# Emma Pierson

## EDUCATION

PhD, Computer Science, Stanford University	Starting Fall 2015
MS by Research, Statistics, Oxford University	Expected Summer 2015
$M\!S\!$ , Computer Science, Stanford University Concentrations in Artificial Intelligence and Biocomputation, GPA: $4.03/4.00$	Winter 2013 - Spring 2013
BS, Physics (with distinction), Stanford University Concentration in Theoretical Physics, GPA: 3.97/4.00	Fall 2009 - Spring 2013

Graduate level background in machine learning and artificial intelligence. Biocomputation, computer systems, algorithms, scientific simulations. Python/Matlab (most comfortable), C/C++, Java, Mathematica, R, JavaScript, HTML, D3, PHP.

Websites: http://cs.stanford.edu/people/emmap1/, http://obsessionwithregression.blogspot.com/

### HONORS

Hertz Fellow	2014
NDSEG Fellow	2014
NSF Graduate Research Fellow (declined)	2014
Gates-Cambridge Scholarship Finalist (withdrew from consideration)	2013
Rhodes Scholar	2013
Marshall Scholar (declined)	2013
Deans' Award, Stanford (awarded to 5-10 undergraduates for "outstanding academic contributions")	2013
2nd place, US National Debate Championships	2013
3rd place, Kaggle Job Recommendation Engine Competition (\$2,000)	2012
Levinthal Tutorial Recipient, Non-fiction Writing, Stanford	2011
National Merit Scholar	2009
Presidential Scholar Candidate	2009
Semifinalist, United States Physics Olympiad	2008
Semifinalist, United States Biology Olympiad	2008
5-time American Invitational Mathematics Exam Qualifier 2008	5-2009

### EXPERIENCE

Freelance Writer, FiveThirtyEight

• Conducted statistical analysis of women in science, online dating, and Shakespeare for Nate Silver's blog; research featured in *Time*, the BBC, *The Huffington Post*, and *The Washington Post*, among others.

Researcher, 23andMe

- Discovered social and psychological factors that predict whether people will want to obtain genetic information.
- Explored machine learning techniques for combining many SNPs to increase accuracy of phenotype prediction from genotype.

Winter 2013 – Present

Fall 2013 – Present

### Data Analyst, Coursera

- Performed statistical analyses to aid Coursera's mission of providing free online education: modeled the role of education in democratic development, ways of increasing gender equity, and ways of improving peer grading, among others.
- Presented analyses to broader audiences: published in *The Atlantic* and *The Wall Street Journal*, was interviewed for Japanese television, coauthored paper to be submitted to a conference on education, wrote first posts for Coursera analytics blog.
- Built tools for data export to facilitate research in educational institutions around the world.

### Researcher, Koller Biocomputation Lab

- Created an algorithm to learn genetic networks informed by tissue hierarchies. Methods were more accurate than previous methods and applicable to any hierarchical dataset, including those in cancer.
- Performed statistical network analysis and discovered principles of tissue specificity. Accepted by the American Society of Human Genomics; preparing journal paper for submission to Genome Biology ("Unity and Diversity: A Network Analysis of Tissue-Specificity")

### Researcher, Goodman Cognitive Psychology Lab

- Performed psychological surveys and built a mathematical model of how people value information
- Paper submitted to *PLoS One* ("Uncertainty and denial: a resource-rational model of the value of information") (under revision)
- Essay published in New York Times Science section and Well Blog ("Knowing You Carry a Cancer Gene"); awarded "Best Blog Post of 2012" by the organization Cancer101

### Used collaborative filtering to predict job applications

• Placed 3rd out of 83 international teams in the Kaggle Job Recommendation Engine Competition, winning \$2,000.

Researcher, Burchat Cosmology Lab, Stanford

• Developed two clustering algorithms for identifying red-sequence galaxies that improved upon labeling by a human expert; presented research to department.

Researcher, Ganguli Neuroscience Lab, Stanford

• Used clustering algorithms to model synchrony in Watts-Strogatz neural networks.

#### Levinthal Tutorial, Stanford

• One of ten Stanford students awarded a tutorial in non-fiction writing; conducted an independent research project into the psychological effects of the CAH genetic mutation, which I carry; flew to Harvard to interview the surgeon who treated me as a baby, wrote a 50-page essay, and was invited to speak to the entering class at Harvard medical school. Expanding essay into a collection of essays.

#### LEADERSHIP

#### Live-in Counselor, Bridge Peer Counseling Center Summer 2011 – Summer 2013 • One of four students selected to lead the Bridge, Stanford's Volunteer Student Organization of the Year in 2012, as a live-in counselor; provided psychological counseling to Stanford students between 12 AM and 9 AM, advised and supported Bridge staff, made leadership decisions in collaboration with campus psychologists

Winter 2012 - Summer 2013

Summer 2012–Summer 2013

Winter 2011

Spring 2011

Fall 2012

Summer 2011–Spring 2012

• Performed a statistical analysis of calls; reported for the first time on the periods when suicide calls were most likely to occur, on the counselors who were most effective, and on the factors explaining their success. Research presented to campus psychological health authorities and incorporated into Stanford's core Psychology curriculum. Created computer program to allow non-statisticians to automatically perform future analyses.

#### President, Stanford Debate Society

• Managed a \$300,000 budget, recruited two world-class coaches, and presided over the most competitively successful Stanford team in 30 years; top-ranked active debater at Stanford (2012); awards at numerous national and international competitions, including the World Championships, the North American Championships, the US Championships, Harvard, and Yale (2009-2013)

#### OTHER INTERESTS

Independent statistical research: Performed analyses of sexism in sports and debate (latter to appear in the peer-reviewed journal *Monash Debating Review*), last statements of death row inmates, and societal responses to sexual assault trials, among others; for all projects, see http://cs.stanford.edu/people/ emmap1/math.html.

**Teaching:** Math/Physics/CS resident tutor for Stanford University; founded and led an SAT tutoring business as an academic tutor for Ivy Insiders; taught classes on cancer, math, and philosophy, and physics for Stanford SPLASH

**Long-distance backpacking**: weeklong expeditions in the Italian Alps, the Swiss Alps, the Oregon Cascades, the California High Sierras, and the Idaho Sawtooths

2012