

Objective

Apply HCI, UX, and systems skills to lead innovations in research and implementations of world-class systems.

Experience

Human-Computer Interaction (HCI/UX) and front-end systems architectures.

Principle scientist, technical lead, team leader, system architect, experience designer, and front-end engineer for over ten years. Most of my career has been working on web-based, contextual, and collaborative systems. My Ph.D. is in perception-based, time-critical 3D graphics.

Worked in top research institutes and in top engineering industries. Experience includes engineering at a successful start-up, working as a principle scientist at NASA on a Mars mission, performing advanced research at Xerox PARC, innovating and engineering for over 8+ years as a senior researcher at Google.

Designed, led, and implemented several software systems for a broad range of product domains including interactive 3D graphics (VR, AR, Glass, information visualization), mobile, television, travel, retail, and multi-person, interactive, public displays.

Work History

You can also visit my [projects page](#) for more details.

Explorer (2014 - present):

After 8+ years of innovation and engineering at Google (growing from 3,000 to 60,000+ employees), now is a good time to explore new venues.

Google (2005 - 2014): *mad scientist, technical lead, front end engineer*

Google [X] - led team on a mobile design sprint with [solve for \[X\]](#), worked on early Google Glass UX mocks

large, multi-person, multi-modal, information display - led the design, research development, and engineering deployment of a large, depth-sensing, interactive, multi-person display system

- designed and prototyped in research, presented at a Google research consortium
- joined knowledge team, migrated and engineered to interact with real time news
- implemented and deployed in-house, 24/7
- presented to all of Google at a company-wide engineering all-hands

innovative UX and recommendation system for YouTube television - co-developed, [published](#), and helped deploy listings recommendation system and remote control interaction experience. Significant improvement in speed and experience when entering searches from a remote control.

argos - built [a new platform and model](#) for rapid application development on Android devices

- led a small team of researchers
- developed platform, applications and API
- integrated 2D (web), 3D (OpenGL) and realtime (camera) information into single model
- supported external sensor extensions
- published in IEEE Pervasive Computing
- presented at Google research consortium
- presented to Andy Rubin and senior staff

gulliver - co-developed collaborative, [mobile travel application](#) . developed and tested in research, deployed with engineering team. Worked with Lonely Planet partnership for content.

Google I/O 2011 - worked with vision researchers and Android team on developing face-tracking applications for mobile devices (using the GPU). Team presented platform to Larry, Sergey, Andy, senior staff to be integrated into Android core. Applications were presented at [Google I/O Android keynote](#).

world-wide tv listings - Co-tech lead, lead on interaction and design of [a world-scale television guide](#) . Allowed millions of viewers all over the planet to explore and interact with listings and related information.

Smaller initiatives:

- [watch interfaces](#) with Android
- security: a novel [CAPTCHA system \(published\)](#)
- sketch-up team on [a 3D warehouse interactive model catalog](#)
- Google production code reviewer for JavaScript

HP Labs (2003 - 2005): *research scientist*

CustomTV - part of a team that designed and developed a way to create [personal television channels](#). A channel was a streaming search result (e.g. "news", "wearables", "my vacation"), browsed with a remote control.

- worked with USC school of film and television
- implemented the design
- presented at CES HP keynote

Plog- a mobile phone [image sharing and storytelling platform](#) developed when cameras were first integrated with cell phones. Images were clustered on the server into stories and were shared to desktops, tvs, and printers as postcard collage.

Plog News - an automatic newspaper generated based on determining news-worthiness from plog pictures clustered in time and location.

Media2Go - mobile interaction with [public displays](#) via bluetooth. People could walk up to digital posters and get information, coupons, and video trailers beamed to their phones.

Principle Investigator - University of California, Berkeley Industry Collaboration - worked with HP and Berkeley on funding and sharing innovations.

NASA Ames (2002 - 2003): *principle research scientist*

MERBoard - [a collaborative system](#) of large touchscreen displays designed, developed and deployed for the Mars Exploration Rover (MER) mission. Multiple publications.

AdSpace Networks (acquired start-up) (2001 - 2002): *senior software engineer*

CoolSign Network - complex software system that delivers and manages digital assets to large digital signs.

- ad selling modeled after television auctions
- network included theatre chains, shopping malls, Las Vegas signs
- mixed real time information, entertainment, advertising

IBM Almaden Research (2000 - 2001): *research scientist and systems developer*

BlueBoard - co-designed and developed a web-based, in situ, [easy-to-use collaboration system](#) . Allowed people to easily hold meetings, retain state, share to other boards and external devices.

- presented to the CEO of IBM
- deployed at various IBM locations for senior executives around the world
- basis for a system used by NASA

- multiple publications

DSpace - project lead for a system supporting real-time, distributed user interfaces on the internet. The toolkit provided developers with an easy way to create distributed widgets that could react to digital and physical sensors. Based on a Gelernter tuple model.

Xerox PARC (1997 - 2000): *research scientist*

Side Impact - a modified browser with [a side tray](#) that reacted to the pages you visited, could store gathered information, present enhanced interfaces for the page.

ConeGraph - developed [a 3D widget](#) for simultaneously viewing hierarchy and linkage structures.

Grid - developed a PC-based, [interactive 3D graphics infrastructure and API](#) used for information visualization.

Bookplex I and II - developed [an interactive 3D graphics application](#) allowing users to read a scanned book plus all of its references online, perform queries and recommendations on the Bookplex.

Penguin Portfolio - worked with Bernardo Huberman developing an economics-based model for managing graphics resources, treating objects as stocks with risk-reward [rendering characteristics](#) .

NavCards - developed a project integrating a digital 3D world with physical RF tags to navigate three-dimensional spaces.

Silicon Graphics Inc. (SGI) (1995 - 1997): *3D graphics engineer*

CosmoWorlds - part of a large engineering team. Helped produce an interactive 3D graphics modeling system used to create virtual worlds on the web.

Contributed to the VRML specification.

Education

Ph.D. - University of Virginia (1996)

Perception-Based Time Critical Rendering

improved rendering rates in virtual environments using app-independent, visual perception techniques

developed [DIVER \(distributed VR platform\)](#) , a basis for Alice

developed a virtual reality lab for UVa

conducted and published [psychology perception experiments using virtual environments](#)

Randy Pausch's first Ph.D. student

Master of Computer Science, minor mathematics - University of Virginia (1990)

Application Independent Object Selection from Multimodal Input

Combined probabilistic input from voice and gesture to recommend selection results

Papers and Talks

[Perceiving geographical slant](#)

Dennis Proffitt, Mukul Bhalla, Rich Gossweiler, J. Midgett - Psychonomic Bulletin & Review, 1995, pp. 409-428.

[Alice: Rapid prototyping system for virtual reality](#)

Randy Pausch, Tommy Burnette, A.C. Capeheart, Matthew Conway, Dennis Cosgrove, Rob DeLine, Jim Durbin, Rich Gossweiler, Shuichi Koga, and Jeff White, IEEE Computer Graphics and Applications 15(3), 1995, 8-11.

[An Introductory Tutorial for Developing Multi-User Virtual Environments](#)

Rich Gossweiler, Robert J. Laferriere, Michael L. Keller, and Randy Pausch. "An introductory tutorial for developing multiuser virtual environments." Presence 3, no. 4 (1994): 255-264.

[On the design of personal and communal large information scale appliances](#)

Daniel Russell, Rich Gossweiler, Ubicomp 2001: Ubiquitous Computing, pp. 354-361, Springer Berlin Heidelberg, 2001.

[Distributed and Disappearing User Interfaces in Ubiquitous Computing](#)

Beverly Harrison, Rich Gossweiler, SIGCHI 2001 Workshop. 2001.

[What's up CAPTCHA?: a CAPTCHA based on image orientation](#)

Rich Gossweiler, Maryam Kamvar, Shumeet Baluja, proceedings of the 18th international conference on World wide web, pp. 841-850, ACM, 2009.

[Enhancing a digital book with a reading recommender](#)

Allison Woodruff, Rich Gossweiler, James Pitkow, Ed H. Chi, and Stuart K. Card, proceedings of the SIGCHI conference on Human factors in computing systems, pp. 153-160, ACM, 2000.

[Visualizing the evolution of web ecologies](#)

Ed Chi, James Pitkow, Jock Mackinlay, Peter Pirolli, Rich Gossweiler, and Stuart K. Card, Proceedings of the SIGCHI conference on Human factors in computing systems, pp. 400-407. ACM Press/Addison-Wesley Publishing Co., 1998.

[Alice: A Rapid Prototyping System for Building Virtual Environments](#)

Matthew Conway, Randy Pausch, Rich Gossweiler, Tommy Burnette, Conference companion on Human factors in computing systems. pp 295-296, ACM, 1994.

[Alice: Lessons Learned from Building a 3D System for Novices](#)

Matthew Conway, Steve Audia, Tommy Burnette, Dennis Cosgrove, and Kevin Christiansen, Rob Deline, Jim Durbin, Rich Gossweiler, Shuichi Koga, Chris Long, Beth Mallory, Steve Miale, Kristen Monkaitis, James Patten, Jeff Pierce, Joe Shochet, David Staack, Brian Stearns, Richard Stoakley, Chris Sturgill, John Viega, Jeff White, George Williams, Proceedings of the SIGCHI conference on Human factors in computing systems, pp. 486-493. ACM, 2000.

[DIVER: a Distributed Virtual Environment Research Platform](#)

Rich Gossweiler, Chris Long, Shuichi Koga, and Randy Pausch. In Virtual Reality, 1993. Proceedings., IEEE 1993 Symposium on Research Frontiers in Virtual Reality, pp. 10-15. IEEE, 1993.

[NASA's MERBoard](#)

Jay Trimble, Roxana Wales, Rich Gossweiler. In Public and Situated Displays, pp. 18-44. Springer Netherlands, 2003.

[NASA position paper for the cscw 2002 workshop on public, community and situated displays: MERBoard](#)

Jay Trimble, Roxana Wales, Rich Gossweiler, 2002 Conference on Computer Supported Cooperative Work, 2002.

[ContentCascade incremental content exchange between public displays and personal devices](#)

Himanshu Raj, Rich Gossweiler, and Dejan Milojicic, Mobile and Ubiquitous Systems: Networking and Services, pp. 374-381, IEEE, 2004.

[Content Exchange Appliances](#)

Dejan Milojicic, John Ankcorn, Rich Gossweiler, Jim Rowson, Larry Rudolph, Sonia Garg, Franklin Reynolds, Rajnish Kumar, and Himanshu Raj, HPL-2003-139, 2003.

[PLOG: Easily Create Digital Picture Stories Through Cell Phone Cameras.](#)

R Gossweiler, J Tyler - IWUC, 2004 - hpl.hp.com

[SketchUp: An Easy-to-Use 3D Design Tool that Integrates with Google Earth](#)

Rich Gossweiler, Mark Limber. In Adjunct Proceedings of the 19th annual ACM Symposium on User Interface Software and Technology (UIST06), 19, p. 3, 2006.

[Alice and Diver: A software architecture for building environments.](#)

Randy Pausch, Matthew Conway, Robert DeLine, Rich Gossweiler, and Steve Miale, INTERACT'93 and CHI'93 Conference Companion on Human Factors in Computing Systems, pp. 13-14. ACM, 1993.

[Argos: Building a Web-Centric Application Platform on Top of Android](#)

Rich Gossweiler, Colin McDonough, James Lin, and Roy Want

[A System for Application Independent Time Critical Rendering](#)

Rich Gossweiler, ACM, 1994.

[Amortizing 3D Graphics Optimization Across Multiple Frames](#)

Jim Durbin, Rich Gossweiler, and Randy Pausch. "Amortizing 3D graphics optimization across multiple frames." In Proceedings of the 8th annual ACM symposium on User interface and software technology, pp. 13-19. ACM, 1995.

[Principles of Visual Perception and Its Applications in Computer Graphics](#)

Victoria Interrante, Penny Rheingans, James Ferwerda, Rich Gossweiler, and Toms Filsinger, SIGGRAPH 97 Course Notes 33.

[UserVerse: Application-Independent Object Selection Using Inaccurate Multi-Modal Input](#)

Randy Pausch, Rich Gossweiler, Multimedia interface design, pp. 139-145, ACM, 1992.
also as a chapter in *Multimedia interface design*, Meera Blattner, Roger Dannenberg, Addison-Wesley, April 1992.

[PHIZ: Discovering TVs Long Tail through a Channel-Centric Model](#)

James Rowson, Rich Gossweiler, Kurt MacDonald, 3rd European Conference on Interactive Television, EuroITV 2005, Aalborg University, Denmark, 2005.

[Google TV search: dual-wielding search and discovery in a large-scale product](#)

Manish Patel, Rich Gossweiler, Mehran Sahami, John Blackburn, David Brown, and Andrea Knight, proceedings of the 1st international conference on Designing interactive user experiences for TV and video, pp. 95-104. ACM, 2008.

[Enabling informal communication of digital stories](#)

Debaty, Philippe, Patrick Goddi, Rich Gossweiler, Rakhi Rajani, Alex Vorbau, and Josh Tyler, HPL-2004-180, 2004. 2004 - hpl.hp.com

[QuickSuggest: character prediction on web appliances](#)

Ulas Gargi, Rich Gossweiler, proceedings of the 19th international conference on World wide web, pp. 1249-1252. ACM, 2010.

Stanford Talk on Argos Platform for Android (2/6/2013)

[USC Interactive Media and Games talk on \(1/31/2007\)](#)

USC Cinematic Arts talk on Collaborative Systems(1/26/2011)

USC Design Intelligence Symposium (3/3/2011) - Intelligent Physical Architectures

Patents

WO2013082311A1 - Contactless Payment System Providing Supplemental Content...

WO2012154832A3 - Object Tracking

CA2685577A1 - Hiding portions of display content

WO2008121967A3 - Interactive media display across devices

WO2008134749A3 and CA2685419A1 - Program guide user interface

WO2008134742A1 and CA2685566A1 - Customizable media channels

CA2719138A1 - Lightweight three-dimensional display

US20130163390A1 - Smart-watch including flip up display

WO2011056610A3 - Predictive text entry for input devices

US8368723B1 - User input combination of touch and user position

US20130033366A1 - Method and system for providing haptic feedback of variable intensity

US20140007164A1 and US8640167B2 - System for displaying and searching multimedia events...

US8542251B1 - Access using image-based manipulation

CA2719141A1 - File access via conduit application

CA2428678C - A system for the simultaneous display and manipulation of hierarchical and non-hierarchical data

US8572649B1 - Electronic program guide presentation

US8640167B2 - System and method for displaying multimedia events scheduling information

US8522281B1 - Head end generalization

US8542251B1 - Access using image-based manipulation

US8533761B1 - Aggregating media information

EP1816553B1 - Systems...for the display and operation of virtual three-dimensional books

US8624836B1 - Gesture-based small device input

US8484192B1 - Media search broadening

US8612767B2 - Obscuring an accelerometer signal

US8504008B1 - Virtual control panels using short-range communication

US8488912B2 - Systems and methods for socially-based correction of tilted images

US8392986B1 - Evaluating text-based access strings

US8606933B1 - Selective pairing of devices using short-range wireless communication

US8467270B2 - Smart-watch with user interface features

US20130016129A1 - Region-Specific User Input

US6573916 - Navigation of rendered virtual environments using physical tags

WO2005076482A1 and US20060031517A1 - Information transfer system and method

US8291454B2 - System and method for downloading multimedia events scheduling information for display

US20130113760 - Techniques for providing localized tactile feedback via an electro-acoustic touch display...

US20130222743A1 - Privacy display

US8255953B1 - Arrangement of content within a custom television channel

CA2816842A1 and EP2635951A1 - Social aspects of media guides

WO2008134736A1 - Momentary electronic program guide

US20050225647A1 - Method and system of creating photo vignettes
WO2008134373A1 - Virtual channels
US7089288B2 - Interactive context preserved navigation of graphical data sets using multiple physical tags
US6400372B1 - Methods for selecting levels of detail for objects having multi-resolution models...
US20080270395A1 - RelevanceBar for Content Listings
US20080244681A1 - Conversion of Portable Program Modules for Constrained Displays
US7379078B1 - Controlling text symbol display size on a display using a remote control device
US6856313B2 - System for the simultaneous display and manipulation of hierarchical and non-hierarchical data
US6422474B1 - N-space indexing of digital data representations using physical tags
US6441817B1 - Methods for performing z-buffer granularity depth calibration in graphics displays of 3D scenes
US7069518B2 - Indexing methods, systems...for virtual three-dimensional books
US7248269B2 - Magnification methods, systems...for virtual three-dimensional books
US7917508B1 - Image repository for human interaction proofs
US6952806B1 - Medium containing information gathered from material...for displaying the information
US20050151849A1 - Method and system for image driven clock synchronization
US8725113 - User proximity control of devices
US8531551B2 - System and method for image sharing
US20130287269A1 - Creating social network groups
US8258390B1 - System and method for dynamic, feature-based playlist generation
WO2013074140A1 - Methods and systems to determine a context of a device
US8649563 - Object tracking
US8693807 - Systems and methods for providing image feedback
US8700643 - Managing electronic media collections
US8713002 - Identifying media content in queries
US8717401 - Secure, location-based virtual collaboration
US8754926 - Managing nodes of a synchronous communication conference
US8024765 - Method and system for communicating media program information

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