Ren Ng

1131 Parkinson Ave
Palo Alto, CA 94301

650-804-0300
renng@cs.stanford.edu
graphics.stanford.edu/~renng/app

Degrees

Ph.D. in Computer Science, Stanford University, 2006
Dissertation: Digital Light Field Photography
Advisor: Pat Hanrahan
[ACM Doctoral Dissertation Award; and Arthur Samuel Award, Stanford University]

M.S. in Computer Science, Stanford University, 2006

B.S. with Distinction in Mathematical & Computational Science with Honors, Stanford University, 2001

Work Experience

Lytro, Inc., Mountain View, CA.
Founder and CEO, 2006 – July 2012.
Executive Chairman of the Board, since July 2012.

- Commercialized Ph.D. research – shipped the first consumer light field camera in March 2012.
- Started and led company as CEO through 70 employees and shipping product.
- Raised $90+ million in venture capital (Greylock, NEA, Andreessen Horowitz).
- Managed a complex consumer electronics business, including hardware and software engineering, consumer marketing, global supply chain, manufacturing and customer operations.
- Company and product were featured in hundreds of popular media articles, and won a number of awards, including Popular Science Innovation of the Year, Time Magazine 50 Best Inventions, MIT Tech Review 10 Emerging Technologies, Edison Award, CES Innovation Award, Core77 Design Award, Popular Mechanics Breakthrough Award, and the National Design Award.

Stanford University, Graduate research assistant and teaching assistant, 2002-2006.

Microsoft Research, Redmond, WA. Research intern, Summer 2003.

Microsoft Corporation, Redmond, WA. Program manager intern, Summer 2000.

Stanford University Psychiatry and Behavioral Sciences. Programmer, 1997-2000.

University of Melbourne, Victoria, Australia. Programmer, 1996-1998.

Teaching Experience

Stanford University. Teaching assistant for Pat Hanrahan in Image Synthesis Techniques (CS348b), spring quarters 2004, 2005, 2006; for Robyn Yilmaz in Introduction to Automata and Complexity Theory (CS154), summer 2005.

Honors

HIPA (Hamdan International Photography Award) Photographic Research Award, 2014.

PMDA (PhotoImaging Manufacturers & Distributors Assoc.) Technical Achievement Award, 2014.

Rochester Institute of Technology, Imaging Hall of Fame, 2013.

Royal Photographic Society, Selwyn Medal (imaging science research), 2013.

MIT Technology Review, Entrepreneur of the Year, 2012 (Inaugural).

MIT Technology Review, TR 35, 2012.

Fast Company 100 Most Creative People in Business, 2012.

40 Under 40, Silicon Valley Business Journal, 2011.

ACM Doctoral Dissertation Award, 2006.

Arthur Samuel Award for Best Thesis in Computer Science Department, Stanford University, 2006.

Microsoft Research Graduate Fellowship, 2004-2006.

ACM SIGGRAPH / Eurographics Graphics Hardware, Best Paper Award, 2002.

Publications

4D Compression and Relighting with High-Resolution Light Transport Matrices, by Ewen Cheslack-Postava, Nolan Goodnight, Ren Ng, Ravi Ramamoorthi, and Greg Humphreys. Proceedings of ACM Symposium on Interactive 3D graphics: 81-88, 2007.

Digital Correction of Lens Aberrations in Light Field Photography, by Ren Ng and Pat Hanrahan. SPIE Vol 6342 (Proceedings of the International Optical Design Conference), 2006.

Efficient Wavelet Rotation for Environment Map Rendering, by Rui Wang, Ren Ng, David Luebke, and Greg Humphreys. Proceedings of Eurographics Symposium on Rendering: 173-182, 2006.

Light Field Microscopy, by Marc Levoy, Ren Ng, Andrew Adams, Matthew Footer and Mark Horowitz. ACM Transactions on Graphics (Proceedings of SIGGRAPH) 25(3):924-934, 2006.

Fourier Slice Photography, by Ren Ng. ACM Transactions on Graphics (Proceedings of SIGGRAPH 2005) 24(3): 735-744, 2005.

Light Field Photography with a Hand-Held Plenoptic Camera, by Ren Ng, Marc Levoy, Mathieu Brédif, Gene Duval, Mark Horowitz, Pat Hanrahan. Stanford University Computer Science Tech Report CSTR 2005-02.

Triple Product Wavelet Integrals for All-Frequency Relighting, by Ren Ng, Ravi Ramamoorthi and Pat Hanrahan. ACM Transactions on Graphics (Proceedings of SIGGRAPH) 23(3): 475-485, 2004.

All-Frequency Shadows Using Non-linear Wavelet Lighting Approximation, by Ren Ng, Ravi Ramamoorthi and Pat Hanrahan. ACM Transactions on Graphics (Proceedings of SIGGRAPH) 22(3): 376-381, 2003.

Efficient Partitioning of Fragment Shaders for Multipass Rendering on Programmable Graphics Hardware, by Eric Chan, Ren Ng, Pradeep Sen, Kekoa Proudfoot, and Pat Hanrahan. Proceedings of ACM SIGGRAPH / EUROGRAPHICS Graphics Hardware: 69-78, 2002. [Best Paper Award.]

Chromium: A Stream Processing Framework for Interactive Graphics on Clusters, by Greg Humphreys, Mike Houston, Ren Ng, Randall Frank, Sean Ahern, Peter Kirchner and James T. Klosowski. ACM Transactions on Graphics (Proceedings of SIGGRAPH) 21(3): 693-702, 2002.

Patents

System of and Method for Video Refocusing, Colvin Pitts, Yi-Ren Ng, United States Patent 8,570,426, October 29, 2013.

Interactive Refocusing of Electronic Images, Yi-Ren Ng, United States Patent, 8,559,705, Oct 15, 2013.

Imaging Arrangements and Methods Therefor, Yi-Ren Ng, Marc Levoy, Pat Hanrahan, Mark Horowitz, United States Patent, 8,547,475, October 1, 2013.

Generating and Outputting Video Data from Refocusable Light Field Video Data, Colvin Pitts, Yi-Ren Ng, Unites States Patent, 8,446,516, May 21, 2013.

Imaging Arrangements and Methods Therefor, Yi-Ren Ng, Marc Levoy, Pat Hanrahan, Mark Horowitz, Unites States Patent, 8,395,696, March 12, 2013.

Imaging Arrangements and Methods Therefor, Yi-Ren Ng, Marc Levoy, Pat Hanrahan, Mark Horowitz, Unites States Patent, 8,358,367, January 22, 2013.

Correction of Optical Aberrations, Yi-Ren Ng, Marc Levoy, Pat Hanrahan, Mark Horowitz, United States Patent 8,358,354, January 22, 2013.

Light Field Data Acquisition Devices, and Methods of Using and Manufacturing Same, Timothy J. Knight, Yi-Ren Ng, Colvin Pitts, United States Patent 8,289,440, October 16, 2012.

System and Method for Acquiring, Editing, Generating and Outputting Video Data, Colvin Pitts, Yi-Ren Ng, United States Patent 8,279,325, October 2, 2012.

Variable Imaging Arrangements and Methods Therefor, Yi-Ren Ng, Marc Levoy, Pat Hanrahan, Mark Horowitz, United States Patent, 8,248,515, August 21, 2012.

Correction of Optical Aberrations, Yi-Ren Ng, Marc Levoy, Pat Hanrahan, Mark Horowitz, United States Patent 8,243,157, Aug 14, 2012.

Imaging Arrangements and Methods Therefor, Yi-Ren Ng, Marc Levoy, Pat Hanrahan, Mark Horowitz, United States Patent 7,936,392, May 3, 2011.

Microscopy Arrangements and Approaches, Marc Levoy, Yi-Ren Ng, Mark Horowitz, United States Patent 7,723,662, May 25, 2010.

Systems and Methods for Robust Sampling for Real-Time Relighting of Objects in Natural Lighting Environments, Peter-Pike Sloan, John Snyder, Yi-Ren Ng, United States Patent 7,382,369, Jun 3, 2008.

Systems and Methods for All-Frequency Relighting Using Spherical Harmonics and Point Light Distributions, Peter-Pike Sloan, John Snyder, Yi-Ren Ng, United States Patent 7,262,771, Apr 28, 2007.

Patent Applications

Depth-Assigned Content for Depth-Enhanced Pictures, Yi-Ren Ng, Eric Cheng, Chia-Kai Liang, Kayvon Fatahalian, Dave Evans, Kira Wampler, Kristen Berman, Kurt Akeley, United States Patent Application, 20130342526, Dec 26, 2013.

Compensating for Variation in Microlens Position During Light-Field Image Processing, Colvin Pitts, Timothy Knight, Chia-Kai Liang, United States Patent Application, 20130222606, Aug 29, 2013.

Compensating for Sensor Saturation and Microlens Modulation During Light-Field Image Processing, Kurt Akeley, Brian Cabral, Colvin Pitts, Chia-Kai Liang, Bennett Wilburn, Timothy Knight, Yi-Ren Ng, United States Patent Application, 20130222652, Aug 29, 2013.

Patent Applications (Continued)

Light-Field Processing and Analysis, Camera Control, and User Interfaces and Interaction on Light-Field Capture Devices, Timothy Knight, Colvin Pitts, Yi-Ren Ng, Alex Fishman, Yuriy Romanenko, Jeff Kalt, Kurt Akeley, Unites States Patent Application, 20130222633, Aug 29, 2013.

Light Field Camera Image, File and Configuration Data, and Methods of Using, Storing and Communicating Same, Timothy Knight, Yi-Ren Ng, Colvin Pitts, Alex Fishman, United States Patent Application, 20130113981, May 9, 2013.

Optical Assembly Including Plenoptic Microlens Array, Colvin Pitts, Yi-Ren Ng, Steven Oliver, United States Patent Application, 20130033636, February 7, 2013.

Light Field Data Acquisition, Yi-Ren Ng, Colvin Pitts, Timothy Knight, United States Patent Application, 20120327222, Dec 27, 2012.

Selective Transmission of Image Data Based on Device Attributes, Kurt Akeley, Yi-Ren Ng, Kenneth Waters, Kayvon Fatahalian, Timothy Knight, Yuriy Romanenko, Chia-Kai Liang, Colvin Pitts, Tom Hanley, Mugur Marculescu, Unites States Patent Application, 20120249550, Oct 4, 2012.

Storage and Transmission of Pictures Including Multiple Frames, Kurt Akeley, Yi-Ren Ng, Kenneth Waters, Kayvon Fatahalian, Timothy Knight, Yuriy Romanenko, Unites States Patent Application, 20110234841, Sept 29, 2011.

Light Field Camera Image, File and Configuration Data, and Methods of Using, Storing and Communicating Same, Timothy Knight, Yi-Ren Ng, Colvin Pitts, Alex Fishman, United States Patent Application, 20100265385, Oct 21, 2010.

Light Field Data Acquisition Devices, and Methods of Using and Manufacturing Same, Timothy Knight, Yi-Ren Ng, Colvin Pitts, United States Patent Application, 20100141802, Jun 10, 2010.

Invited Talks

Light Fields and Entrepreneurship.
Stanford University CS45N Computers and Photography, Oct 2013.

Light Fields and the Future of Photography.
Stanford Photonics Research Center, Annual Symposium, Sept 2013.

Adventures in Startup Land.
Stanford Graduate School of Business Ignite Program, March 2013.

Light Fields and the Future of Imaging.
TTI Vanguard [next] Conference, Seattle, Dec 2012.

Light Fields and the Future of Photography.
Carnegie Mellon University Robotics Institute Seminar, Pittsburgh, Oct 2012.

Entrepreneur of the Year Lecture.
MIT Technology Review EmTech Conference, Boston, Oct 2012.

Lytro, Light Fields, and the Future of Photography.
University of California at Berkeley, Apr 2012.

Invited Talks (Continued)

Light Fields and the Future of Photography.
TedX San Jose Conference, Apr 2012.

Light Fields and the Future of Photography.
EG Conference, Monterey, Apr 2012.

Lessons from Disruptors: Game Changing Start-Ups [Panel].
SXSW Conference, Austin, Mar 2012.

Lytro, Light Fields and the Future of Photography.
Google Tech Talk, Mountain View, Mar 2012.

The Lytro Consumer Light Field Camera.
Stanford Center for Image Systems Engineering, Feb 2012.

Light Fields and the Future of Photography.
Pixar Tech Talk, Emeryville, Jan 2012.

Lytro Brainstorm Tech Demo.
Fortune Brainstorm Tech Conference, Aspen, Jul 2012.

Refocusing Photographs After the Fact.
Camera Owners of the Bay Area, Palo Alto, Dec 2006.

Digital Light Field Photography.
Zygo Corporation, Middlefield, CT, Nov 2006.

Digital Light Field Photography.
Optical Society of America Rochester Chapter, Rochester, Nov 2006.

Digital Correction of Lens Aberrations in Light Field Photography.
Ricoh Corporation, Palo Alto, Jul 2006.

Digital Correction of Lens Aberrations in Light Field Photography.
International Optical Design Conference, Vancouver, Jun 2006.

Digital Light Field Photography.
Silicon Valley SIGGRAPH Chapter, Cupertino, Mar 2006.

Digital Light Field Photography.
Pixar Animation Studios, Emeryville, Feb 2006.

Fourier Slice Photography.
ACM SIGGRAPH Conference, Los Angeles, Aug 2005.

Light Field Photography: Optics and Computation for a 4D Imaging Paradigm.
Hewlett-Packard Labs, Palo Alto, Jul 2005.

Light Field Photography: Optics and Computation for a 4D Imaging Paradigm.
University of Washington, Seattle, Apr 2005.

Light Field Photography: Optics and Computation for a 4D Imaging Paradigm.
University of California at Berkeley, Feb 2005.

Invited Talks (Continued)

Light Field Photography with a Hand-Held Plenoptic Camera.
Microsoft Research, Redmond, Feb 2005.

Triple Product Wavelet Integrals for All-Frequency Relighting.
ACM SIGGRAPH Conference, Los Angeles, Aug 2004.

Exploiting Precomputation for Fast Relighting.
Microsoft Research, Redmond, Dec 2003.

Realistic Materials Under All-Frequency Lighting.
Columbia University, New York, Aug 2003.

All-Frequency Shadows Using Non-linear Wavelet Lighting Approximation.
ACM SIGGRAPH Conference, San Antonio, Jul 2003.

All-Frequency Shadows Using Non-linear Wavelet Lighting Approximation.
Microsoft Research, Redmond, Jul 2003.

All-Frequency Shadows Using Non-linear Wavelet Lighting Approximation.
ACM SIGGRAPH Silicon Valley Chapter, Cupertino, May 2003.

Volume Rendering Using Procedural Shading Languages.
ACM SIGGRAPH Course on Real-Time Shading, Los Angeles, Jul 2001.

References

Pat Hanrahan
Canon USA Professor of Computer Science & Electrical Engineering, Stanford University
hanrahan@cs.stanford.edu

Marc Levoy
VMware Founders Professor of Computer Science & Electrical Engineering, Stanford University
levoy@cs.stanford.edu

Mark Horowitz
Yahoo Founder's Professor of Electrical Engineering & Computer Science, Stanford University
horowitz@stanford.edu

Shree Nayar
T.C. Chang Professor of Computer Science, Columbia University
nayar@cs.columbia.edu

Dwight Nishimura
Addie and Al Macovski Professor of Electrical Engineering, Stanford University
dwight@stanford.edu

Ravi Ramamoorthi
Associate Professor of Computer Science, University of California at Berkeley
ravir@cs.berkeley.edu

Michael Hawley
Director of EG Conference; Board of Directors, Eastman Kodak Company; (Retired) Alexander W. Dreyfoos Jr. Professor, MIT Media Lab
mike@media.mit.edu

Personal

Born in Malaysia. Australian naturalized citizen. Permanent resident in USA.

Married with one daughter.