice: Technologies to Support Children's Fantasy and Storytelling." *Personal Technologies* 5(3): 203-224.

Refereed Conference Papers

- Ryokai, K., Raffle, H., Kowalski, R. (2012). StoryFaces: pretend-play with ebooks to support social-emotional storytelling. In *Proceedings of the 11th ACM International Conference on Interaction Design and Children (ACM IDC '12)*. ACM, New York, NY, USA, 125-133.
- Charoenying, T., Gaysinsky, A., Ryokai, K. (2012). The choreography of conceptual development in computer supported instructional environments. In *Proceedings of the 11th ACM International* Conference on Interaction Design and Children (ACM IDC '12). ACM, New York, NY, 162-167.
- Ryokai, K., Agogino, A.M. (2012). Geocentric Contextualized Mobile Learning with the Engineering Pathway Digital Library. In *Proceedings of Australasian Association for Engineering Education (AAEE) Annual Conference*. 3rd 5th December 2012.
- Ryokai, K., Oehlberg, L., Manoochehri, M., and Agogino, A. (2011) (Best Paper Honorable Mention) GreenHat: exploring the natural environment through experts' perspectives. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '11). ACM, New York, NY, USA, 2149-2152.

- Rosner, D. K. and Ryokai, K., (2010). "The Present of Captured Time": Giving Gifts of Digitally Augmented Craft Objects. In *Proceedings of the 28th international SIGCHI Conference on Human* Factors in Computing Systems (Atlanta, GA, USA, April 10 - 15, 2010). CHI '10. ACM, New York.
- Faridani, S., Bitton, E., Ryokai, K., Goldberg, K. (2010). A User Study of Opinion Space: A
 Scalable Tool for Browsing Online Comments. In *Proceedings of the 28th international SIGCHI*Conference on Human Factors in Computing Systems (Atlanta, GA, USA, April 10 15, 2010).
 CHI '10. ACM, New York.
- Ryokai, K., Lee, M. J., and Breitbart, J. M., (2009). (Best Paper) Children's storytelling and programming with robotic characters. In *Proceeding of the Seventh ACM Conference on Creativity and Cognition* (Berkeley, California, USA, October 26 30, 2009). C&C '09. ACM, New York, NY, 19-28.
- Rosner, D. K. and Ryokai, K., (2009). (Best Paper) Reflections on craft: probing the creative process of everyday knitters. In *Proceeding of the Seventh ACM Conference on Creativity and Cognition* (Berkeley, California, USA, October 26 - 30, 2009). C&C '09. ACM, New York, NY, 195-204.
- Rosner, D. K., Ryokai, K., (2008) "Spyn: Augmenting Knitting to Support Storytelling and Reflection." In *Proceedings of the 10th international Conference on Ubiquitous Computing* (Seoul, Korea, September 21 - 24, 2008). UbiComp '08, vol. 344. ACM, New York, NY, 340-349.
- Ryokai, K., Marti, S., Ishii, H. (2004). "I/O Brush: Drawing with Everyday Objects as Ink." In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '04). ACM, New York, NY, USA, 303-310.
- Ryokai, K., Vaucelle, C., and Cassell, J. (2002). "Literacy Learning by Storytelling with a Virtual Peer." In *Proceedings of the Conference on Computer Support for Collaborative Learning: Foundations for a CSCL Community (CSCL '02*), Gerry Stahl (Ed.). International Society of the Learning Sciences 352-360..
- Ryokai, K. and Cassell, J. (1999). "Computer Support for Children's Collaborative Fantasy Play and Storytelling", In *Proceedings of the 1999 conference on Computer support for collaborative learning (CSCL '99)*, Christopher M. Hoadley and Jeremy Roschelle (Eds.). International Society of the Learning Sciences. Article 63.
- Cassell, J., Stocky, T., Bickmore, T., Gao, Y., Nakano, Y., Ryokai, K., Tversky, D., Vaucelle, C., Vilhjálmsson, H. (2002). "MACK: Media lab Autonomous Conversational Kiosk." In *Proceedings of Imagina '02*. Monte Carlo.

Refereed ACM Extended Abstracts and Published Posters

- Ryokai, K., Subramanian, D., Tom, L. (2012). Mobile Augmented Reality Learning Tool to Simulate Experts' Perspectives in the Field. In *Proceedings of the 14th ACM International Conference on Ubiquitous Computing (UBICOMP '12) September 5-8, Pittsburgh, PA.*
- Devendorf, L., Ryokai, K. (2012). AnyType: Creating Typography from Anything, Anywhere. In Proceedings of the 14th ACM International Conference on Ubiquitous Computing (UBICOMP '12) September 5-8, Pittsburgh, PA.
- Moser, K., Kiechle, M., Ryokai, K. (2012). Photocation: tangible learning system for DSLR photography. In Proceedings of the 2012 ACM annual conference extended abstracts on Human Factors in Computing Systems Extended Abstracts (CHI EA '12). ACM, New York, NY, USA, 1691-1696.
- Ryokai, K., Kowalski, R., and Raffle, H. (2011) StoryFaces: children exploring emotional expressions in storytelling with video. In *Proceedings of the 2011 ACM annual conference* extended abstracts on Human Factors in Computing Systems Extended Abstracts. ACM, New York, NY, 87-96.
- Ryokai, K., Raffle, H., Horii, H., Mann, Y. (2010). Tangible video bubbles. In CHI '10 Extended Abstracts on Human Factors in Computing Systems (CHI EA '10). ACM, New York, NY, USA, 2775-2784.
- Ryokai, K., Lee, M. J., and Breitbart, J. M., (2009). Multimodal programming environment for kids: a "thought bubble" interface for the Pleo robotic character. In *Extended Abstracts of the 27th international Conference on Human Factors in Computing Systems* (Boston, MA, USA, April 04 - 09, 2009). CHI EA '09. ACM, New York, NY, 4483-4488.
- Ryokai, K., Raffle, H., and Brooks, A., (2009). Tangible message bubbles for children's

- communication and play. In *Extended Abstracts of the 27th international Conference on Human Factors in Computing Systems* (Boston, MA, USA, April 04 09, 2009). CHI EA '09. ACM, New York, NY, 4597-4602.
- Rosner, D. K., Ryokai, K., (2008). "Weaving Memories into Handcrafted Artifacts with Spyn." In Extended Abstracts of Conference on Human Factors in Computing Systems (CHI 2008).
- Rosner, D. K., Oehlberg, L., Ryokai, K., (2008). "Studying Paper Use to Inform the Design of Personal, Portable Technology." In *Extended Abstracts of Conference on Human Factors in Computing Systems (CHI 2008).*
- Ryokai, K., Marti, S., Ishii, H. (2007). "I/O Brush: Beyond Static Collages." In Extended Abstracts
 of Conference on Human Factors in Computing Systems (CHI 2007).
- Ishii, H., Alonso, J., Bonanni, L., Chang, A., Gouldstone, J., LeClerc, V., Parkes, A., Patten, J., Raffle, H., Ryokai, K., Whitney, R., Zuckerman, O., Marti, S., Recht, B. Kase, I., Hirano, M., Kobayashi, K., Hosokawa, T. (2006). Tangibles at play. In ACM SIGGRAPH 2006 Emerging technologies (SIGGRAPH '06). ACM, New York, NY, USA.
- Ryokai, K., Marti, S., Ishii, H. (2005). "Designing the World as Your Palette." In Extended Abstracts of Conference on Human Factors in Computing Systems (CHI 2005).
- Kehoe, C., Cassell, J., Goldman, S., Dai, J., Gouldstone, I., MacLeod, S., O'Day, T., Pandolfo, A., Ryokai, K., Wang, A. (2004). "Sam Goes to School: Story Listening Systems in the Classroom" International Conference for the Learning Sciences.
- Yoon, J., Ryokai, K., Dyner, C., Alonso. J., Ishii, H. (2004). egaku: Enhancing the Sketching Process, in Conference Abstracts and Applications of SIGGRAPH 2004, August 8-12, 2004
- Cassell, J. and Ryokai, K. (2000). "Story Spaces: Interfaces for children's voices." In Extended Abstracts of Conference on Human Factors in Computing Systems (CHI 2000).
- Cassell, J., Ananny, M., Basu, A., Bickmore, T., Chong, P., Mellis, D., Ryokai, K., Smith, J., Vilhjlmsson, H., Yan, H. (2000). "Shared Reality: Physical Collaboration with a Virtual Peer." In Extended Abstracts of Conference on Human Factors in Computing Systems (CHI 2000).
- Cassell, J., Smith, J., Bickmore, T., Ryokai, K, Chong, P. (1999). "CrossTalk". In SIGGRAPH '99
 Catalog on Electronic Art and Animation.
- Ryokai, K. and Cassell, J. (1999). "StoryMat: A Play Space with Narrative Memory." In Proceedings of IUI '99, ACM.
- Ryokai, K. and Cassell, J. (1999). "StoryMat: A Play Space for Collaborative Storytelling." In Extended Abstracts of Conference on Human Factors in Computing Systems (CHI 1999).

Books and Book Chapters

- Larson, R. and Ryokai, K. (Illustration) (2010). Grammar as Science. MIT Press.
- Ryokai, K. (2007). "The World as Your Palette" in Okude, N. and Wakita, A. (eds.) *Design Language II.* Keio University Press.

Invited Publications (not peer reviewed)

- Ryokai, K., Agogino, A.M., Oehlberg, L. (2012). Green Hat & Engineering Pathway. Session on Mobile & Augmented Reality Cyberlearning at the Cyberlearning Tools for STEM Education Conference, March 8, 2011, Berkeley, California.
- Rosner, K.D. and Ryokai, K. (2008). Knitting Scarves and Stories Together. Spring. Ambidextrous.

Patents

Drawing tool for capturing and rendering colors, surface images and movement. (pending)

Awards & Grants

- Winning proposal at UP: Urban Prototyping San Francisco 2012 (with Laura Devendorf).
- Best Paper Honorable Mention Award. ACM CHI conference 2011.
- Distinguished Mentor Award. UC Berkeley School of Information 2010.
- Best Paper Award. ACM Creativity & Cognition conference 2009.
- Best Paper Award (with Daniela Rosner). ACM Creativity & Cognition conference 2009.
- Winning proposals at WPA 2.0: Working Public Architecture (with Nicholas de Monchaux). cityLAB Design Competition WPA 2.0 Rides Perfect Storm in DC.

- 2009-2010 (PI) Nokia Research Grant (\$150,000) Project Title: "Multimodal Communication Tools for Children."
- 2008-2009 (PI) Nokia Research Grant (\$75,000) Project Title: "Multimodal Communication Tools for Children."
- 2008-2010 (PI) National Science Foundation Grant (\$150,000) Project Title: "Expanding the Accessibility of NSDL for Mobile Learning," Award ID: 0840790.
- 2008-2009 (Co-PI) CITRIS Research Grant (\$75,000) Project Title: "Game Based Learning Initiative for Early Head Start in Oakland."
- 2008-2009 (PI) Nokia Research Grant (\$70,000) Project Title: "Multimodal Communication Tools for Children."
- 2008-2009 Junior Faculty Research Grant (\$9,000), UC Berkeley.
- 2007-2008 Junior Faculty Research Grant (\$6,000), UC Berkeley.
- Presidential Chair Fellow (2007-2008), UC Berkeley.
- Gold Award Industrial Design Society of America 2005 Industrial Design Excellence Award
- ITRI Fellowship (2004 to 2005).
- Best Paper Award, CSCL 1999 (Computer Support for Collaborative Learning).
- Fellowship for Research Assistantship with the Tangible Media Group and the Gesture & Narrative Language Group (1997 to 2005).

Installations / Exhibitions

UP: San Francisco Urban Prototype (October 2012)

San Francisco, CA

Exhibition of "AnyType" with Laura Devendorf.

San Jose Museum of Quilts & Textiles (June 2008)

San Jose, CA, USA

Exhibition of "Knitter's Tapestry" with Daniela Rosner.

SIGGRAPH UNRAVEL Fashion Show 2007 (August 2007)

Los Angeles, CA, USA

An interactive runway presentation of "Knitter's Tapestry" with Daniela Rosner.

Asociación E3 Futura (July 2007)

Valencia, Spain

Invited to showcase "I/O Brush" at the Asociación E3 Futura's Campus Party 2007.

Ars Electronica Center (Aug 2004 – Aug 2006)

Linz, Austria

"I/O Brush" commissioned for the Ars Electronica Center. The initial one-year contract was extended to a two-year contract based on the exhibition's great success.

NESTA Futurelab Innovations at BETT Educational Technology Show (Jan 2005) London, UK Invited to exhibit "I/O Brush" as an exemplar innovative research project.

Wired NextFest 2004 (May 2004)

San Francisco, CA, USA

Invited to showcase "I/O Brush" as the "Future of Design" at the Wired Magazine's NextFest 2004.

TED Conference (Feb 2004)

Monterey, CA, USA

Invited to exhibit "I/O Brush" at the TED Conference opening exhibition.

Digital Childhood NESTA Future Lab (Mar 2003)

Cambridge, England

Invited to exhibit "AnimalBlocks" project at the Digital Childhood conference's opening exhibition.

Children's Art Museum & Park / CAMP (Apr 2001-present)

Kyoto, Japan

Installed interactive museum kiosk for children, based on "AnimalBlocks" project.

SIGGRAPH '99 TechnOasis (Aug 1999)

Los Angels, CA, USA

Installed "CrossTalk" for the SIGGRAPH's Art Gallery: TechnOasis.

Tokyo Toy Fair (Apr 1998)

Tokyo, Japan

Invited to present "StoryMat" my master's project and "Jr. Summit" at the Tokyo's largest toy fair.

Service Program Committees

- ACM CHI (Conference on Human Factors in Computing Systems) 2012
- ACM TEI (Conference on Tangible, Embedded and Embodied Interaction) 2009
- ACM SIGGRAPH Asia. 2010 & 2011

Reviewer

- ACM CHI (Conference on Human Factors in Computing Systems) 2003 2012
- ACM UIST (Symposium on User Interface Software and Technology) 2008 2012

- ACM SIGGRAPH 2011
- ACM SIGGRAPH Asia 2010 & 2011
- ACM DIS (Conference on Designing Interactive Systems) 2011
- ACM TEI (Conference on Tangible, Embedded and Embodied Interaction) 2009 2011
- Interacting with Computers. 2012
- Journal of CAD in Arts. 2010
- Artificial Intelligence for Engineering Design, Analysis and Manufacturing. 2010.

Students Advised

PhD Students

Daniela Rosner (2008-2012) Joining University of Washington's HCDE department as an assistant professor in Fall 2013.

Dilan Mahendran (2009-2011, co-advised by Paul Duquid)

Laura Devendorf (2011-present)

Master's Students

2012 Deepak Subramanian (James R. Chen Awards Honorable Mention), Leslie Tom (James R. Chen Awards Honorable Mention), Alex Chung, D. H. Jung, Iris Cheung

2010 Ljuba Miljkovic (James R. Chen Awards for Outstanding Master's Final Project), Carol Chen, Jin Young Baik, Janani Vasudev, Sunny Lee, Ashley Kayler, Connor Riley, Laura Paajanen

2009 Hyun-Young Jin (Architecture), Hsin-Hsien Chiu (Architecture), Tavi Nathanson (IEOR)

2008 Daniela Rosner (James R. Chen Awards for Outstanding Master's Final Project), Kesava Mallela, Karen Hsu, Alana Pechon, Jerome Tobias (Architecture), Seung Wook Kim (CS)

2007 Edmund Wong

Media & **Press**

PBS KQED. March 10, 2011

http://blogs.kqed.org/mindshift/2011/03/video-games-and-simulations-bring-science-to-life/

NBC Bay Area. December 3, 2009

http://people.ischool.berkeley.edu/~kimiko/download/TUI09 on NBC.mov

California Magazine. Spynning Yarns. October, 2009

http://alumni.berkeley.edu/news/california-magazine/fall-2009-constant-change/spynning-yarns

San Francisco Chronicle. The purikura king is at PikaPika in Japantown. January 23, 2009 http://www.sfgate.com/bayarea/article/The-purikura-king-is-at-PikaPika-in-Japantown-3175506.php

San Francisco Chronicle. Tangible fun at UC Berkeley's virtual projects. December 11, 2008 http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2008/12/10/BAF214L2I2.DTL

Craft Magazine. Spynning Stories. July 2008

http://www.craftzine-digital.com/craft/vol08/?pg=35

BBC News World Edition. 'Magic brush' paints visual world. September 15, 2005, 08:47 GMT http://news.bbc.co.uk/2/hi/technology/4184160.stm

BusinessWeek. I/O Brush IDEA Awards Gold 2005. July 4, 2005

http://images.businessweek.com/ss/05/06/idea2005/source/139.htm

Discovery News. Virtual Brush Captures 'Paint' from Real Life. May 27, 2005

http://dsc.discovery.com/news/briefs/20050523/paintbrush.html

Discovery Channel Canada. Painting with a new palette. January 25, 2005

http://www.exn.ca/dailyplanet/story.asp?id=2005012654

Numerous articles in major techno-culture and design blogs (e.g., SlashDot, Engadget, Smart Mobs)

I/O Brush videos became viral (e.g., IFILM.com, YouTube.com)

Invited Talks

NTT Docomo (Aug 2012)

"Designing Interactions on Multi-Touch Systems"

Tokyo, Japan

International Conference on Ubiquitous Learning Conference (Nov 2011) Keynote Speaker. "Exploring the Natural Environment Through Experts' Perspectives" Berkeley, CA

Nokia Research Center Palo Alto (Spring 2009)

Palo Alto, CA

"Technologies for Creativity and Learning"

NTT Docomo Research Center (Summer 2008) Palo Alto, CA

"Objects with Narrative Memories"

Global COE International Conference (January 2008) Kyoto, Japan

"Inquiry in Extended Design Space"

Digital Stories Conference (Jun 2005)

Newark, NJ

"The World as Your Palette"

Kumamoto Contemporary Art Museum (Mar 2004) Kumamoto, Japan

"Multidisciplinary Study in Media Arts and Sciences"

SONY Design Center (Feb 2004) San Francisco, CA

"Tangible Bits"

Digital Childhood NESTA Future Lab (Mar 2003) Cambridge, England

"Beyond the Screen"

Fisher Price (Mar 2002) East Aurora, NY

"Story Spaces"

NIMIS EU Educational Technology Research Group (May 2000) Waldeck, Germany

"Children's Fantasy Play and Collaborative Storytelling"

Languages English, Japanese (native), some German and French