Eric Price

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Work Experience

8/2020–present **The University of Texas at Austin**, *Austin, TX*, Associate Professor of Computer Science

8/2014–8/2020 **The University of Texas at Austin**, *Austin, TX*, Assistant Professor of Computer Science

7/2018–8/2018 **Microsoft Research**, *Redmond, WA*, Visiting Scientist

5/2016–7/2016 **OpenAI**, *San Francisco, CA*, Visiting Scientist

6/2015–7/2015 **Google**, *Mountain View, CA*, Visiting Scientist

1/2014–8/2014 **IBM Almaden Research Center**, *San Jose, CA*, Postdoctoral researcher

9/2013–12/2013 **Simons Institute for the Theory of Computing**, *Berkeley, CA*, Postdoctoral research fellow

6/2012–8/2012 **Microsoft Research**, *Cambridge, MA*, Research intern
Research on streaming algorithms and coding theory.

6/2011–8/2011 **IBM Research**, *Almaden, CA*, Research intern
Research with David P. Woodruff. Simplified lower bounds for compressive sensing.

6/2010–8/2010 **Google**, *New York, NY*, Research intern
Developed theoretical justification for a heuristic used in large scale machine learning.

Education

9/2009–9/2013 **PhD in Computer Science**, *Massachusetts Institute of Technology*
Research Advisor: Prof. Piotr Indyk, MIT CSAIL.
Thesis: *Sparse Recovery and Fourier Sampling.*

9/2010 **Master of Engineering in Electrical Engineering and Computer Science**, *Massachusetts Institute of Technology*
Research Advisor: Prof. Piotr Indyk, MIT CSAIL.
Thesis: *Algorithms and Lower Bounds for Sparse Recovery*

9/2005–6/2009 **Bachelor of Science in Computer Science and Engineering**
Bachelor of Science in Mathematics, *Massachusetts Institute of Technology*
Departmental GPAs: 5.0/5.0 (each); overall GPA: 4.9/5.0.

Awards

NSF CAREER Award
2013

George M. Sprowls Award for best computer science doctoral thesis at MIT
One of two recipients, 2013

Simons Graduate Fellowship in Theoretical Computer Science
Fellowship recipient, 2012

NSF Graduate Research Fellowship Program
Fellowship recipient, 2009

ACM International Collegiate Programming Contest
8th place team, 2009 World Finals, Stockholm, Sweden
4th place team, 2007 World Finals, Tokyo, Japan

William Lowell Putnam Mathematics Competition
6-15 place bracket, 2006
7-16 place bracket, 2005

International Olympiad in Informatics
Perfect score, 2005, Nowy Sacz, Poland
Silver medal, 2004, Athens, Greece

International Mathematical Olympiad
Gold medal, 2005, Merida, Mexico

Service

External Program Committees
RANDOM 2015, SODA 2016, STOC 2017, SOSA 2019, ALT 2021, SODA 2021, COLT 2021, ESA 2021, RANDOM 2022, COLT 2022, COLT 2023, SODA 2024, ESA 2024.

UT-wide Committees
Elected in 2017 to the Committee of Counsel on Academic Freedom and Responsibility

Papers

- **Diffusion Posterior Sampling is Computationally Intractable**. Gupta, Shivam, Jalal, Ajil, Parulekar, Aditya, Price, Eric, and Xun, Zhiyang. ICML 2024.
- **Learning a 1-layer conditional generative model in total variation**. Jalal, Ajil, Kang, Justin, Uppal, Ananya, Ramchandran, Kannan, and Price, Eric. NeurIPS 2023.
- **A Competitive Algorithm for Agnostic Active Learning**. Zhou, Yihan and Price, Eric. NeurIPS 2023.
- **Minimax-Optimal Location Estimation**. Gupta, Shivam, Lee, Jasper C.H., Price, Eric, and Valiant, Paul. NeurIPS 2023.
- **Finite-Sample Symmetric Mean Estimation with Fisher Information Rate**. Gupta, Shivam, Lee, Jasper C.H., and Price, Eric. COLT 2023.
- **High-dimensional Location Estimation via Norm Concentration for Subgamma Vectors**. Gupta, Shivam, Lee, Jasper C.H., and Price, Eric. ICML 2023.
- **Fast splitting algorithms for sparsity-constrained and noisy group testing**. Price, Eric, Scarlett, Jon, and Tan, Nelvin. Information and Inference: A Journal of the IMA 2023.
- **An Improved Online Reduction from PAC Learning to Mistake-Bounded Learning**. Gretta, Lucas and Price, Eric. SOSA 2023.
- **Finite-Sample Maximum Likelihood Estimation of Location**. Gupta, Shivam, Lee, Jasper C.H., Price, Eric, and Valiant, Paul. NeurIPS 2022.
- **Linear Bandit Algorithms with Sublinear Time Complexity**. Yang, Shuo, Ren, Tongzheng, Shakkottai, Sanjay, Price, Eric, Dhillon, Inderjit, and Sanghavi, Sujay. ICML 2022.

- **Hardness and Algorithms for Robust and Sparse Optimization**. Price, Eric, Silwal, Sandeep, and Zhou, Samson. ICML 2022.
- **Factorial Lower Bounds for (Almost) Random Order Streams**. Chiplunkar, Ashish, Kallaugher, John, Kapralov, Michael, and Price, Eric. FOCS 2022.
- **Sharp Constants in Uniformity Testing via the Huber Statistic**. Gupta, Shivam and Price, Eric. COLT 2022.
- **Coresets for Data Discretization and Sine Wave Fitting**. Maalouf, Alaa, Tukan, Murad, Price, Eric, Kane, Daniel, and Feldman, Dan. AISTATS 2022.
- **Simulating Random Walks in Random Streams**. Kallaugher, John, Kapralov, Michael, and Price, Eric. SODA 2022.
- **Robust Compressed Sensing MRI with Deep Generative Priors**. Jalal, Ajil, Arvinte, Marius, Daras, Giannis, Price, Eric, Dimakis, Alex, and Tamir, Jonathan I.. NeurIPS 2021.
- **L1 Regression with Lewis Weights Subsampling**. Parulekar, Aditya, Parulekar, Advait, and Price, Eric. RANDOM 2021.
- **A Simple Proof of a New Set Disjointness with Applications to Data Streams**. Kamath, Akshay, Price, Eric, and Woodruff, David P.. CCC 2021.
- **Optimal Non-Adaptive Probabilistic Group Testing in General Sparsity Regimes**. Bay, Wei Heng, Price, Eric, and Scarlett, Jon. Information and Inference 2021.
- **Fairness for Image Generation with Uncertain Sensitive Attributes**. Jalal, Ajil, Karmalkar, Sushrut, Hoffman, Jessica, Dimakis, Alex, and Price, Eric. ICML 2021.
- **Instance-Optimal Compressed Sensing via Posterior Sampling**. Jalal, Ajil, Karmalkar, Sushrut, Dimakis, Alex, and Price, Eric. ICML 2021.
- **Near-Optimal Learning of Tree-Structured Distributions by Chow-Liu**. Bhattacharyya, Arnab, Gayen, Sutanu, Price, Eric, and Vinodchandran, N. V.. STOC 2021.
- **Optimal Testing of Discrete Distributions with High Probability**. Diakonikolas, Ilias, Gouleakis, Themis, Kane, Daniel, Peebles, John, and Price, Eric. STOC 2021.
- **A Fast Binary Splitting Approach to Non-Adaptive Group Testing**. Price, Eric and Scarlett, Jon. RANDOM 2020.
- **Lower Bounds for Compressed Sensing with Generative Models**. Kamath, Akshay, Karmalkar, Sushrut, and Price, Eric. ICML 2020.
- **Separations and equivalences between turnstile streaming and linear sketching**. Kallaugher, John and Price, Eric. STOC 2020.
- **Outlier-Robust High-Dimensional Sparse Estimation via Iterative Filtering**. Diakonikolas, Ilias, Kane, Daniel, Karmalkar, Sushrut, and Price, Eric. NeurIPS 2019.
- **Adversarial examples from computational constraints**. Bubeck, Sébastien, Lee, Yin Tat, Price, Eric, and Razenshteyn, Ilya. ICML 2019.
- **Active Regression via Linear-Sample Sparsification**. Chen, Xue and Price, Eric. COLT 2019.
- **Estimating the frequency of a clustered signal**. Chen, Xue and Price, Eric. ICALP 2019.

- **The Complexity of Counting Cycles in the Adjacency List Streaming Model**. Kallaugher, John, McGregor, Andrew, Price, Eric, and Vorotnikova, Sofya. PODS 2019.
- **Adaptive Sparse Recovery with Limited Adaptivity**. Kamath, Akshay and Price, Eric. SODA 2019.
- **Compressed Sensing with Adversarial Sparse Noise via L1 Regression**. Karmalkar, Sushrut and Price, Eric. SOSA 2019.
- **The Sketching Complexity of Graph and Hypergraph Counting**. Kapralov, Michael, Kallaugher, John, and Price, Eric. FOCS 2018.
- **AmbientGAN: Generative Models From Lossy Measurements**. Bora, Ashish, Dimakis, Alex, and Price, Eric. ICLR 2018.
- **Sample-Optimal Identity Testing with High Probability**. Diakonikolas, Ilias, Gouleakis, Themis, Peebles, John, and Price, Eric. ICALP 2018.
- **Stochastic Multi-armed Bandits in Constant Space**. Liau, David, Price, Eric, Song, Zhao, and Yang, Ger. AISTATS 2018.
- **Robust polynomial regression up to the information theoretic limit**. Kane, Daniel, Karmalkar, Sushrut, and Price, Eric. FOCS 2017.
- **Testing Hereditary Properties of Sequences**. Freitag, Cody, Price, Eric, and Swartworth, William. RANDOM 2017.
- **Compressed Sensing using Generative Models**. Bora, Ashish, Jalal, Ajil, Price, Eric, and Dimakis, Alex. ICML 2017.
- **Fast Regression with an Linf Guarantee**. Price, Eric, Song, Zhao, and Woodruff, David P.. ICALP 2017.
- **Fast Sparse Recovery for Any RIP-1 Matrix**. Price, Eric. ICASSP (invited paper) 2017.
- **A Hybrid Sampling Scheme for Triangle Counting**. Kallaugher, John and Price, Eric. SODA 2017.
- **Equality of Opportunity in Supervised Learning**. Hardt, Moritz, Price, Eric, and Srebro, Nathan. NIPS 2016.
- **Fourier-sparse interpolation without a frequency gap**. Chen, Xue, Kane, Daniel, Price, Eric, and Song, Zhao. FOCS 2016.
- **A Robust Sparse Fourier Transform in the Continuous Setting**. Price, Eric and Song, Zhao. FOCS 2015.
- **Binary Embedding: Fundamental Limits and Fast Algorithm**. Yi, Xinyang, Caramanis, Constantine, and Price, Eric. ICML 2015.
- **Tight Bounds for Learning a Mixture of Two Gaussians**. Hardt, Moritz and Price, Eric. STOC 2015.
- **SCRAM: Scalable Collision-avoiding Role Assignment with Minimal-makespan for Formational Positioning**. MacAlpine, Patrick, Price, Eric, and Stone, Peter. AAAI 2015.
- **The Noisy Power Method: A Meta Algorithm with Applications**. Hardt, Moritz and Price, Eric. NIPS 2014.
- **Trace Reconstruction Revisited**. McGregor, Andrew, Price, Eric, and Vorotnikova, Sofya. ESA 2014.
- **(Nearly) sample-optimal sparse Fourier transform**. Kapralov, Michael, Price, Eric, and Indyk, Piotr. SODA 2014.

- **New constructions of RIP matrices with fast multiplication and fewer rows**. Nelson, Jelani, Price, Eric, and Wootters, Mary. SODA 2014.
- **Improved Concentration Bounds for Count-Sketch**. Minton, Gregory T. and Price, Eric. SODA 2014.
- **Sample-Optimal Average-Case Sparse Fourier Transform in Two Dimensions**. Ghazi, Badih, Hassanieh, Haitham, Indyk, Piotr, Katabi, Dina, Price, Eric, and Shi, Lixin. Allerton (invited paper) 2013.
- **Lower Bounds for Adaptive Sparse Recovery**. Price, Eric and Woodruff, David P.. SODA 2013.
- **Applications of the Shannon-Hartley Theorem to Data Streams and Sparse Recovery**. Price, Eric and Woodruff, David P.. ISIT 2012.
- **Nearly Optimal Sparse Fourier Transform**. Hassanieh, Haitham, Indyk, Piotr, Katabi, Dina, and Price, Eric. STOC 2012.
- **Simple and Practical Algorithm for Sparse Fourier Transform**. Hassanieh, Haitham, Indyk, Piotr, Katabi, Dina, and Price, Eric. SODA 2012.
- **On the Power of Adaptivity in Sparse Recovery**. Indyk, Piotr, Price, Eric, and Woodruff, David P.. FOCS 2011.
- **(1+eps)-approximate sparse recovery**. Price, Eric and Woodruff, David P.. FOCS 2011.
- **K-Median Clustering, Model-Based Compressive Sensing, and Sparse Recovery for Earth Mover Distance**. Indyk, Piotr and Price, Eric. STOC 2011.
- **Compressive Sensing with Local Geometric Features**. Gupta, Rishi, Indyk, Piotr, Price, Eric, and Rachlin, Yaron. SOCG 2011.
- **Efficient Sketches for the Set Query Problem**. Price, Eric. SODA 2011.
- **Sparse Recovery for Earth Mover Distance**. Gupta, Rishi, Indyk, Piotr, and Price, Eric. Allerton (invited paper) 2010.
- **Improved Analysis of Sequential Sparse Matching Pursuit**. Price, Eric. Manuscript.
- **Lower Bounds for Sparse Recovery**. Do Ba, Khanh, Indyk, Piotr, Price, Eric, and Woodruff, David P.. SODA 2010.
- **Confluently Persistent Tries for Efficient Version Control**. Demaine, Erik, Langerman, Stefan, and Price, Eric. SWAT 2008.
- **Browser-Based Attacks on Tor**. Abbott, Timothy G., Lai, Katherine J., Lieberman, Michael R., and Price, Eric C.. PET 2007.

Talks

- Tsinghua University. *On Posterior Sampling with Diffusion Models*, June 2024
- NeurIPS workshop on Deep Learning and Inverse Problems. *Progress and Regress in Deep Generative Models and Inversion*, December 2023
- Center for Approximation and Mathematical Data Analytics, Texas A&M. *Finite-Sample Location Estimation with Fisher Information Rate*, May 2023
- Workshop on Algorithms and Foundations for Data Science. *Finite-Sample Maximum Likelihood Estimation of Location*, June 2022
- UT Good Systems Seminar. *Fairness for Generation with Uncertainty*, October 2021

- WALDO. *Simulating Random Walks in Random Streams*, August 2021
- TADS seminar, Iowa State. *Instance-Optimal Compressed Sensing via Conditional Resampling*, April 2021
- UCSD. *Separations and Equivalences between Turnstile Streaming and Linear Sketching*, 2020
- University of Houston. *Compressed Sensing and*, 2020
- NUS Singapore Theory Week. *Compressed Sensing with Generative Models*, January 2020
- Simons Data Science Reunion Workshop. *Separations and Equivalences between Turnstile Streams and Linear Sketching*, December 2019
- BIRS workshop on Computational Harmonic Analysis and Data Science. *Estimating Fourier-sparse signals without a frequency gap*, October 2019
- Austin-TAMU Probability day. *Compressed Sensing and Generative Models*, October 2019
- SPIE Optics and Photonics, San Diego, CA. *Compressed Sensing and Generative Models*, August 2019.
- TTIC Workshop on Learning-Augmented Algorithms, Chicago, IL. *Compressed Sensing and Generative Models*, August 2019.
- ISIT, Paris, France. *Compressed Sensing and Generative Models*, July 2019.
- MIT, Cambridge, MA. *Compressed Sensing and Generative Models*, March 2019.
- Canadian Mathematical Society meetings, Vancouver, CA. *Compressed Sensing and Generative Models*, December 2018.
- Harvard, Cambridge, MA. *The Sketching Complexity of Graph and Hypergraph Counting*, December 2018.
- Simons, Berkeley, CA. *Adaptive Sparse Recovery with Limited Adaptivity*, November 2018.
- ISMP, Bordeaux, France. *The Sketching Complexity of Graph and Hypergraph Counting*, July 2018.
- EPFL, Lausanne, Switzerland. *Compressed Sensing and Generative Models*, June 2018.
- EPFL, Lausanne, Switzerland. *Active Regression via Linear-Sample Sparsification*, June 2018.
- Simons Workshop on Mathematical and Computational Challenges in Real-Time Decision Making, Berkeley, CA. *Active Regression via Linear-Sample Sparsification*, May 2018.
- Microsoft Research, Redmond, WA. *Active Regression via Linear-Sample Sparsification*, March 2018.
- Stanford, Stanford, CA. *Condition number-free query and active learning of linear families*, Jan 2018.
- FOCS tutorial, Berkeley, CA. *Compressed Sensing using Generative Models*, October 2017.
- Stanford, Stanford, CA. *Fourier Sparsity, Polynomials, and Fast Interpolation*, Jan 2017.
- MIT, Cambridge, MA. *Tight Bounds for Learning a Mixture of Gaussians*, Jan 2015.

- Workshop on Sublinear Algorithms, Bertinoro, Italy. *Learning Mixtures of Gaussians*, May 2014.
- Library of Congress, Washington, DC. *NewsDiffs: Tracking Online News Over Time*, February 2014.
- IBM Research Almaden, San Jose, CA. *Improved Concentration Bounds for Count-Sketch*, February 2014.
- Simons Institute, Berkeley, CA. *Sparse Fourier Transforms: Optimizing Time and Sample Complexity*, December 2013.
- Duke University, Durham, NC. *Sparse Fourier Transforms: Optimizing Time and Sample Complexity*, December 2013.
- Duke University, Durham, NC. *Improved Concentration Bounds for Count-Sketch (and more)*, December 2013.
- Stanford University, Stanford, CA. *Fourier Sampling and Beyond*, October 2013.
- Coding, Complexity, and Sparsity Workshop, Ann Arbor, MI. *Sparse Recovery and Fourier Sampling*, August 2013.
- University of Texas, Austin, TX. *Fast RIP matrices with fewer measurements*, April 2013.
- University of Texas, Austin, TX. *Fourier Sampling and Beyond*, April 2013.
- South by Southwest, Austin, TX. *NewsDiffs: Tracking Online News Over Time*, March 2013.
- Weizmann Institute of Science, Rehovot, Israel. *Adaptive Sparse Recovery*, December 2012.
- Coding, Complexity, and Sparsity Workshop, Ann Arbor, MI. *Improved Concentration Bounds for Count-Sketch*, August 2012.
- Workshop on Streaming Algorithms, Dortmund, Germany. *Nearly Optimal Sparse Fourier Transform*, July 2012.
- Carnegie Mellon University, Pittsburgh, PA. *Nearly Optimal Sparse Fourier Transform*, April 2012.
- Carnegie Mellon University, Pittsburgh, PA. *Adaptive Sparse Recovery*, April 2012.
- Johns Hopkins University, Baltimore, MD. *On the Power of Adaptivity in Sparse Recovery*, February 2012.
- SIAM Minisymposium on Computational Geometry, Boston, MA. *Geometric Aspects of Compressive Sensing*, January 2012.
- Berkeley University, Berkeley, CA. $(1+\epsilon)$*-approximate sparse recovery*, November 2011.
- Coding, Complexity and Sparsity Workshop, Ann Arbor, MA. *On the Power of Adaptivity in Sparse Recovery.* August 2011.
- IBM Research, Almaden, CA. *On the Power of Adaptivity in Sparse Recovery.* June 2011.
- Microsoft Research New England, Cambridge, MA. *Survey on Compressive Sensing*, May 2011.
- IBM Research, Almaden, CA. *Efficient Linear Sketches for Sparse Recovery.* January 2011.
- Bar Ilan University, Ramat Gan, Israel. *Efficient Linear Sketches for Sparse Recovery.* December 2010.

- Technion, Haifa, Israel. *Efficient Linear Sketches for Sparse Recovery.* December 2010.
- Google Research Seminar, New York, NY. *Efficient Linear Sketches for Sparse Recovery.* July 2010.
- CSAIL Student Workshop, Gloucester, MA. *Lower Bounds in Compressed Sensing.* September 2009.
- Center for Massive Data Algorithmics (MADALGO), Aarhus, Denmark. *Lower Bounds in Compressed Sensing.* April 2009.
- CSAIL Student Workshop, Gloucester, MA. *Fully Persistent Hash Tables.* September 2008.

Teaching

Spring 2024	**Undergraduate algorithms**
Fall 2023	**Randomized Algorithms**
Spring 2023	**Honors Undergraduate algorithms**
Spring 2022	**Undergraduate algorithms**
Fall 2021	**Randomized Algorithms**
Spring 2021	**Honors undergraduate algorithms**
Fall 2020	**Sublinear Algorithms**
Spring 2020	**Undergraduate algorithms**
Fall 2019	**Randomized Algorithms**
Spring 2019	**Honors undergraduate algorithms**
Fall 2017	**Randomized Algorithms**
Fall 2017	**Undergraduate algorithms**
Spring 2017	**Honors undergraduate algorithms**
Fall 2016	**Sublinear Algorithms**
Spring 2016	**Honors undergraduate algorithms**
Fall 2015	**Randomized Algorithms**
Fall 2014	**Sublinear Algorithms**