Ivan Poupyrev, Ph.D

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Work and research experience

2009 – currently: Senior Research Scientist
Disney Research Pittsburgh, Walt Disney Imagineering, USA.

Directing a group of researchers conducting research novel user interface technologies, including tactile feedback for touch screens, interaction techniques for mobile devices, novel sensor solutions, interactive mobile projectors, including hybrid projector system combining infrared and visible projected images, multi-person collaborative systems based on mobile projectors, augmented reality, large scale tactile surfaces, such as haptic chairs and vests.

Results of this research have been extensively published in prestigious research conferences, received awards (e.g. Best Paper Award at ACM UIST 2011) and broadly reported in popular media including BBC, CNN, New Scientist, Technology Review, MSNBC, Wired and many others. Multiple patents were filed on these technologies and aggressive commercialization program for developed technologies is being conducted.

2001 – 2009: Researcher
Interaction Laboratory, Sony Computer Science Laboratories, Japan.

Designing tactile feedback for touch screens based on vibrating piezoelectric elements and interaction concepts that combine tactile feedback and visual interaction; designing concepts and prototypes for bendable computers and highly dynamic graphical user interfaces for bendable computers; investigating back touch interaction, scrolling and object positioning and selection in user interfaces; designing shape-changing displays, and arbitrary-shaped display devices; designing text input and content creation techniques for mobile phones.

The results of this research have been extensively reported in prestigious research conferences as well as popular media, including BBC, Financial Times, New Scientist and many others. Multiple patents were filed. SONY products incorporating developed technologies have been released on the market, including back touch interface for SONY

PS VITA gaming machine, drawing application for SONY ERICSSIN CEDAR mobile phone and touch screen tactile feedback for SONY NAVITUS remote controller.

1998 – 2001: Researcher
Media Integration and Communication Research Laboratories,
Advanced Telecommunication Research Institute International, Japan.

Designing augmented reality systems and interfaces based on computer-vision and marker-based registration techniques, including interactive tables, multi-user and collaborative augmented reality interactive systems; investigating tracking and face detection algorythms.

This research was extensively published and exhibited in prestigious research venues, such as ACM SIGGRAPH and Laval Virtual. Popular media reported on this research including New York Times, Asahi News Paper and many others.

1995 – 1998: Visiting Scientist
Human Interface Technology Lab, University of Washington, USA.

Design and investigation of 3D user interfaces for desktop 3D, virtual reality systems, as well as augmented reality environments. The topics researched included designing techniques and algorithms sensors for tracking user and gestures and postures, developing techniques that optimize virtual 3D object manipulation, simulation techniques, investigating pen and tablets in 3D user interaction, as well as tactile and haptic feedback in 3D user interfaces.

The results of this research were extensively published in prestigious research conferences; it was also summarized in a highly regarded book "3D user interfaces: Theory and practice" by Poupyrev, Ivan with co-authors, published by Addison-Wesley Publishing in 2004.

1992– 1993: Leading Software Engineer,

1989– 1992: Research Associate
Russian Center for Cardiovascular Surgery, Moscow, Russia.

Design of decision support system, interfaces and data visualization techniques for real-time analysis in presentation during open-heart surgeries.

The developed system was extensively used in practice during open-heart surgeries and after surgery recovery in intensive care units in Russian Center for Cardiovascular Surgery in Moscow.

Education

1994 - 1999: Doctor of Engineering,
Faculty of Engineering, Hiroshima University, Japan.
Thesis: **A study on 3D user interface design for virtual reality systems.**

1986 – 1992: MS/BS of Engineering,
Faculty of Applied Mathematics, Moscow Airspace University, Russia.
Thesis: **Design and development of a decision support system for operation theater, reanimation and intensive care units in cardiovascular clinic.**

Publications and Patents

*Over **50** high-impact publications in prestigious research conferences and journals;*
***10** issued United States Patents;*

see http://www.ivanpoupyrev.com/publications/ *for full publication list*;
selected publications are below:

1. Poupyrev, I., Tan, D., Billinghurst, M., et al. *Developing a generic augmented-reality interface*, IEEE Computer. March, 2002. p. 44-49.

2. Poupyrev, I., S. Maruyama, J. Rekimoto. *TouchEngine: A tactile display for handheld devices*. in CHI 2002. 2002: ACM p. 644-645.

3. Schwesig, C., I. Poupyrev, and E. Mori**.** *Gummi: a bendable computer*. Proceedings of CHI'2004. 2004: ACM: pp. 263-270.

4. Poupyrev, I., Nashida, T., Okabe, M. *Actuation and Tangible User Interfaces: the Vaucanson Duck, Robots, and Shape Displays***.** Proceedings of TEI'07. 2007: ACM: pp. 205-212

5. Poupyrev, I., Willis, K. *TwelvePixels: Drawing & Creativity on a Mobile Phone***.** Proceedings of CHI'08. 2008: ACM: pp. 2361-2366.

6. Poupyrev, I., Oba, H., Ikeda, T., Iwabuchi, E. *Designing Embodied Interfaces for Casual Sound Recording Devices*. Proceedings of CHI'08. 2008: ACM: pp. 2129-2134.

7. Parkes, A., Poupyrev, I., Ishii, H. *Designing Kinetic Interactions for Organic User Interfaces*. Communications of the ACM 51(6). 2008: pp. 58-65.

8. Bau, O., Poupyrev, I., Israr, A, Harrison, C. TeslaTouch: Electrovibration for Touch Surfaces. Proceedings of UIST 2010: ACM: pp. 283-292.

9. Willis, K. D.D., Poupyrev, I., Hudson, S. E., Mahler, M. SideBySide: Ad-hoc Multi-user Interaction with Handheld Projectors. In Proceedings of UIST 2011: ACM: pp. 431-440.

Books

Bowman, D., E. Kruijff, J. LaViola, and I. Poupyrev, 3D user interfaces: Theory and practice. 2004: Addison-Wesley**.** 512 pp

Selected keynote talks and lectures

2009 Keynote talk at EPFL, Lausanne, Switzerland,

2009 Invited talk at Coded Cultures Festival, Vienna, Austria,

2011 Invited lecture at TTI/Vanguard Conference Series, Miami, USA,

2012 Keynote talk at IEEE Haptic Symposium, 2012 Vancouver, Canada (upcoming),

2012 Keynote talk at ACM 14th International Conference on Multimodal Interaction (upcoming).

Selected media reports

Pittsburgh Tribune-Review "*Disney develops 'magic' touch*" 2011,

Wired "SideBySide uses handheld projector for multiplayer games" 2011,

Voice of America "Gamers, filmgoers could soon feel jolt of onscreen car crash", 2011,

BBC "Haptics brings a personal touch to technology", 2011,

MSNBC "*Feel the future: Touch screens that touch back*" 2010,

CNN "*When glass touch screens feel like sandpaper*" 2010,

Axis Magazine, Japan December 2005 "*Lumen*",

Financial Times UK; June 25, 2003 "*Sony's flexible approach pays dividends in lab*",

Selected products

2004. *TouchEngine* was incorporated into *Sony Navitus RM-NX7000* integrated remote controller to enhance on-screen GUI interface with tactile feedback. Navitus, released only on the North American market, was the world-first consumer electronic product featuring touch screen with tactile feedback.

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2011. *Backtouch interaction* was incorporated into *PS Vita* hand-held gaming console, where the multi touch sensor is incorporated on the back of the handheld device.