

Stefan Marti

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Research Objectives Research team leader where I can apply my HCI experience in spatial interfaces, robotics and animatronics, mobile communication, and speech interfaces, to the following domains:

- Non-traditional user interfaces (non-verbal, implicit, volumetric)
- Mobile augmented reality and mixed reality systems
- Human robot interaction (HRI), particularly Natural HRI methods (N-HRI); human interaction with autonomous intelligent entities; companion and pet robotics
- Intermediaries (robots as the interface between human and non-embodied agencies)
- Social, affective, and moral intelligence in HCI and A.I.

Work Experience **SAMSUNG ADVANCED INSTITUTE OF TECHNOLOGY (2005 - present) San Jose, CA**
Principal Engineer and Project Leader: Initiate and manage Human-Computer Interaction (HCI) research projects that will significantly influence future generations of consumer products. I lead the HCI team and envision, design, and develop fundamentally novel user interface concepts, based on original research in the domains of ubiquitous computing, mobile communication, artificial intelligence, robotics, virtual worlds, and augmented reality. Create working prototypes, do user testing, file for patents, transfer the technology. Set up a network of leading HCI experts to foster collaboration between Samsung and international researchers. Provide Samsung researchers worldwide with novel HCI visions, concepts, and intellectual property.

M.I.T. MEDIA LABORATORY (1997 – 2005) Cambridge, MA
Research Assistant: Lead researcher for ten research projects in speech interfaces and mobile communication, conversational and communication agents, embodied agents and animatronics, wireless sensor networks, and tangible interfaces (details at <http://www.stefanmarti.com/research.html>). Supervised undergraduate researchers (software, robotics, circuit design). Journal & conference publications. 100+ presentations for and frequent interactions with the 150 Media Lab corporate sponsors (US & international.) Invited to present work at leading international telecom and mobile communication conferences. Designed & installed multi-year long interactive art exhibits.

IBM TOKYO RESEARCH LAB (2000) Tokyo, Japan
Consulting Engineer: Project lead in two-month technology transfer of IBM proprietary agent software to the public domain.

INTERNATIONAL DATA CORPORATION (IDC) (1995) Switzerland
Consulting Psychologist: Project lead of a three-month impact study on corporate communication networks.

SWISS NATIONAL TELEVISION (1996 – 1997) Zürich, Switzerland
Senior Staff Video Editor: Responsible for editing a broad range of nationally broadcasted programs such as sports events, news, documentaries, and advertisement. Part of an elite and competitive pool of video engineers, trained on site to the specific postproduction needs of the only Swiss National broadcaster.

CULTURE & CONGRESS CENTER AARAU (1996) Aarau, Switzerland
Director of Technology: Responsible for setting up and maintaining all audio-visual technology of a large event space, consisting of 7 auditoriums, hosting audiences of up to 800. Responsible for audio, video, and light engineering for concerts, theater plays, trade

shows, congresses, conferences, seminars. Leading staff of twenty audio and light engineers, maintenance and cleaning personnel.

SHOW-TEC CONSULTING (1987 – 1996)

Europe

Founder, CEO, Media Engineer: Producer, audio and video engineer for sound recording studios. Live sound engineer for large-scale events. Director of Technology for concerts and international tours (Germany, Netherlands, France, Switzerland, England, Austria, Italy). Engineering for wider range of video & film productions. Customers ranged from international artists to large multinational companies in the domains of finance, energy, and entertainment.

Education

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Cambridge, MA

Doctor of Philosophy in Media Arts and Sciences, June 2005

Thesis: *Autonomous Interactive Intermediaries: Social Intelligence for Mobile Communication Agents* (Thesis advisors Prof. Chris Schmandt, Cynthia Breazeal, Henry Lieberman). Theory and implementation of a context-aware computer-mediated call control system that acts on input from caller, callee, and co-located people. The Intermediary is a dual conversational agent that can converse with both user and caller simultaneously. It is embodied in a wireless animatronics device and uses human-style non-verbal cues to get attention. It is aware of the user's conversational status querying its own RF sensor network. It solicits input from the participants of a face-to-face conversation using wirelessly actuated finger rings.

Coursework (GPA 5.0/5.0): Commonsense Reasoning for Interactive Applications, Embodied Intelligence (Rodney Brooks), The Society of Mind (Marvin Minsky), How To Make Almost Anything (Neil Gershenfeld), Tangible User Interfaces (Hiroshi Ishii), Multilingual Computing, Systems & Self (Mitch Resnik, Sherry Turkle), Conversational Computer Systems, and many more.

Master of Science in Media Arts and Sciences, September 1999

Thesis: *Active Messenger: Email Filtering and Mobile Delivery.*

UNIVERSITY OF BERN

Bern, Switzerland

Master's Degree (Lizenziat) in Psychology, Computer Science & Philosophy, 1993

Thesis: *Psychological Impact of Communication Technologies on Users* (Thesis advisors Prof. Dr. Alfred Lang and Dr. Urs Fuhrer).

Coursework domains: Usability, Human Factors, Human-Computer Interaction, Environmental and Ecological Psychology, Social Psychology, Psychological Aspects of Music, Processes of Creative Design.

Skills

Human Computer Interaction (HCI) research: 12-year experience as an international HCI researcher, working on all levels of Interaction Design and HCI: from theories (social and cognitive psychology, sociology, ethnography, HCI design), to prototypes (hardware, software, firmware, mechanical & electrical design), to conducting empirical studies (experimental design, statistical evaluation), to publishing the results, to filing patents; management of team of researchers and engineers.

Computer programming: Extensive knowledge in PERL, C, C++, VB, Pascal, Lingo; XML, CGI, JavaScript, HTML. Working knowledge in Assembler, Java, Python.

Computer hardware and networking: Extensive experience with microcontrollers for wireless sensor networks and robotic control. Circuit board design and prototyping with sensors, actuators, wired and wireless transceivers for audio and data (Bluetooth, analog radio, etc.). Interfacing analog and digital systems. TCP/IP networking (data and VoIP, wired and 802.11), two-way pager networks.

Operating systems and applications: Experience with all Windows OS, UNIX/Linux; 3D and 2D modeling (Rhinoceros, Truespace4, Corel Draw, Photoshop).

Micro modeling & mechanical design: Expert in designing and building R/C micro systems, with special focus on small animatronics and hovering robotics platforms.

Rapid prototyping: Experienced with laser cutting (Universal X-600), 3D printing (Stratasys FDM2000), CNC milling, composite materials (Kevlar, carbon & glass fiber).

Audio engineering: 10-year experience as a professional live audio mixer in large venues (audiences of 3000+). Responsible for studio recordings of 30+ albums. Extensive experience with virtually any existing live audio mixing console (Yamaha, Soundtracs, Soundcraft, Mackie, Tascam, etc) and outboard equipment (FX processors, dynamics processors, filtering)

Video engineering: 5-year experience as a professional video editor. Experienced with many analog editing suites (e.g., Betacam SP/Digibeta, Ampex VPR3 1"), hybrid video editing (e.g., Fast Videomachine), and digital editing (Media 100, Premiere, Final Cut Pro).

Exhibitions **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. Project together with Kimiko Ryokai.

Publications **Journal Publications:**

- Schmandt, C. & Marti, S. (2005). **Active Messenger: Email Filtering and Delivery in a Heterogeneous Network.** In *Human-Computer Interaction Journal (HCI)*, 2005, Vol. 20, No. 1&2, 2005.
- Schmandt, C., Marmasse, N., Marti, S., Sawhney, N., & Wheeler, S. (2000). **Everywhere Messaging.** *IBM Systems Journal*, Vol. 39, No. 3&4, 2000.

Conference Proceedings:

- Ryokai, K., Marti, S., Ishii, H. (2007). **I/O Brush: Beyond Static Collages.** In Extended Abstracts of *ACM conference on Human Factors in Computing Systems (CHI '07)*, San Jose/CA, 2007.
- Marti, S. & Schmandt, C. (2005). **Physical Embodiments for Mobile Communication Agents.** In Proceedings of *UIST 2005*, Seattle/WA, 2005.
- Marti, S. & Schmandt, C. (2005). **Giving the Caller the Finger: Collaborative Responsibility for Cellphone Interruptions.** In Proceedings of *ACM conference on Human Factors in Computing Systems (CHI '05)*, Portland/OR, 2005.
- Ryokai, K., Marti, S., & Ishii, H. (2005). **Designing "The World as your Palette."** Design Expo of the *ACM conference on Human Factors in Computing Systems (CHI '05)*, Portland/OR, 2005.
- Marti, S. (2004). **Autonomous Interactive Intermediaries: Social Intelligence for Mobile Communication Agents.** In Doctoral Colloquium Companion Booklet of *ACM conference on Computer supported Cooperative Work (CSCW '04)*, Chicago, 2004.
- Ryokai, K., Marti, S., & Ishii, H. (2004). **I/O Brush: Drawing with Everyday Objects as Ink.** In Proceedings of *ACM conference on Human Factors in Computing Systems (CHI '04)*, Vienna/Austria, 2004.

Invited Talks

- **Palo Alto Research Center PARC** (March 2, 2006) Palo Alto, CA
Talk "Cellular Squirrel"
- **Samsung Advanced Institute of Technology** (December 15, 2005) Seoul (Korea)
Talk "User Interface Innovations: Cellular Squirrel"
- **Siemens Technology-To-Business Center** (September 14, 2005) Berkeley, CA

- Talk "The Commercial Potential of the Cellular Squirrel"
- **Samsung Information Systems of America** (August 11, 2005) San Jose, CA
Talk "Autonomous Interactive Intermediaries"
 - **France Telecom R&D Boston** (July 11, 2005) Cambridge, MA
Talk "The Next Generation of Mobile Communication"
 - **Motorola Research Labs** (June 22, 2005) Schaumburg, IL
Talk "Social Intelligence of Mobile Communication Agents"
 - **Accenture Technology Labs** (May 11, 2005) Palo Alto, CA
Talk "Cellular Squirrel and A.I.I."
 - **Intel Research Berkeley** (April 27, 2005) Berkeley, CA
Talk "The Cellular Squirrel"
 - **3GSM Congress** (February 14-17, 2005) Cannes (France)
Weeklong presentations and demonstrations of my doctoral work
 - **M.I.T. Media Lab** (1997-2005) Cambridge, MA
More than 150 presentations and talks on my research
 - **Federal Institute of Technology (ETH)** (May 29, 2002) Zürich (Switzerland)
Panel "Security in the Net: Big Brother Is Watching and Protecting You"
 - **AT&T Labs** (January 28, 1999) Red Bank, NJ
Talk "Active Messenger: Email Filtering and Mobile Delivery"
 - Convention of **SwissICT** (former SVD) (November 15, 1994) Zürich (Switzerland)
Talk "The Strange Effects of Telecommunication on Human Beings"

Media, TV & Press

- **SIGNature** bluetooth.org (quarterly magazine): "In a NutCell" April, 2007, <http://www.nxtbook.com/nxtbooks/bluetooth/signatureq207/index.php?startpage=46>
- **Financial Times Germany** (German daily newspaper): "Hörpuschel: Handy-Eichhörnchen" (cellphone squirrel) April 28, 2006
- **Boston Business Journal** (US daily newspaper): "Inspecting gadgets: Gizmos that developers hope will be the next must-have tech contraptions" April 28, 2006, <http://boston.bizjournals.com/boston/stories/2006/05/01/focus1.html>
- **I-Droid** (Italian monthly magazine): "F.A.C.E., La Spia Discreta" January 2006
- **International Telecommunication Union ITU News magazine** (English/French/Spanish monthly publication): "How annoying is your phone?" December 2005, <http://www.itu.int/itu-news/manager/display.asp?lang=en&year=2005&issue=10&ipage=technology&ext=html>
- **The New York Times Magazine** (US weekly magazine): "The Year in Ideas: Consensual Interruptions" December 11, 2005, <http://www.nytimes.com/2005/12/11/magazine/11ideas1-10.html>
- **YouTube.com** I/O Brush video becomes the *most watched Youtube video on October 7, 2005*, and goes viral (estimated 1.2 million viewings so far) <http://www.i4u.com/article4344.html>
- **The Age** (Australian daily newspaper): "Screen all my calls" October 1, 2005, <http://www.theage.com.au/news/icon/screen-all-my-calls/2005/09/27/1127804480665.html>
- **PC Chip Croatia** (Croatian monthly magazine): "Animatronička vjeverica" September 2005
- **Kölner Stadtanzeiger** (German daily newspaper): "Sekretärin mit viel Pelz" (Secretary with lots of fur) September 29, 2005, <http://www.ksta.de/html/artikel/1125645192032.shtml>
- **BBC News World Edition**. "Magic brush paints visual world" September 15, 2005, <http://news.bbc.co.uk/2/hi/technology/4184160.stm>

- **Technology Review** (US monthly magazine): "Executive Squirrel" August 2005, <http://www.technologyreview.com/Infotech/14672/page2/>
- **BBC News**: "Squirrel helps with mobile calls" August 26, 2005, <http://news.bbc.co.uk/2/hi/technology/4749507.stm>
Hundreds of follow-up articles in international online publications such as BBC Persian Online (Persian), BBC Arabic Online (Arabic), breedband.telenet.be (Belgium), aftonbladet.se (Swedish), BBC News Online (Spanish), metafilter.com, giornaletecnologico.it (Italian), dk.compulenta.ru (Russian), computerra.ru (Russian), idg.se (Swedish), omni.lt (Lithuanian), blueyonder.co.uk (British)
- **The Toronto Star** (Canadian daily newspaper): "A PhD student fights the rudeness of cellphones" July 24, 2005, <http://pqasb.pqarchiver.com/thestar/access/871439201.html?dids=871439201:871439201&FMT=ABS>
- **Mobileburn.com**: "Cellular Squirrel, a robot that screens your calls" July 15, 2005, <http://www.mobileburn.com/news.jsp?id=1519>
Hundreds of follow-up articles online publications (big fraction non-english): Blueserker.com, Gearlive.com, Pierro.org (French), De-bug.de (German), mizusawa.cocolog-nifty.com (Japanese), geek.com, jy.lv (Latvian), jolt.co.uk, techdigest.tv, shinyshiny.tv, gizmodo.com, 4rthur.com, pazar cuccok (Hungarian), membrana.ru (Russian), brunodelfrate (Italian), ferket.com (Dutch), bug.hr (Croatian), smooth.blogs.com (French), nfsa.us, core.org.au, tecnologia.tiscali.it (Italian), nrg.co.il (Hebrew), mytech.it (Italian), webpanel.ru (Russian), liberoblog (Italian)
- **BusinessWeek**. I/O Brush IDEA Awards Gold 2005. July 4, 2005, <http://images.businessweek.com/ss/05/06/idea2005/source/139.htm>
- **FRAMES** (US monthly publication): "Cellular Squirrel" May/June 2005, <http://frames.media.mit.edu/frames.nsf/a0da1d86e6b0ba5185256d200052a6f0/7f207b902079250b8525703500646924?OpenDocument>
- **Discovery News**. Virtual Brush Captures 'Paint' from Real Life. May 27, 2005, <http://web.archive.org/web/20061007144848/http://dsc.discovery.com/news/briefs/20050523/paintbrush.html>
- **Engadget.com**: "Switched On: The Blossoming of Bluetooth" March 16, 2005, <http://www.engadget.com/2005/03/16/switched-on-the-blossoming-of-bluetooth/>
- **Discovery Channel Canada**. Painting with a new palette. January 25, 2005, <http://web.archive.org/web/20050315212622/http://www.exn.ca/dailyplanet/story.asp?id=2005012654>
- **The New York Times** (US daily newspaper): "Block That Ringtone!" April 8, 2004, <http://query.nytimes.com/gst/fullpage.html?res=9C07E6D71438F93BA35757C0A9629C8B63&sec=&spn=&pagewanted=2>
- **K-Spezial** (Swiss weekly magazine): "Computer werden merken, ob der Anwender nervös ist" (Computers will notice nervous users) April 30, 2003, <http://www.saldo.ch/themen/beitrag/1017529/>
- **Futur(es)** (Swiss monthly magazine): "Stefan Marti et ses puce volante", "Stefan Marti, un chercheur génial" (Stefan Marti and his flying saucers; Stefan Marti, a genius researcher) January 2001
- **Swiss Television** (Swiss national TV): "Superreich oder Pleite - Schweizer Jungunternehmer im Internet" (documentary) January 11, 2001
- **Basler Zeitung** (Swiss daily newspaper): "Wie sich die beiden Giganten Harvard und MIT belauern" (How the giants from Harvard and MIT compete) January 2, 2001
- **L'AGEFI** (Swiss monthly magazine): "Au célèbre Medialab du MIT, les professeurs Nimbus sont plus valorisés que les tenants du chercher utile" October 26, 2000
- **Swiss Television** (Swiss national TV): "MTW" (documentary) October 5, 2000
- **Tribune de Genève** (Swiss daily newspaper): "Le punk d'Olten réinvente sa vie au Media Lab du MIT" (The punk from Olten re-invents himself at the M.I.T. Media Laboratory) October 18, 1999
- **PCTip** (Swiss weekly magazine): "Zukunftslabor: Gute Connections und mehr Grips"

(Future lab: savvy with good connections) November 1998

- Honors & Awards**
- **Gold Award, Industrial Design Society of America** (2005) Industrial Design Excellence
 - **Motorola fellow** (1999 - 2000)
 - **AT&T fellow** (1998 - 1999)
 - **Fellowship for Research Assistantship** from the M.I.T. Media Lab Speech Interface Group (1997 - 2005)
- Patents (pending)**
- Animatronic creatures that act as intermediaries between human users and a telephone system (US20070217586)
 - Methods and apparatus for autonomously managing communications using an intelligent intermediary (US20070127704)
 - Drawing tool for capturing and rendering colors, surface images and movement (US20060084039)
 - System and method for automatic image capture in a handheld camera with a multiple-axis actuating mechanism (US20090128647)
 - System and method for object selection in a handheld image capture device (US20090128618)
 - System and method for selection of an object of interest during physical browsing by finger framing (US20090110235)
 - System and method for selection of an object of interest during physical browsing by finger pointing and snapping (US20090109795)
 - Image capturing device for high-resolution images and extended field-of-view images
 - Immersive display system for interacting with three-dimensional content
 - Mobile immersive display system
 - In-line mediation for manipulating three-dimensional content on a display device
 - Spatially correlated rendering of three-dimensional content on display components having arbitrary positions
 - Egomotion speed estimation on a mobile device
 - Detecting ego-motion on a mobile device displaying three-dimensional content
- Students supervised**
- Quinn Mahoney (2002-2003, M.I.T. Media Lab)
 - Matt Hofman (2003-2005, M.I.T. Media Lab)
 - Jonathan Harris (2002-2003, M.I.T. Media Lab)
 - Mark Newman (2003, M.I.T. Media Lab)
 - Robert Figueiredo (2005, M.I.T. Media Lab)
 - Joshua Monzon (2005, M.I.T. Media Lab)
 - Han Joo Chae (2009, summer intern from CMU)
- Leadership**
- Leader of the HCI team of the Computer Science Lab at Samsung R&D Center Silicon Valley (August 2008 – present)
 - On advisory board of the *Swiss House for Advanced Research and Education* (SHARE), Cambridge. SHARE is the Swiss consulate in Boston, and a joint operation of the State Secretariat for Education and Research and the Swiss Federal Department of Foreign Affairs (2000 - 2002)
 - M.I.T. Media Lab Student Committee (2001 – 2005)
- Professional Associations**
- Association for Computing Machinery (ACM)
 - Institute of Electrical and Electronics Engineers (IEEE)
 - Association for the Advancement of Artificial Intelligence (AAAI)
 - Audio Engineering Society (AES)
 - ACM's Special Interest Group on Computer-Human Interaction (SIGCHI)
 - San Francisco Bay Area Chapter of ACM SIGCHI (BayCHI)
 - World Future Society (WFS)

- Community Services (Reviewer)**
- ACM Conference on Human Factors in Computing Systems (CHI) 2006-2009
 - ACM Conference on Computer Supported Cooperative Work (CSCW) 2006, 2008
 - Graphics Interface 2006 (GI) 2006
 - ACM Symposium on User Interface Software and Technology (UIST) 2005, 2007
 - Annual IEEE International Symposium on Wearable Computers (ISWC) 2004
 - International Conference on Ubiquitous Computing (UbiComp) 2003, 2007
 - Tangible and Embedded interaction (TEI) 2009, 2010
- Professional Travels**
- Australia (2009), Austria (2004), Canada (1998, 2004), France (1982, 1985, 1987, 1992, 1996, 1998, 2005), Germany (1980-1997, 2007), Greece (1989), Indonesia (1989), Italy (1993, 1995), Japan (1999, 2000, 2002, 2003, 2004, 2006), South Korea (2005-2009), Malaysia (1989), Netherlands (1993), Singapore (1989), Spain (1985, 1993, 2007), Sri Lanka (1989), Thailand (1989), United Kingdom (1981–1997, 2005-2007), United States (1996-2009)
- Language Skills**
- Fluent: German, English, French, Swiss German (native)
 - Understand: Italian, Spanish, Latin; very basic Japanese
- Immigration Status**
- Permanent Resident of the U.S.A.