

AHNA GIRSHICK

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Data Scientist and User Researcher with passion for human behavior, machine learning and data visualization

- Experienced at extracting actionable insights from lab and crowdsourced data, and diverse data sets including photos, human image perception and sensory integration, user behavior, music, healthcare, social networks, and Wikipedia
- Scientific authority on human visual perception / interaction with 2D & 3D displays with 15+ research articles in top journals (*Nature Neuroscience, J Vision, SIGGRAPH*) and over 1000 citations
- Trained in machine learning techniques including regressions, random forests, bootstrapping, model comparison, data preparation, cross-validation, deep learning, convolutional neural nets
- Expert in designing, conducting and analyzing randomized controlled experiments, user interviewing, usability testing
- Experience and strong design aesthetic; user interface and data visualizations were shown at Museum of Modern Art (NY)
- Strategic in aligning data science and product priorities to maximize impact

Education Ph.D. in Vision Science, University of California, Berkeley, CA, 2007, GPA 3.9/4.0
M.S. in Computer Science with minors in Cognitive Psychology and Scientific Computation,
University of Minnesota, Twin Cities, MN, 1996, GPA 4.0/4.0
B.S. in Computer Science, University of Minnesota, Twin Cities, MN, 1993, GPA 3.8/4.0

Tools Python, scipy, numpy, scikit-learn, NLTK, SQL, Javascript, Matlab, HTML, CSS, C++, C, OpenGL,
Mathematica, d3, R, Lisp

Experience **Computational Genomics Scientist, Ancestry DNA, San Francisco, CA. August 2016 - present**
• Applying machine learning and computer vision techniques to Ancestry's vast genealogy and genetic data

Head of Product, ENLITIC, San Francisco, CA. January 2015 - April 2016

Named to MIT Tech Review's 50 Smartest Companies 2015 and 2016

- Manage a groundbreaking AI product that uses the latest advances in machine learning and deep learning to make radiology faster, more accurate, cheaper, and more accessible
- Conduct user and product research to rapidly iterate and improve upon our MVP
- Work with doctors, business stakeholders, and deep learning engineers to develop product strategy / roadmap
- Produced a visualization of deep learning results that was shown on *CNN*

Senior Data Scientist, ENLITIC, San Francisco, CA. August 2014 - January 2015

- Developed medical training datasets of radiology images and reports for deep learning algorithms
- Researched and experimented with convolutional neural networks
- As the company's first employee, helped build the company's strategy and processes across branding, marketing, PR (*WSJ, New York Times, WIRED, MIT Tech Review*), hiring (22 employees), evangelizing, go-to-market planning, market research, client pitches, investor pitches (raised \$15M), and company culture

Data Science Fellow, INSIGHT DATA SCIENCES, Palo Alto, CA. June - July 2014

Senior Product Manager, SNIBBESTUDIO.COM (now Eyegroove), San Francisco, CA. 2012-2013

- Managed team of engineers & designers to create interactive music / visualization apps for major artists including Björk, Philip Glass, Metric, Passion Pit, and Feist
- Built product plans, conceptualized app functionality, designed UI/UX, spearheaded social and real-time app usage analytic integration, and contributed to production code in Objective C and C++
- Managed cross-platform app development for iOS, Mac, Android, Windows, and LEAP Motion

- Received two Webby Awards, exhibited at the Museum of Modern Art, NY, press from *WIRED*, *Rolling Stone*, and won Apple's App Store Best App of the Year Award

Computer Science Postdoctoral Fellow, UNIVERSITY OF CALIFORNIA, Berkeley, CA. 2011-2012

- Researched optimizing human perception of visualizations of large datasets using Mechanical Turk, and machine learning of advertising styles

Neural Science and Psychology Postdoctoral Fellow, NEW YORK UNIVERSITY, New York, NY. 2008-2010

- Awarded a three-year NIH Fellowship, published results in *Nature Neuroscience* that received press in *Science News*, *NPR*, *Nature*
- Developed machine learning models to reverse-engineer the brain's expectations about the structure of visual environment using optimization, bootstrapping and model comparisons
- Performed behavioral experiments to measure human expectations about the world
- Measured actual structure of visual environment in photographs using computer vision
- Simulated an artificial neural network whose behavior matches human perceptual biases

Vision Science Graduate Student Researcher, UNIVERSITY OF CALIFORNIA, Berkeley, CA. 2001-2007

- Awarded a four-year DOE Computational Sciences Fellowship to research the mechanisms of visual perception of images and digital displays
- Published results in *Nature Neuroscience*, *SIGGRAPH* and received press in *NPR* and *New York Times*
- Developed machine learning models of visual perception of virtual reality, 2D and 3D displays, and the sensory integration of multiple sources of information (stereo, perspective, focus, haptics)
- Designed and conducted visual psychophysics experiments in the laboratory using C, C++, OpenGL
- Analyzed results and created data simulations in Matlab to validate hypotheses

Research Assistant, NISSAN CAMBRIDGE BASIC RESEARCH AT M.I.T., Cambridge, MA. 1999-2001

- Programmed pioneering car-mounted computer vision system to predict road geometry for self-driving cars
- Conducted randomized controlled experiments on the use of information in human reach and locomotion

Computer Science Research Assistant, UNIVERSITY OF MINNESOTA, Minneapolis, MN. 1998-1999

- Researched why traditional illustrators depict 3D shapes better than some computer renderings, and designed an algorithm to mimic traditional illustration styles using C++ and OpenGL

Data Visualization Intern, SILICON GRAPHICS (SGI) Eagan, MN. Summer 1998

- Programmed prototypes for scientific visualization and high-performance computing in C++ and OpenGL

Data Visualization Intern, XEROX PARC & INXIGHT SOFTWARE, Palo Alto, CA, 1997

- Software engineering and user researcher towards commercializing groundbreaking information visualization research prototypes (Hyperbolic Browser, Cone Tree, Perspective Wall)

Journal Articles

- Girshick, AR, MS Landy, EP Simoncelli. [Cardinal rules: visual orientation perception reflects knowledge of environmental statistics](#). *Nature Neuroscience*, 14:926-932. (2011)
- Burge, J, AR Girshick, MS Banks. [Visual-haptic adaptation in the absence of feedback is determined by relative reliability](#). *Journal of Neuroscience*, 30(22): 7714-21. (2010)
- Girshick, AR, MS Banks. [Probabilistic combination of disparity and texture slant information: weighted averaging and robust estimation as optimal percepts](#). *Journal of Vision*, 9(9):8. 1-20. (2009)
- Hoffman, DM, AR Girshick, K Akeley, MS Banks. [Vergence-accommodation conflicts hinder visual performance and cause visual fatigue](#). *Journal of Vision*, 8(3):33, 1-30. (2008)
- Girshick, AR. *Probabilistic integration of sensory information for 3D visual surface slant perception*. Ph.D. thesis, Berkeley: University of California. (2007)
- Vishwanath, D, AR Girshick, MS Banks. [Why pictures look right when viewed from the wrong place](#). *Nature Neuroscience*, 8(10), 1401-10. (2005)

- Akeley, K, SJ Watt, AR Girshick, MS Banks. [A stereo display prototype with multiple focal distances](#). (SIGGRAPH) *ACM Transactions on Graphics*, 23 (3), 804-11. (2004)
- Girshick, AR, V Interrante, S Haker, T Lemoine. [Line direction matters: An argument for the use of principal directions in 3D line drawings](#). *ACM Non Photorealistic Animation & Rendering*, 43-52. (2000)
- Girshick, AR, V Interrante. [Real-time principal direction line drawings of arbitrary 3D surfaces](#). *Computer Graphics Visual Proceedings (SIGGRAPH)*, 271. (1999)

Other Writings

- Banks, MS, D Hoffman, R Held, AR Girshick. "Visual perception in stereo cinema." In L. Lipton (Ed.) *Stereocinema*, unpublished.
- Banks, MS, R Held, AR Girshick. [Perception of 3-D layout in stereo displays](#). *Information Display*, 25(1). (2009).
- Banks, MS, K Akeley, DM Hoffman, AR Girshick. [Consequences of incorrect focus cues in stereo displays](#). *Information Display*, 24(7), 10-4. (2008)
- Girshick, AR. The psychology of art and the evolution of the conscious brain by Robert L. Solso (MIT Press). *Pattern Analysis & Applications*, 8(3), 256-7. (2005). Invited book review.
- Watt, SJ, K Akeley, AR Girshick, MS Banks. [Achieving near-correct focus cues in a 3-D display using multiple image planes](#). *Proc. SPIE: Human Vision & Electronic Imaging*, (IS&T/SPIE 5666-53). (2005)
- Banks, MS, HF Rose, D Vishwanath, AR Girshick. [Where should you sit to watch a movie?](#) *Proc. SPIE: Human Vision and Electronic Imaging*, (IS&T/SPIE 5666-34). (2005)
- Boer, ER, AR Girshick, T Yamamura, N Kuge. [Experiencing the Same Road Twice: A Driver-Centered Comparison between Simulation and Reality](#). *Proc. Driving Simulation Conference*, 33-55. (2000)
- Girshick, AR, V Interrante. Real-time principal direction line drawings of arbitrary 3D surfaces. *University of Minnesota Computer Science Technical Report (99-011)*. (1999)

Commercial Creative Projects

- [METRIC Synthetica](#), an iOS app album presenting an interactive musical remix journey through Metric's Synthetica album, featuring the artwork of [Superstudio](#) (2013). The app is a 2014 Webby Award Honoree and is featured at the 2014 Sonar Festival.
- [REWORK :Philip Glass Remixed](#), an iOS app album featuring a 'Glass Machine' and 11 interactive visualization of remixes of Philip Glass music by Beck, Amon Tobin, Dan Deacon, and others. Recipient of 2013 [D&AD InBook Award for Digital Design](#), featured in the [2013 Sonar Festival](#), a 2014 Webby Award Honoree, and exhibited at the [Museum of Modern Art](#), NY in conjunction with the 2013 exhibit [Soundings: A Contemporary Score](#) (2012) and the [Barbican Gallery](#), London (2014).
- Video production for [Jim Campbell's The Journey](#), a 60-foot long, 38,000 LED ceiling installation for the San Diego International Airport (2013).
- [Oscilloscoop](#) audio-visual interactive app and video for Mac and LEAP Motion, recipient of the 2011 ZKM App Art Award for Technical Innovation. (2011-2013).
- [Gravilux](#) interactive music-visualizer app and video for iOS, Android, Windows, and LEAP Motion (2011-2013).
- Passion Pit's iOS app [Gossamer](#) and concert [video for Webby Awards 2012](#).
- [MotionPhone](#) app and for iPhone and iPad (2011), which was featured in a live performance at San Francisco's Davies Symphony Hall with the [Calder Quartet](#), as part of [Pop-Up Magazine](#) Issue 5.
- Animation for concert [videos](#) for [Björk's](#) Webby-award-winning [Biophilia Tour](#). *Where is the Line?* and *Declare Independence* premiering at Bestival 2011.

Select Press

- [Deep learning in diagnostic healthcare: The future?](#) *IDG Connect*. March 4, 2015.
- [COMPUTERS THAT THINK: Deep learning is transforming artificial intelligence into science fiction fact](#). *Compass 3D Experience Magazine*. 2015.
- [Why deep learning is at least inspired by biology, if not the brain](#). *GigaOM*, Feb. 14, 2015.
- [No, you don't need a ton of data to do deep learning](#). *GigaOM*, Feb. 12, 2015.
- [It's Almost Impossible to Make Bad Music with this App](#). *FastCo Design*, Dec. 9, 2013.
- [Rework \(Philip Glass Remixed\) app by Snibbe Studio](#). *WIRED*, Dec. 13, 2012.
- [A Magical App For Exploring A Philip Glass Remix By Beck](#). *FastCo Design*, Dec. 13, 2012.

[Exploring Snibbe's New App Album For Philip Glass' REWORK , Featuring Beck, Amon Tobin, Nosaj Thing, And More.](#) *The Creator's Project*, Dec 13, 2012.

[REWORK \(Philip Glass Remixed\) by Snibbe Studio.](#) *Creative Applications Network*, Dec 13, 2012.

[Metric Release 'Synthetica' Companion Album and App.](#) *Rolling Stone*, Nov. 12, 2013.

[Step Into an Optical Illusion.](#) *Science Friday*. Oct 12, 2012.

[Passion Pit: Gossamer – New interactive music app by Scott Snibbe Studio.](#) *Creative Applications Network*, July 19, 2012.

[The Probabilistic Mind.](#) *Science News* feature. 180:18. Oct. 18, 2011.

[Prior & prejudice.](#) *Nature Neuroscience* “News & Views”, 14:943–945. July 26, 2011.

[Nintendo 3DS and young eyes: Should parents really be concerned?](#) *Yahoo! Games*, March 23, 2011. [also in *The Daily Mail*, March 28, 2011]

[Nintendo issues warning to kids wanting new 3DS handheld,](#) *St. Petersburg Times*, January 6, 2011. [also in *Minneapolis Star Tribune*, January 17, 2011]

[Nintendo Warns Parents Of Eye Risks In 3-D Game,](#) *National Public Radio*, January 3, 2011.

[A Real Science of Mind,](#) *The New York Times*, December 19, 2010.

[3-D Movies Can Induce Headaches and Sickness,](#) *The New York Times*, February 8, 2010.

[Scientists uncover why picture perception works,](#) *Science Daily News*, September 21, 2005.

Select Public Speaking

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| Nov 2015 | Smart Everything, UC Berkeley, CA |
| Oct 2015 | GSV Pioneer Summit, Redwood City, CA |
| August 2015 | Smart Data Forum, San Jose, CA |
| July 2015 | TTI/Vanguard Innundata, Philadelphia, CA |
| Oct 2013 | Guest Lecture, Data Visualization course, University of San Francisco, CA |
| Feb 2013 | ZERO1 Garage , San Jose, CA |
| Nov 2012 | Bay Area Science Festival, Berkeley, CA |
| Jan 2012 | Intel Labs, Experience Insights Lab, Hillsboro, OR |
| Sept 2010 | Center for Neural Science, New York University, New York, CA |
| June 2010 | SRI International, Artificial Intelligence Center, Menlo Park, CA |
| May 2008 | Vision Sciences Society, Naples, FL |
| April 2007 | Max-Planck Institute for Biological Cybernetics, Tübingen, Germany |
| April 2007 | Albert Einstein School of Medicine, Department of Neuroscience, New York, NY |
| April 2007 | UC San Francisco, Keck Center for Integrative Neuroscience, San Francisco, CA |
| March 2007 | Pictures in Art, Science & Engineering, Berkeley, CA |
| March 2007 | University of Rochester, Center for Visual Science, Rochester, NY |
| July 2006 | New York University, Department of Psychology, New York, NY |
| June 2006 | Université Paris 5, Laboratoire Psychologie de la Perception, Paris, France |
| May 2006 | Smith-Kettlewell Eye Research Institute, San Francisco, CA |
| May 2006 | Vision Sciences Society, Sarasota, FL |
| Sept 2005 | Max-Planck Institute for Biological Cybernetics, Tübingen, Germany |
| August 2005 | European Conference on Visual Perception, La Coruña, Spain |
| June 2005 | Computational Sciences Graduate Fellowship Conference, Washington, DC |
| March 2005 | UC Berkeley Vision Science Retreat, Walker Ranch, CA |
| August 2004 | European Conference on Visual Perception, Budapest, Hungary |
| July 2004 | Bay Area Vision Research Day, Berkeley, CA |
| May 2004 | Vision Sciences Society, Sarasota, FL |
| June 2000 | Non-Photorealistic Rendering and Animation Conference, Annecy, France |
| August 1999 | SIGGRAPH (Computer Graphics Conference), Los Angeles, CA |

Honors

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| 2014 | Insight Data Sciences Fellowship recipient |
| 2009-2012 | Ruth L. Kirschstein National Research Service Award (NIH/NEI, 3-year fellowship) |
| 2010 | Gatsby Charitable Foundation CoSyNe Fellowship |
| 2010 | “Science Communication”, participant, Carter School of Journalism, NYU |
| 2008 | “ Computational Neuroscience: Vision ” 1-month residency, Cold Spring Harbor Lab , NY |
| 2004 | Vision Sciences Society , Student Talk Award |
| 2001-2005 | Computational Sciences Graduate Fellowship (DOE, 4-year fellowship) |
| 1999 | University of Minnesota Computer Science Research Contribution Award |
| 1999 | Agnes Hansen Graduate Women in Science Award from Sigma Delta Epsilon Xi |
| 1996 | University of Minnesota Undergraduate Research Grant |
| 1995-1996 | Lando Scholarship |
| 1993 | The Geometry Center Summer Institute, participant, University of Minnesota |