# Emmanuel Candès

*Curriculum Vitae*

Department of Statistics
390 Jane Stanford Way
Stanford University
Stanford, CA 94305-4065
Phone: 650-723-2620
Fax: 650-725-8977

Department of Mathematics
480 Jane Stanford Way, Bldg. 380
Stanford University
Stanford, CA 94305-2155
Phone: 650-725-6284
Fax: 650-725-4066

email: candes@stanford.edu
website: https://candes.su.domains

## Current position

The Barnum-Simons Chair in Mathematics and Statistics, Stanford University

## Areas of specialization

Applied mathematics, statistics, information theory, signal processing, imaging science, mathematical optimization

## Appointments held

**Director of Stanford Data Science**
Stanford University, 2018–present

**The Barnum-Simons Chair in Mathematics and Statistics**
Stanford University, 2012–present

**Chair of the Department of Statistics**
Stanford University, 2016–2018

**Professor of Electrical Engineering** (by courtesy)
Stanford University, 2010–present

**Professor of Mathematics and of Statistics**
Stanford University, 2009–present

**Member of the Institute for Computational and Mathematical Engineering**
Stanford University, 2009–present

**Executive Officer for Applied and Computational Mathematics**
Caltech (Dept. Chair), 2009

**Professeur Invité**
Université de Toulouse, 2006

**Ronald and Maxine Linde Professor of Applied and Computational Mathematics**
Caltech, 2006–2011

**Professeur Invité**
Université Paris-Sud XI, 2002

**Assistant, Associate, Full Professor of Applied and Computational Mathematics**
Caltech, 2000–2006

**Assistant Professor of Statistics**
Stanford University, 1998–2000

## Education

**Ph.D.** in **Statistics**
Stanford University, 1998

**M.Sc.** in **Applied Mathematics**
University of Paris VI and Paris IX, France, 1994

**B.Sc.** [Diplome d'Ingénieur]
École Polytechnique, France, 1993

## Honors & awards

Best Paper Award in Mathematics (Awarded by The International Congress of Basic Science of China for "Panning for gold: 'model-X' knockoffs for high dimensional controlled variable selection"; 2023; *declined because no co-authors were able to attend the required in-person award ceremony*)

Breiman Award Lecture, Neurips, 2022

Arthur Cohen Award, Rutgers University, 2022

2021 IEEE Jack S. Kilby Signal Processing Medal

Princess of Asturias Award for Technical & Scientific Research, 2020

IEEE Signal Processing Society Best Paper Award, *Signal Processing Magazine*, 2019

Information Theory Society Paper Award, 2019

IEEE Fellow, 2018

American Mathematical Society (AMS) Fellow, 2018

2017 MacArthur Fellowship

Ralph E. Kleinman Prize
Society for Industrial and Applied Mathematics (SIAM), 2017

Society for Industrial and Applied Mathematics (SIAM) Fellow, 2017

Wald Memorial Lecturer, Institute of Mathematical Statistics, 2017

Prix Pierre Simon de Laplace, Société Française de Statistique, 2016

IEEE Signal Processing Society Best Paper Award (shared with Boyd & Zymnis), *Signal Processing Letters*, 2015

Beal-Orchard-Hays Prize
Mathematical Optimization Society (shared with Becker & Grant), 2015

George David Birkhoff Prize
American Mathematical Society and Society for Industrial and Applied Mathematics, 2015

SIAM Outstanding Paper Prize (shared with Eldar, Ströhmer & Voroninski), 2014

Member, National Academy of Sciences, 2014

Fellow of the American Academy of Arts & Sciences, 2014

Invited Plenary Lecture at the International Congress of Mathematicians (ICM 2014), Seoul, 2014

First Recipient of the Prix Jean Kuntzmann, 2014

Dannie Heineman Prize, Academy of Sciences at Göttingen, 2013

Lagrange Prize in Continuous Optimization
Mathematical Optimization Society (MOS) and Society of Industrial and Applied Mathematics (SIAM), 2012

Simons Chair, Math+X, Simons Foundation, 2011

Collatz Prize
International Council for Industrial and Applied Mathematics (ICIAM), 2011

George Pólya Prize
Society of Industrial and Applied Mathematics (SIAM), 2010

Chaire Schlumberger in the mathematical sciences
Institut des Hautes Études Scientifiques (IHES), France (declined), 2008

Information Theory Society Paper Award, 2008

Alan T. Waterman Medal
National Science Foundation, 2006

James H. Wilkinson Prize in Numerical Analysis and Scientific Computing
Society of Industrial and Applied Mathematics (SIAM), 2005

Best Paper Award of the European Association for Signal, Speech and Image Processing, 2003

Department of Energy Young Investigator Award, 2002

Alfred P. Sloan Research Fellow, 2001–2003

Third Popov Prize in Approximation Theory, 2001

Direction des Recherches et Études Techniques (DRET) Fellowship for doctoral research awarded on the basis of final ranking from École Polytechnique, 1993–1997

French National Scholarship awarded on the basis of ranking at the national examination for admission to École Polytechnique, 1990–1993

## Honorary lectures

Bernoulli Lecture, 11th World Congress in Probability and Statistics, 2024

Bahadur Lecturer, University of Chicago, 2024

Nie Lecture, Columbia University, 2024

George Zyskind Memorial Lecture, Iowa State University, 2023

Breiman Award Lecture, Neurips, 2022

Distinguished Theme Seminar Series, Purdue University, 2022

Arthur Cohen Lecture, Rutgers University, 2022

Challis Lectures, University of Florida, 2022

Tripods Distinguished Colloquium, Texas A&M, 2020

Bernoulli Lecture, École Polytechnique Fédérale de Lausanne, 2020

Milliman Lecturer, University of Washington, 2020

Cray Distinguished Lecture, University of Minnesota, 2020

The Kailath Lecture, Stanford University, 2019

The Feng Kang Distinguished Lecturer, Beijing, China, 2018

Green Family Lectures, University of California at Los Angeles, 2018

Euler Lecture, Mathematics Departments in Berlin and Potsdam, Potsdam, Germany, 2018

Woodroofe Lecturer, University of Michigan, 2018

The 2018 Breakthrough Prize Symposium, Stanford University, 2017

Wald Memorial Lectures, 2017 Joint Statistical Meetings, Baltimore, 2017

Bernoulli Society Presidential Invited Lecture, ISI 61st World Statistics Congress, Marrakech, Morocco, 2017

Abel Lecture, University of Oslo, 2017

Leçons Jacques-Louis Lions 2017, Université Pierre et Marie Curie (Paris VI), Paris, 2017

Laplace Lecture, Société Française de Statistique, Montpellier, 2016

Sobel Lecture, University of California at Santa Barbara, 2016

Oppenheim Lecture, National University of Singapore, 2016

Grande Conférence Publique du CRM, Université de Montréal, 2015

Richard E. Phillips Distinguished Lecture Series, Michigan State University, 2015

Distinguished CAMS Lecture, University of Southern California, 2015

94th Mathematical Colloquium, Charles University, 2015

Public Lecture, Fields Institute, University of Toronto, 2015

Distinguished Lecture Series, University of California at Irvine, 2014

Amick Lectures, University of Chicago, 2014

Columbia University Distinguished Colloquium Series in Interdisciplinary & Applied Mathematics, 2014

Public Lecture, Academy of Sciences at Göttingen, 2013

Simons Institute Open Lecture, UC Berkeley, 2013

Bernoulli Society/European Mathematics Society Lecture, European Meeting of Statisticians, 2013

Simons Lecturer, Massachusetts Institute of Technology, 2013

Distinguished Lecturer, Academia Sinica, Taiwan, 2013

Stelson Lecturer, Georgia Institute of Technology, 2012

Medallion Lecturer, Institute of Mathematical Statistics (IMS), 2012

Distinguished Lecturer, Fields Institute, 2012

Ziwet Lecturer, University of Michigan, 2012

Ron DiPerna Lecturer, University of California at Berkeley, 2012

Erdös Memorial Lecturer, American Mathematical Society, 2011

Class of 27 Lectures, Rensselaer Polytechnic Institute, 2011

London Mathematical Society Lecturer, 2011

Lucien Le Cam Lecture, Journées de Statistique, 2010

Stewardson Lecture, British Mathematics Colloquium *&* British Applied Mathematics Colloquium, 2010

Distinguished Israel Pollak Lecturer, Technion — Israel Institute of Technology, 2010

Amundson Lecturer, University of Houston, 2009

Courant Lecturer, New York University, 2009

Aziz Lecturer, University of Maryland, 2007

Plenary lecture, International Congress on Industrial *&* Applied Mathematics (ICIAM 2007), Zürich, 2007

Invited lecture, International Congress of Mathematicians (ICM 2006), Madrid, 2006

## Patents

**U.S. Patent** "A Digital Multiplexing Readout for Sparse Signals on Imaging Arrays", Patent No. US 9,197,805; Nov. 24, 2015

**U.S. Patent** "Error Correction using Linear Programming", Patent No. US 7,890,842 B2; Feb. 15, 2011

**U.S. Patent** "Methods for Performing Fast Discrete Curvelet Transforms of Data", Patent No. US 7,840,625 B2; Nov. 23, 2010

**U.S. Patent** "Digital Ridgelet Transform via Digital Polar Coordinate Transform", Patent No. US 6,766,062 B1; Jul. 20, 2004

## Grants *&* research contracts

**ONR**: Leveraging Foundational Models for Reliable Discovery and Inference (N00014-24-1-2305); $740,000, 01/04/24/03/31/27; Candès (PI)

**NIH**: The pursuit of genetic causal mechanisms (Award 1R56HG010812-01A1); $811,611, 01/01/21–12/31/22; Candès (Co-investigator)

**NSF**: Collaborative Research: Transferable, Hierarchical, Expressive, Optimal, Robust, Interpretable NETworks (THEORINET) (Award 2032014); $350,000, 09/01/20–08/31/25; Candès (PI)

**Simons Foundation**: Collaborative Research: Transferable, Hierarchical, Expressive, Optimal, Robust, Interpretable NETworks (THEORINET) (Award 814641); $350,000, 09/01/20–08/31/25; Candès (PI)

**ONR**: Trusted Machine Learning: Statistical Tools for Making the Black Box Effective (N00014-20-1-2157); $674,614; 02/15/20–02/14/23; Candès (PI)

**NSF**: The Stanford Data Science Collaboratory; $2,000,000; 09/01/19–08/31/22; Candès (PI)

**TwoSigma**: gift in the amount of $75,000, 03/2019

**TwoSigma**: gift in the amount of $75,000, 11/2017

**NSF**: Discovering what matters: informative and reproducible variable selection with applications to genomics (DMS 1712800); $420,000; 09/01/17–08/31/20; Candès (co-PI), Sabatti (co-PI)

**TwoSigma**: gift in the amount of $75,000, 11/2016

**ARO**: Semantic Information Pursuit for Multimodal Data Analysis (ARO 2003514594); $975,000; 07/15/17–07/14/23; Candès (co-PI)

**ONR**: Statistical Tools for Reproducible Selection (N00014-16-1-2712); $450,000; 06/01/16–05/31/19; Candès (PI)

**NSF**: BIGDATA: Collaborative Research: F: From Data Geometries to Information Networks (IIS-1546206); 01/01/16–12/31/19; Guibas (co-PI), Candès (co-PI)

**Simons Foundation**: Math+X Chair Activities Award; $325,000 per year for graduate and postdoctoral fellowships, 2015–2018

**Broadcom Foundation**: gift in the amount of $25,000, 10/2013

**NIH**: Computational Tools for Next Generation of Cone Beam CT (1R01EB016618); 10/01/13–09/30/17; Xing (PI)

**Simons Foundation**: Math+X Enabling Grant; $100,000 per year, 01/01/13–12/31/15

**Simons Foundation**: Math+X Chair Activities Award; $325,000 per year for graduate and postdoctoral fellowships, 2012–2015

**Broadcom Foundation**: gift in the amount of $25,000, 10/2012

**Broadcom Foundation**: gift in the amount of $25,000, 02/2012

**ONR**: Statistical Detection of Structured and Unstructured Anomalous Events (N00014-10-1-0599); $620,000; 03/15/10–03/14/13; Candès (PI)

**ONR**: Recovery of Large Data Matrices from Partial Information: Theory, Algorithms *&* Applications (N00014-08-1-0749); $65,000; 02/15/10–10/31/10; Candès (PI)

**NSF-CCF** CIF: Medium: Collaborative Research: Advances in the Theory and Practice of Low-Rank Matrix Recovery and Modeling (CCF-0963835); $1,200,000; 05/01/10–04/30/14; Candès (co-PI)

**NSF-CNS** NetSE: Large: A Theory of Network Architecture (CNS-0911041); $2,500,000; 10/01/09–09/30/12; Candès (co-PI)

**AFOSR**: Information Dynamics as Foundation for Network Management (MURI); total funding is $8,000,000 over five years; 08/09–07/14; Candès (co-PI)

**ONR**: Recovery of Large Data Matrices from Partial Information: Theory, Algorithms *&* Applications (N00014-09-1-0469); $150,000; 02/01/09–01/31/10; Candès (PI)

**ONR**: Methods for the Detection of Anomalous Clusters in Large Networks (N00014-09-1-0258); $300,000; 12/01/08–11/30/11; Candès (PI)

**ONR**: System Identification from Incomplete Data: Theory, Algorithms and Applications (N00014-08-1-0749); $300,000; 03/01/08–12/31/10; Candès (PI)

**DARPA**: Analog-to-Information (A-to-I) Receiver Development Program; $2,000,000; 05/01/08–04/30/11; Candès (PI) (total funding for the larger team is approximately $10,000,000)

**NSF-CCF**: Waterman Award (CCF-0631558); $500,000, 08/15/06–08/14/09; Candès (PI)

**NSF-SCREMS**: Scientific Computing Research Environments for the Mathematical Sciences (DMS 0619860); $153,000, 09/01/06–08/31/07; Candès (co-PI)

**DARPA**: Analog to Information; $280,000; 02/01/06–01/31/07; Candès (co-PI) (total funding for the team is $1,000,000)

**NSF-CCF**: Signal Recovery from Highly Incomplete Data (CCF-0515362); $300,000, 05/01/05–04/30/08; Candès

(PI)

**DOE** Early Career Award; Geometrical Multiscale Analysis: Applications to Scientific Computing and Partial Differential Equations (DOE DE-FG03-02ER25529); $300,000; 08/15/02–08/14/05; Candès (PI)

**NSF-FRG** Collaborative Research: A Focused Research Group on Multiscale Geometric Analysis–Theory, Tools, and Applications (DMS-0140540); $1,000,000; 08/15/02–07/31/05; Candès (co-PI), Donoho (co-PI), Huo (co-PI), Jones (co-PI)

**NSF-ITR**: Multiscale Analysis, Modeling, and Simulation (ACI-0204932); $1,247,000; 10/01/02–09/30/04; Marsden (PI)

**Alfred P. Sloan** Fellowship: $40,000, 09/01/01–08/30/03

**NSF-KDI**: Member of the Wavelet Ideal Data Representation Center, 1998–2001

## Research supervision & advising

### Postdoctoral supervision

Tijana Zrnic, Stanford 2023–present

Jinzhou Li, Stanford 2023–present

Daniel Lejeune, Stanford 2023–2024

Alice Cortinovis, Stanford, 2022–2024
Faculty, University of Pisa

Yao Zhang, Stanford, 2022–present

Haoyang Liu, Statistics, Stanford, 2020–2021
Hudson River Trading

Lihua Lei, Statistics, Stanford, 2019–2022
Faculty, Stanford University

Yaniv Romano, Statistics, Stanford, 2018–2020
Faculty, Israel Institute of Technology (Technion)

Ju Sun, Mathematics, Stanford, 2016–2019
Faculty, University of Minnesota

Asaf Weinstein, Statistics, Stanford, 2015–2018
Postdoctoral Fellow, Hebrew University and Carnegie Mellon University

Mert Pilanci, Statistics, Stanford, 2016–2017
Faculty, Stanford University

Yuxin Chen, Statistics, Stanford, 2015–2017
Faculty, Wharton School at University of Pennsylvania

Lester Mackey, Statistics, Stanford, 2012–2013
Senior Researcher, Microsoft Research New England

Rina Foygel Barber, Statistics, Stanford, 2012–2013
Faculty, University of Chicago

Veniamin Morgenshtern, Statistics, Stanford, 2012–2016
Faculty, Friedrich-Alexander-Universität Erlangen-Nürnberg

Mark Davenport, Statistics, Stanford, 2010–2012
Faculty, Georgia Tech

Ewout van den Berg, Statistics, Stanford, 2010–2012
IBM T.J. Watson Research Center

Deanna Needell, Statistics, Stanford, 2009–2011
Faculty, UCLA

Jérôme Bobin, Applied and Comp. Math., Caltech, 2008–2009
Co-head of CosmoStat lab, CEA Saclay

Benjamin Recht, Center for Math. of Information, Caltech, 2006–2009
Faculty, UC Berkeley

Arnaud Durand, Applied and Comp. Math., Caltech, 2007–2008
Faculty, Université Paris-Sud

José Costa, Applied and Comp. Math., Caltech, 2005–2008
DRW Trading Group

Michael Wakin, Applied and Comp. Math., Caltech, 2006–2007
Faculty, Colorado School of Mines

Lexing Ying, Applied and Comp. Math., Caltech, 2004–2006
Faculty, Stanford University

Justin Romberg, Applied and Comp. Math., Caltech, 2003–2006
Faculty, Georgia Tech

### Doctoral advising

Ziang Song, Statistics, Stanford

Michael Salerno, Statistics, Stanford

Zitong Yang, Statistics, Stanford

Yash Nair, Statistics, Stanford

Asher Spector, Statistics, Stanford

Parth Nobel, Electrical Engineering, Stanford

John Cherian, Statistics, Stanford

Zhaomeng, Chen, Statistics, Stanford

Jayoon Jang, Statistics, Stanford, 2024
Data Scientist, Moloco

Ying Jin, Statistics, Stanford, 2022
Faculty, Wharton School at University of Pennsylvania

Isaac Gibbs, Statistics, Stanford, 2024
Post-doctoral researcher, UC Berkeley

Shuangning Li, Statistics, Stanford, 2022
Faculty, The University of Chicago Booth School of Business

Qian Zhao, Statistics, Stanford, 2021
Faculty, University of Massachusetts—Amherst

Zhimei Ren, Statistics, Stanford, 2021
Faculty, Wharton School at University of Pennsylvania

Qijia Jiang, Electrical Engineering, Stanford 2021
Faculty, UC Davis

Stephen Bates, Statistics, Stanford 2020
Faculty, Massachussetts Institute of Technology

Matteo Sesia, Statistics, Stanford 2020
Faculty, University of Southern California

Evan Patterson, Statistics, Stanford 2020
Research Scientist, Topos Institute

Pragya Sur, Statistics, Stanford, 2019
Faculty, Harvard University

David Barmherzig, Institute of Computational and Mathematical Engineering, Stanford, 2019
Flatiron Research Fellow, Simons Foundation

Lucas Janson, Statistics, Stanford, 2017
Faculty, Harvard University

Wejie Su, Statistics, Stanford, 2016
Faculty, Wharton School at University of Pennsylvania

Carlos Sing Long, Institute of Computational and Mathematical Engineering, Stanford, 2016
Faculty, Pontificia Universidad Catolica de Chile

Alexandra Chouldechova, Statistics, Stanford, 2014
Faculty, Carnegie Mellon University

Mahdi Soltanolkotabi, Electrical Engineering, Stanford, 2014
Faculty, University of Southern California

Carlos Fernández Granda, Electrical Engineering, Stanford, 2014
Faculty, Courant Institute at New York University

Vladislav Voroninski, Mathematics, UC Berkeley, 2013
CEO, Helm.ai

Xiaodong Li, Mathematics, Stanford, 2013
Faculty, UC Davis

Yaniv Plan, Applied and Comp. Math., Caltech, 2011
Faculty, University of British Columbia

Stephen Becker, Applied and Comp. Math., Caltech, 2011
Faculty, University of Colorado at Boulder

Paige Alicia Randall, Physics, Caltech, 2009
Center for Communications Research at Princeton

Hannes Helgason, Applied and Comp. Math., Caltech, 2008
Faculty, University of Iceland and deCODE Genetics/Amgen

Laurent Demanet, Applied and Comp. Math., Caltech, 2006
Faculty, Massachussetts Institute of Technology

### Other advising activities

M.Sc. advisor, Department of Statistics, Stanford University, 2010–2012

Department representative, Applied and Computational Mathematics, Caltech, 2001–2005:
Provided consultation on academic programs, degree requirements, financial aid, etc., and provided general supervision to graduate students in the department.

## Professional service

### Editorial boards

*IEEE Journal on Selected Areas in Information Theory*, 2019–present
*Bulletin of the American Mathematical Society*, 2014–present
*Information and Inference*, 2011–present
*Applied and Computational Harmonic Analysis*, 2010–present
*IEEE Transactions on Signal Processing*, 2010–2014
*Journal of the American Mathematical Society*, 2008–present
*SIAM Journal on Imaging Sciences*, 2007–2012
*Multiscale Modeling and Simulation*, 2006–2012
*Foundations of Computational Mathematics*, 2007–2020
*Inverse Problems and Imaging*, 2006–present
Elected member of the Advisory Board, *Foundations of Computational Mathematics*, 2005
*Numerische Mathematik*, 2003–2010
*Constructive Approximation*, 2002–present

### National and international committees

Chair of Selection Committee, Lucien Le Cam Lecture, Société Française de Statistique, 2023–2024
Member of Evaluation Committee of proposals for Data Science Research Centers, The Data Science Initiative of the Council for Higher Education, Israel, 2020
*Proc. Nat. Acad. Sci.* Cozzarelli Prize Committee, 2015–2019
Chair, Wiener Prize Committee, American Mathematical Society & Society for Industrial and Applied Mathematics, 2018
Jury member, BBVA Foundation Frontiers of Knowledge Awards in the basic sciences, 2018–present
Nevanlinna Prize Committee, 2017–2018
Core panel member, Section 12, Probability & Statistics, International Congress of Mathematicians, 2018
International Congress of Mathematicians, 2015–2017
Scientific Advisory Board, Simons Institute for the Theory of Computing, 2015–present
Vice Chair, Science Advisory Board, Institute of Pure & Applied Mathematics, 2014–present
SIAM Polya Prize Committee, 2014
Chair, Section 17, Mathematics in Science & Technology, International Congress of Mathematicians, 2014
International Congress of Mathematicians, 2012–2013
Member, Scientific Board of the Institut des Hautes Études Scientifiques (IHES), France, 2011–2017
The Mathematical Sciences in 2025, The Board on Mathematical Sciences and its Applications, 2010–2012
SIAM Major Award Committee, 2009–2012
Elected leader, SIAM Activity Group on the Imaging Sciences, 2003

### Conference organization

Math+Stats+X, A Conference on the Occasion of Dave Donoho's 60th Birthday, Stanford University, 2017
Applied Harmonic Analysis, Massive Data Sets, Machine Learning, and Signal Processing, BIRS, 2016
Program and Organizing Committee Chair, Modern Trends in Optimization, Institute of Pure and Applied Mathematics, 2010
Multiscale Geometry and Analysis in High Dimensions, Institute of Pure and Applied Mathematics, 2004
Multiscale Geometric Analysis, Institute for Pure and Applied Mathematics, 2003
Session organizer, Applied Inverse Problems, 2003

### Program committees

SIAM Conference on Imaging Science, 2010
Wavelets X, SPIE Annual Meeting, 2005
IAM Conference on Imaging Science, 2004
Second International Conference on Computational Harmonic Analysis, 2004
Wavelets X, SPIE Annual Meeting, 2003

### Academic responsibilities

Director, Data Science Design Team, Stanford University, 2018–present
Chair, Department of Statistics, Stanford University, 2016–2018
Vice Chair, Department of Statistics, Stanford University, 2012–2013
Executive Officer (Dept. Chair), Applied and Computational Mathematics, Caltech, 2009

### National responsibilities

Chair, Applied Mathematical Sciences Section, National Academy of Sciences, 2018–2021

## Talks & presentations

### Plenary & distinguished lectures

Keynote Lecture, AI, Science, and Society: Collectives, Collaboration, and Connections, Paris, France, February 2025

Plenary Lecture, 2024 Shenzhen International Conference on Frontiers of Statistics and Data Science, December 2024

Plenary Lecture, ICME 20th Anniversary, Stanford University, November 2024

Plenary Lecture, The Human Advantage, Paris, France, September 2024

Plenary Lecture, EnCORE Institute, University of California at San Diego, 2024

Keynote Speaker, ELLIS RobustML Workshop, Dipoli, Espoo, Finland, September 2023

Plenary Lecture, Groupement de recherche ISIS Information Signal Image viSion, Lyon, France, May 2023

Plenary Lecture, ICORS2023 : International Conference on Robust Statistics, Toulouse, France, May 2023

NSF Distinguished Lecturer, Directorate for Mathematical and Physical Sciences, April 2023

Plenary Lecture, 2022 IMS International Conference on Statistics and Data Science (ICSDS), Florence, Italy, December 2022

Keynote Lecture, Machine Learning for Health (ML4H), New Orleans, November 2022

Plenary Lecture, Statistical Methods and Models for Complex Data: 800 years of research to understand a complex world, University of Padova, Italy, September 2022

Plenary Lecture, IMS-COLT Workshop, London, July 2022

Distinguished Lecture Series, Harvard's Institute for Applied Computational Sciences (IACS), October 2021

Plenary Lecture, AISTATS 2021, April 2021

Invited Lecture, Math *&* IA, Paris, France, March 2021

Plenary Lecture, Halıcıoğlu Data Science Institute 3rd Year Anniversary, San Diego, March 2021

Keynote Lecture, Bernoulli-IMS One World Symposium, August 2020

Keynote Lecture, Machine Learning Conference, VMware, Palo Alto, October 2019

Keynote Lecture, ACM-IMS Interdisciplinary Summit on the Foundations of Data Science, San Francisco, June 2019

Plenary Lecture, Joint Mathematical Meetings, Baltimore, January 2019

Plenary Lecture, Gauss Prize Laudatio, International Congress of Mathematicians, Rio de Janeiro, August 2018

Keynote Speaker, International Congress of Mathematical Optimization (ISMP 2018), Bordeaux, July 2018

Plenary Lecture, Curves and Surfaces 2018, Arcachon (France), July 2018

Keynote Lecture, STOC 2018 TheoryFest: 50th Annual ACM Symposium on the Theory of Computing, Los Angeles, June 2018

Keynote Lecture, 2017 International Conference on Data Science, Shanghai, December 2017

Plenary Lecture, Information Theory and Applications, San Diego, February 2017

Plenary Lecture, International Symposium on Information Theory and Its Applications, Monterey, November 2016

Claude E. Shannon Centennial Celebration, University of Michigan, September 2016

Conference in honour of Jean-Pierre Kahane, Paris, July 2016

Boeing distinguished colloquium, University of Washington, March 2016

2015 Mathematics and Physical Sciences Annual Meeting, Simons Foundation, New York, October 2015

Plenary Lecture, The 2015 European Signal Processing Conference (EUSIPCO 2015), Nice, September 2015

Special Lecturer, Signal Processing with Adaptive Sparse Structured Representations (SPARS 2015), University of Cambridge, UK, July 2015

Plenary Lecture, Big Data and Computational Scalability, University of Warwick, UK, July 2015

Plenary Lecture, 5th International Workshop on Pattern Recognition in Neuroimaging, Stanford, June 2015

Distinguished Lecture, University of South Carolina, April 2015

Plenary Lecture, International Conference on Optimization, Sparsity and Adaptive Data Analysis, Beijing, China, March 2015

Keynote Speaker, International Conference on Computational Photography, Santa Clara, May 2014

Plenary Lecture, Horizons de la Statistique, Paris, France, January 2014

Plenary Lecture, Joint Mathematics Meetings, Baltimore, January 2014

Distinguished Lecture Series in Celebrating 100 Years of Mathematics at Peking University, Beijing, China, October 2013

Keynote Lecture, 43rd European Solid-State Device Research Conference (ESSDERC 2013), Bucharest, September 2013

Plenary Lecture, IEEE International Symposium on Information Theory (ISIT 2013), Istanbul, July 2013

Plenary Lecture, 10th International Conference on Sampling Theory and Applications (SampTA 2013), Bremen, July 2013

Keynote Speaker, International Society for Magnetic Resonance in Medicine (ISMRM) Workshop on Data Sampling and Image Reconstruction, Sedona, Arizona, February 2013

Matheon Talk, Berlin, June 2012

Plenary Lecture, International Conference on Nonparametric Statistics, Greece, June 2012

Plenary Lecture, Challenges in Geometry, Analysis and Computation: High Dimensional Synthesis, Yale, June 2012

Public Lecture, Simons Foundation, New York City, May 2012

Plenary Lecture, IEEE International Symposium on Biomedical Imaging (ISBI), Barcelona, Spain, May 2012

Pacific Institute for the Mathematical Sciences/University of British Columbia Distinguished Colloquium, Vancouver, February 2012

Keynote Lecture, Computing in the 21st Century Conference, Beijing, China, October 2011

Plenary Lecture, Frontiers of Computational and Applied Mathematics, Peking University, Beijing, China, October 2011

Plenary Lecture, Berkeley Optimization Day, UC Berkeley, October 2011

Keynote Lecture, 2011 International Workshop on Biomedical and Astronomical Signal Processing (BASP) Frontiers, Lausanne, Switzerland, September 2011

Plenary Lecture, GRETSI Symposium on Signal and Image Processing GRETSI 2011, Bordeaux, France, September 2011

Plenary Lecture, 8th International Conference on Energy Minimization Methods in Computer Vision and Pattern Recognition, Saint Petersburg, Russia, July 2011

Distinguished Lecture, Annual Cryptological Exchange Conference, La Jolla, May 2011

London Mathematical Society Invited Lecturer, Cambridge, United Kingdom, March 2011

Distinguished Seminar Series, The Scientific Computing and Imaging Institute, University of Utah, February 2011

Invited Lecture, First EU-US Frontiers of Engineering Symposium, Cambridge, UK, September 2010

Keynote Lecture, New Trends in Harmonic and Complex Analysis, Bremen, July 2010

Plenary Lecture, Pacific Rim Conference on Mathematics, Stanford, June 2010

Plenary Lecture, BIT 50 – Trends in Numerical Computing, Lund, Sweden, June 2010

Plenary Lecture, 8th AIMS International Conference on AIMS Dynamical Systems, Differential Equations and Applications, May 2010

Distinguished Speaker Series, UC Irvine Center for Machine Learning and Intelligent Systems, May 2010

Distinguished Lecture Series, UC Berkeley Electrical Engineering and Computer Science, March 2010

Plenary Lecture, ACM-SIAM Symposium on Discrete Algorithms (SODA10), January 2010

Opening Lecture, The European Meetings of Statisticians, Toulouse, July 2009

Plenary Lecture, EPSRC Symposium Capstone Conference, Warwick, July 2009

Tutorial Lectures, 2009 IEEE International Symposium on Information Theory, Seoul, June 2009

Keynote Lecture, Conference on Time-Frequency Strobl, June 2009

Plenary Lecture, Theory and Practice of Computational Learning, Chicago, June 2009

Keynote Lecture, IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS '09), Los Angeles, June 2009

Distinguished Lecture, Northwestern University Electrical Engineering and Computer Science, April 2009

Distinguished Visitor Program, University of Wisconsin-Madison Department of Mathematics, March 2009

ICES Distinguished Speaker Series, University of Texas Institute for Computational Engineering and Sciences, 2008

Plenary Lecture, Research Association on Mathematical Programming (RAMP 2008), Tokyo, October 2008

Plenary Lecture, Workshop on Nonparametric Inference, Coimbra, June 2008

Plenary Lecture, Foundations of Computational Mathematics, Hong Kong, June 2008

Plenary Lecture, Astronomical Data Analysis (ADA V), Crete, May 2008

Distinguished Lecturer, CISE Distinguished Lecture Series National Science Foundation, March 2008

Distinguished Lecture Series in Electrical Engineering, University of Southern California, 2008

Plenary Lecture, AMS 2007 Fall Western Section Meeting Albuquerque, New Mexico, October 2007

Plenary Lecture, 2007 IEEE International Conference on Image Processing in San Antonio, September 2007

Plenary Lecture, IEEE Information Theory Workshop, Lake Tahoe, California, September 2007

Plenary Lecture, IEEE Statistical Signal Processing Workshop 2007, Madison, Wisconsin, August 2007

Keynote Lecture, Ninth IASTED International Conference on Signal and Image Processing, Honolulu, Hawaii, August 2007

Plenary Lecture, The 2007 von Neumann Symposium, Snowbird, Utah, July 2007

Plenary Lecture, Symposium on Mathematics and Science in Digital Media, Technology and Entertainment, Singapore, July 2007

Plenary Lecture, Conference on Applied Inverse Problems 2007: Theoretical and Computational Aspects, Vancouver, Canada, June 2007

Plenary Lecture, Computational Optical Sensing and Imaging, Optical Society of America, Vancouver, Canada, June 2007

Plenary Lecture, The First International Conference on Scale-Space and Variational Methods in Computer Vision, Ischia, Italy, May 2007

Distinguished Colloquium Series, University of British Columbia, 2007

Distinguished Lectures Series, Arizona State University, 2007

Plenary Lecture, Barcelona Analysis Conference, Barcelona, September 2006

Plenary Lecture, Waves 2006, Lausanne, July 2006

Plenary Lecture, Curves and Surfaces, Avignon, June 2006

Plenary Lecture, Mathematical Foundations of Learning Theory, Paris, France, May 2006

Plenary Lecture, SIAM Conference on Imaging Science, Minneapolis, May 2006

Distinguished Lecture Series, University of Pennsylvania, January 2006

Plenary Lecture, 2005 SIAM Annual Meeting, New Orleans, July 2005

Plenary Lecture, 2ème Congrès National de Mathématiques Appliquées et Industrielles, Evian, May 2005

Plenary Lecture, Meeting of the Mathematical Society of Japan, Tokyo, March 2005

Plenary Lecture, Perspectives in Inverse Problems, Helsinki, June 2004

Plenary Lecture, Signal Recovery and Synthesis and Integrated Computational Imaging Systems (SRS-ICIS), Albuquerque, November 2001

Plenary Lecture, Conference on Applied Inverse Problems, Montecatini, Italy, June 2001

Plenary Lecture, 10th International Conference on Approximation Theory, St. Louis, March 2001

Plenary Lecture, Royal Society Discussion Meeting, London, February 1999

### Other invited lectures & presentations

Invited Lecture, Mathematical Aspects of Learning Theory—20 Years Later, Barcelona, Spain, September 2024

Invited Lecture, BS-IMS World Congress Pre-Meeting for Young Researchers 2024, Essen, Germany, August 2024

Invited Lecture, 2023 International Conference on Learning Representations (ICLR), April 2023

Invited Lecture, Mathematical Information Science Workshop, Lagrange Mathematical and Computing Research Center, Paris, October 2023

2023 International Conference on Artificial Intelligence and Statistics (AISTATS), April 2023

Invited Lecture, Elisabeth Gassiat - a Path in Modern Statistics, Faculté des Sciences d'Orsay, May 2023

Invited Lecture, A Multiscale Tour of Harmonic Analysis and Machine Learning, a workshop to celebrate Stéphane Mallat's 60th anniversary, IHES, April 2023

Invited Lecture, IMS Meeting, London, June 2022

Invited Lecture, Second Symposium tribute to Maxime Dahan, Institut Curie, Paris, December 2021

Invited Lecture, Workshop on Interpretability, Safety and Security in AI, Alan Turing Institute, London, December 2021

Invited Lecture, Symposium on the Mathematical Challenges and Opportunities in ML/AI, The National Academies' Board on Mathematical Sciences and Analytics, Washington DC, November 2021

Invited Lecture, 2021 Mathematical and Scientific Foundations of Deep Learning Annual Meeting, September 2021

Invited Lecture, Workshop on Uncertainty Quantification, International Conference on Machine Learning (ICML), July 2021

Invited Lecture, Mathematical Statistics and Learning, Barcelona, June 2021

Invited Lecture, Safety and Security of Deep Learning, ICERM, April 2021

Invited Lecture, Data Science Conference, Temple University, November 2020

Invited Lecture, Statistics Meets Machine Learning, Mathematisches Forschungsinstitut Oberwolfach gGmbH, Oberwolfach, January 2020

Invited Lecture, Moonshot International Symposium, Tokyo, December 2019

Invited Lecture, The Fourth Workshop on Higher-Order Asymptotics and Post-Selection Inference, St. Louis, August 2019

Invited Lecture, Joint Statistical Meetings, Denver, August 2019

Invited Lecture, Statistics Conference, in honor of Aad van der Vaart's 60th birthday, University of Leiden, June 2019

Invited Lecture, Statistical and Computational Aspects of Learning with Complex Structure, Mathematisches Forschungsinstitut Oberwolfach gGmbH, Oberwolfach, May 2019

Invited Lecture, Symposium in Honor of Yoav Benjamini's 70th Birthday, Jerusalem, December 2018

Invited Lecture, Big Data Meets Large-Scale Computing, Institute for Pure *&* Applied Mathematics, Los Angeles, September 2018

Invited Lecture, The Third Workshop on Higher-Order Asymptotics and Post-Selection Inference, St. Louis, September 2018

Invited Lecture, Statistical Inference for Structured High-dimensional Models, Mathematisches Forschungsinstitut Oberwolfach gGmbH, Oberwolfach, March 2018

Invited Lecture, Statistics Meets Friends – from biophysics to inverse problems and back, Göttingen, November 2017

Invited Lecture, Mathematical Methods of Modern Statistics, Luminy, France, July 2017

Invited Lecture, Statistical Recovery of Discrete, Geometric and Invariant Structures, Mathematisches Forschungsinstitut Oberwolfach gGmbH, Oberwolfach, March 2017

Invited Lecture, UC Davis Statistical Sciences Symposium 2016: Statistical Machine Learning: Theory and Methods, April 2016

Invited Lecture, European Meeting of Statisticians, Amsterdam, July 2015

Invited Lecture, Workshop on Inference in High-Dimensional Regression, AIM, San Jose, January 2015

Invited Lecture, Big Data Reunion Workshop, Simons Institute at Berkeley, December 2014

Invited Lecture, Rencontre Grenoble Lyon de Statistique, Grenoble, June 2014

Invited Lecture, CEA LETI, Grenoble, June 2014

Invited Lecture, Statistical Issues in Compressive Sensing, Göttingen, November 2013

Invited Lecture, Future of the Statistical Sciences Workshop, The Statistics 2013 Capstone Event, London, November 2013

Invited Lecture, Modern Large Scale Statistical Learning Workshop, Manhattan Beach, November 2013

Invited Lecture, Optimization and Statistical Learning, Les Houches, France, January 2013

Invited Lecture, 21st Symposium on Mathematical Programming (ISMP 2012), Berlin, August 2012

Invited Lecture, Workshop on Statistical Inference in Complex/High-Dimensional Problems, Vienna, July 2012

Invited Lecture, Phenomena in High Dimensions in Geometric Analysis, Random Matrices and Computational Geometry, Roscoff, France, June 2012

Invited Lecture, High-Dimensional Problems in Statistics, Zürich, September 2011

Main Lecturer, École d'été du 3e cycle romand de statistique et de probabilités appliquées, September 2011

Invited Lecture Schlumberger, Cambridge, March 2010

Invited Lectures, Conference on Neural Information Processing Systems (NIPS 10), Whistler, Canada, December 2010

Invited Lecture, IHES Conference on Applied Mathematics, Paris, November 2010

Invited Lecture, IPAM's 10th Anniversary Conference, Institute of Pure and Applied Mathematics, UCLA, November 2010

Invited Lecture, Modern Trends in Optimization & Its Application, Institute of Pure and Applied Mathematics, UCLA, October 2010

Invited Lectures, 2010 School of Information Theory, Los Angeles, August 2010

Invited Lecture, Joint Statistical Meetings, Vancouver, August 2010

Invited Lecture, SIAM Annual Meeting, Pittsburgh, July 2010

Tutorial Lecture, CVPR 2010: IEEE Conference on Computer Vision and Pattern Recognition, San Francisco, June 2010

Invited Lecture, Sparsity and Computation, Bonn, June 2010

Invited Lecture, 2010 Information Theory and Applications Workshop, San Diego, February 2010

Invited Lecture, Joint Mathematics Meetings, San Francisco, January 2010

Invited Lecture, 20th International Symposium of Mathematical Programming (ISMP), Chicago, August 2009

*Tutorial Lectures*, 2009 IEEE International Symposium on Information Theory, Seoul, June 2009

Invited Lecture, Illinois/Missouri Applied Harmonic Analysis Conference, Urbana-Champaign, March 2009

Invited Lecture, Workshop on Sparse Recovery Problems in High Dimensions: Statistical Inference and Learning Theory, Oberwolfach, March 2009

*Tutorial Lecture*, 22nd Annual Conference on Neural Information Processing Systems (NIPS 08), Vancouver, December 2008

Invited Lecture, Advances in Mathematical Modeling and Computational Algorithms in Information Processing, Tokyo, November 2008

Invited Lecture, Workshop in Honor of Joseph B. Keller, Stanford University, October 2008

Invited Lecture, 7th World Congress in Probability and Statistics, Singapore, July 2008

Invited Lecture, IHES 50th anniversary cycle, Paris, May 2008

Invited Tutorial Lecture, Information Theory and Applications, San Diego, January 2008

Invited Lecture, Contemporary Frontiers in High-Dimensional Statistical Data Analysis, Isaac Newton Institute for Mathematical Sciences, Cambridge, January 2008

Invited Lecture, Information Theory and Applications, San Diego, January 2007

Invited Lecture, Workshop on Inverse Problems, Oberwolfach, August 2006

Invited Lectures, Imagerie fonctionnelle et dispositifs optiques, Université de Montréal, Canada, May 2006

Invited Lecture, SPIE Defense & Homeland Security Symposium, Orlando, April 2006

Plenary Lecture, 4th International Conference on Wavelet Analysis & Its Applications, Macau, December 2005

Invited Lecture, Integration of Sensing and Processing, University of Minnesota, Minneapolis, December 2005

Invited Lecture, 46th Annual IEEE Symposium on Foundations of Computer Science (FOCS 2005), Pittsburgh, October 2005

Semi-plenary Lecture, Foundations of Computational Mathematics 2005, Santander, July 2005

Invited Lecture, International Conference on Function Spaces, Approximation Theory, Nonlinear Analysis dedicated to the centennial of Sergei Mikhailovich Nikolskii, Moscow, May 2005

Invited Lecturer, Wavelet And Multifractal Analysis 2004, Cargese, July 2004

*Main Lecturer*, XI-th Summer School in Computational Mathematics and Scientific Computing, University of Durham, July 2004

Invited Lecture, Workshop on Wavelets and Multiscale Analysis, Oberwolfach, July 2004

Two Invited Lectures, AIMS' 5th International Conference on Dynamical Systems and Differential Equations, Pomona, June 2004

Invited Lecture, International Conference on Computational Harmonic Analysis, Nashville, May 2004

Invited Lecture, SIAM Conference on Imaging Science, Salt Lake City, Utah, May 2004

*Main Lecturer*, 29th Annual Spring Lecture Series in the Mathematical Sciences, University of Arkansas, Fayetteville, April 2004

Invited Lecture, Workshop on "Regularization in Statistics," Banff, Canada, September 2003

Invited Lecture, Workshop on "Inverse Problems and Medical Imaging," Pacific Institute of Mathematical Sciences (PIMS), Seattle, August 2003

Invited Lecture, SPIE Wavelet X, San Diego, August 2003

Two Invited Lectures, 5th International Congress on Industrial & Applied Mathematics (ICIAM), Sydney, July 2003

Invited Lecture, International Conference on Approximation and Computation, Steklov Institute of Mathematics and Institute of Numerical Mathematics, Moscow, June 2003

Invited Lecture, Workshop on "Applicable Harmonic Analysis," Banff, Canada, June 2003

Invited Lecture, Applied Inverse Problems '03, Lake Arrowhead, California, May 2003

Invited Lecture, ONR PI's meeting, Minneapolis, May 2003

Invited Lecture, National Academies' Board on Mathematical Sciences & their Applications (BMSA), National Academies' Beckman Center, Irvine, April 2003

Invited Lecture, AMS Annual Meeting, Baltimore, January 2003

Invited Lecture, Conference on Applied Mathematics, University of Central Oklahoma, October 2002

Two Semi-Plenary Lectures, Foundations of Computational Mathematics (FoCM '02), Minnesota, August 2002

Invited Lecture, The Mathematical Geophysics Summer School, Stanford University, August 2002

Invited Lecture, DIMACS Workshop on Source Coding and Harmonic Analysis, New Jersey, May 2002

Invited Lecture, Nonparametric Smoothing in Complex Statistical Models, Switzerland, May 2002

Two Invited Lectures, SIAM Imaging Science Conference, Boston, March 2002

Invited Lecture, Inverse problems and Applications, MSRI, Berkeley, November 2001

Invited Lecture, IEEE Conference on Image Processing (ICIP2001), Thessaloniki, October 2001

Invited Lecture, Joint Statistical Meetings, Atlanta, August 2001

Two Invited Lectures, SIAM Annual Meeting, San Diego, July 2001

Invited Lecture, Statistics and Inverse Problems, Paris, May 2001

Invited Lecture, 1st Southern California Applied Mathematics Symposium (SoCAMS), Caltech, May 2001

Invited Lecture, Geometry-based Motion, Institute of Pure and Applied Mathematics, UCLA, April 2001

Invited Lecture, Rencontres statistiques, Marseille, France, December 2000

Invited Lecture, Yosemite Symposium on Multiresolution and Multiscale Methods, Yosemite, October 2000

Invited Lecture, AMS Regional Meeting, Toronto, September 2000

Two Invited lectures, SPIE Annual Meeting, San Diego, August 2000

Invited Lecture, SIAM Annual Meeting, Puerto Rico, July 2001

Plenary Lecture, CBMS Lectures Meeting, St. Louis, May 2000

Invited Lecture, 34th Annual Conference on Information Sciences and Systems, Princeton, March 2000

Invited Lecture, Foundations of Computational Mathematics, Hong Kong, November 1999

Plenary Lecture, Curves and Surfaces, Saint Malo, France, July 1999

### Colloquia

D. E. Shaw & Co., 2024

BlackRock, 2024

Section on Statistical Learning and Data Science, American Statistical Association, Webinar, 2024

International Seminar on Selective Inference, 2023

Institut Camille Jordan, Lyon, France, 2023

Friends of IHES, San Francisco, 2023

Center for the Theoretical Foundations of Learning, Inference, Information, Intelligence, Mathematics and Microeconomics at Berkeley (CLIMB), 2022

BlackRock, San Francisco, 2022

Stanford University, Statistics, 2022

SWC-Gatsby Unit, University College London, 2022

Learning Theory Seminar, Google, 2021

Mathematics of Deep Learning Seminar, Flatiron Institute, 2021

Virtual tea hour at the SWC-Gatsby Unit, University College London, 2021

University of Pennsylvania, Joint Statistics & CIS Seminar, 2021

TGS Management Company, 2020

Digital Transformation Institute, C3AI, 2020

Carnegie Mellon University, Statistics & Data Science, 2020

New York University and ETH Zürich, MAD+ Seminar, 2020

International Seminar on Selective Inference, 2020

Indian Statistical Institute, Kolkata, 2019

Stanford University, Statistics, 2019

DAWN faculty retreat, Menlo Park, 2019

Baidu Research, Sunnyvale, 2019

Stanford University, Statistics, 2018

Renaissance Technologies, Stony Brook, 2016

Stanford University, Statistics, 2016

National University of Singapore, Mathematics, 2016

McGill University, Mathematics and Statistics, 2015

University of California at Berkeley, Statistics, 2015

Charles University, Computer Science and Mathematics, 2015

Stanford University, Applied Mathematics, 2015

Stanford University, Statistics, 2014

Tel-Aviv University, Statistics, 2014

Université de Grenoble, France, 2014

École Polytechnique, France, 2014

CIMAT, Guanajuato, Mexico, 2013

Stanford University, Statistics, 2013

National Taiwan University, Electrical Engineering, 2013

Academia Sinica, Institute of Statistical Science, 2013

Stanford University, Statistics, 2012

Princeton University, Operations Research, 2012

ETH Zürich, Mathematics, 2011

EPFL Lausanne, Mathematics, 2011

Stanford University, Management Science and Engineering, 2011

University of Colorado, Computational Optical Sensing and Imaging, April 2011

University of Washington, Electrical Engineering, 2010

Stanford University, Department of Statistics, 2010

Korean Institute for Advanced Study, 2009

University of California at Davis, First Joint Mathematics/Statistics Colloquium, 2009

Duke University, Department of Mathematics, 2009

University of Southern California, Center of Applied Mathematical Sciences, 2009

Stanford University, ICME, 2009

University of California at Los Angeles, Applied Mathematics, 2008

University of Coimbra, Portugal, Department of Mathematics, 2008

University of Washington, Electrical Engineering and Computer Science, 2008

University of Cambridge, UK, 2008

Claremont Colleges, Mathematics, 2007

University of California at Los Angeles, Electrical Engineering, 2007

Claremont Colleges, Mathematics, 2007

University of Chicago, Statistics, 2007

Massachussets Institute of Technology, Laboratory for Information and Decision Systems, 2007

Stanford University, Mathematics, 2006

Stanford University, Statistics, 2006

University of California at Irvine, Mathematics, 2006

University of California at Los Angeles, Statistics, 2006

Université Paul Sabatier (Toulouse, France), Statistics, 2006

École Polytechnique Fédérale de Lausanne, Statistics, 2006

University of California at Berkeley, Applied Mathematics, 2006

University of Chicago, Applied Mathematics, 2006

Yale University, Statistics, 2006

École Polytechnique Fédérale de Lausanne, Applied Mathematics, 2005

Los Alamos National Laboratory, 2005

University of Vienna, Faculty of Mathematics, 2005

Rice University, Electrical Engineering and Applied Mathematics, 2005

Stanford University, Applied Mathematics, 2005

University of California at Irvine, Applied Mathematics, 2005

ETH Zürich, Statistics, 2004

University of California at Davis, Applied Mathematics, 2004

University of California at Los Angeles, Statistics, 2004

University of Southern California, Statistics, 2004

University of California at Los Angeles, Applied Mathematics, 2004

Université Paris-Sud d'Orsay (France), Statistics, 2002

Caltech, Applied Mathematics, 2002

University of Chicago, Applied Mathematics, 2002

University of California at Los Angeles, Mathematics, 2002

University of California at Los Angeles, Applied Mathematics, 2001

École Normale Supérieure (France), Applied Mathematics, 2001

University of California at Los Angeles, Statistics, 2001

University of California at Los Angeles, Applied Mathematics, 2000

Stanford University, Statistics, 2000

University of California at Santa Barbara, Statistics, 2000

Caltech, Applied Mathematics, 2000

New York University (Courant Institute), Applied Mathematics, 2000

Brown University, Applied Mathematics, 2000

Massachusetts Institute of Technology, Applied Mathematics, 2000

University of Wisconsin, Statistics, 2000

Rutgers University, Statistics, 2000

ETH (Switzerland), Statistics, 2000

University of Pennsylvania, Wharton School of Business, 2000

Stanford University, Applied Mathematics, 2000

Hewlett Packard, Palo Alto, California, 1999

University of California at Berkeley, Biostatistics, 1999

Yale University, Statistics, 1999

University of South Carolina, Mathematics, 1998

University of California at Berkeley, Statistics, 1998

University of Chicago, Graduate School of Business, 1998

Stanford University, Statistics, 1998

University of Washington, Statistics, 1998

University of Chicago, Statistics, 1998

Columbia University, Applied Mathematics, Statistics, 1998

Tel-Aviv University (Israel), School of Mathematical Sciences, 1996

### Summer & short courses

Main Lecturer, StatMathAppli 2015, Fréjus, France, August 2015

Summer Lecturer, Machine Learning Summer School, Kyoto, Japan, August 2015

Main Lecturer, Polynomial Optimisation, Cambridge, United Kingdom, July 2013

Main Lecturer, Stochastics Meeting Lunteren, Lunteren, The Netherlands, November 2012

Main Lecturer, 41st Probability Summer School, Saint Flour, France, July 2011

London Mathematical Society Lecturer, University of Cambridge, United Kingdom, March 2011

Lecturer at the 2010 School of Information Theory, University of Southern California, Los Angeles, August 2010

Main Lecturer, New Directions Short Course "Compressive Sampling and Frontiers in Signal Processing", Institute of Mathematics and Its Applications, University of Minnesota, June 2007

Invited Lecturer, Multiscale Geometric Data Representation - Complexity, Analysis and Applications, ETH Zürich, September 2004

Main Lecturer, Mathematics and Computation in Imaging Science and Information Processing, National University of Singapore, 2004

Main Lecturer, XI-th Summer School in Computational Mathematics and Scientific Computing, University of Durham, July 2004

Main Lecturer, NSF-sponsored 29th Annual Spring Lecture Series in the Mathematical Sciences, University of Arkansas, 2004

Summer Lecturer, Spline-Based Wavelets, Frames and Applications to PDEs and Images, Denmark, August 2001

All publications available from `https://candes.su.domains/publications/`.

## Publications


[1] E. J. Candès. "Ridgelets: Theory and applications". PhD thesis. Department of Statistics, Stanford University, 1998.

[2] E. J. Candès. "Harmonic analysis of neural networks". *Applied and Computational Harmonic Analysis* 6.2 (1999), pp. 197–218.

[3] E. J. Candès and D. L. Donoho. "Ridgelets: A key to higher-dimensional intermittency?" *Philosophical Transactions of the Royal Society of London A* 357.1760 (1999), pp. 2495–2509.

[4] E. J. Candès. *Monoscale ridgelets for the representation of images with edges*. Tech. rep. Department of Statistics, Stanford University, 1999.

[5] E. J. Candès and D. L. Donoho. "Curvelets: A surprisingly effective nonadaptive representation for objects with edges". *Curves and Surfaces*. Ed. by L. L. Schumaker et al. Vanderbilt University Press, 1999.

[6] E. J. Candès. "Ridgelets and their derivatives: Representation of images with edges". *Curves and Surfaces*. Ed. by L. L. Schumaker et al. Vanderbilt University Press, 1999.

[7] E. J. Candès and D. L. Donoho. "Curvelets and reconstruction of images from noisy radon data". *Wavelet Applications in Signal and Image Processing VIII*. Ed. by A. Aldroubi, A. F. Laine, and M. A. Unser. Vol. 4119. Proc. SPIE. 2000.

[8] E. J. Candès and D. L. Donoho. "Curvelets, multiresolution representation, and scaling laws". *Wavelet Applications in Signal and Image Processing VIII*. Ed. by A. Aldroubi, A. F. Laine, and M. A. Unser. Vol. 4119. Proc. SPIE. 2000.

[9] E. J. Candès. "Ridgelets and the representation of mutilated Sobolev functions". *SIAM Journal on Mathematical Analysis* 33.2 (2001), pp. 347–368.

[10] E. J. Candès and D. L. Donoho. "Curvelets and curvilinear integrals". *Journal of Approximation Theory* 113.1 (2001), pp. 59–90.

[11] J.-L. Starck, E. J. Candès, and D. L. Donoho. "Very high quality image restoration by combining wavelets and curvelets". *Wavelet Applications in Signal and Image Processing IX*. Ed. by A. Aldroubi, A. F. Laine, and M. A. Unser. Vol. 4478. Proc. SPIE. 2001.

[12] E. J. Candès and D. L. Donoho. "Recovering edges in ill-posed inverse problems: Optimality of curvelet frames". *Annals of Statistics* (2002), pp. 784–842.

[13] J.-L. Starck, E. J. Candès, and D. L. Donoho. "The curvelet transform for image denoising". *IEEE Transactions on Image Processing* 11.6 (2002), pp. 670–684.

[14] E. J. Candès. "New ties between computational harmonic analysis and approximation theory". *Approximation Theory X*. Vanderbilt University Press, 2002, pp. 87–153.

[15] E. J. Candès and F. Guo. "New multiscale transforms, minimum total variation synthesis: Applications to edge-preserving image reconstruction". *Signal Processing* 82.11 (2002), pp. 1519–1543.
[16] E. J. Candès. *Multiscale chirplets and near-optimal recovery of chirps*. Tech. rep. Department of Statistics, Stanford University, 2002.
[17] E. J. Candès. "Ridgelets: Estimating with ridge functions". *Annals of Statistics* (2003), pp. 1561–1599.
[18] J.-L. Starck, F. Murtagh, E. J. Candès, and D. L. Donoho. "Gray and color image contrast enhancement by the curvelet transform". *IEEE Transactions on Image Processing* 12.6 (2003), pp. 706–717.
[19] A. G. Flesia, H. Hel-Or, A. Averbuch, E. J. Candès, R. R. Coifman, and D. L. Donoho. "Digital implementation of ridgelet packets". *Studies in Computational Mathematics* 10 (2003), pp. 31–60.
[20] J.-L. Starck, D. L. Donoho, and E. J. Candès. "Astronomical image representation by the curvelet transform". *Astronomy & Astrophysics* 398.2 (2003), pp. 785–800.
[21] E. J. Candès and L. Demanet. "Curvelets and Fourier integral operators". *Comptes Rendus Mathematique* 336.5 (2003), pp. 395–398.
[22] E. J. Candès and D. L. Donoho. "New tight frames of curvelets and optimal representations of objects with piecewise C2 singularities". *Communications on Pure and Applied Mathematics* 57.2 (2004), pp. 219–266.
[23] E. J. Candès and D. L. Donoho. "Continuous curvelet transform: II. Discretization and frames". *Applied and Computational Harmonic Analysis* 19.2 (2005), pp. 198–222.
[24] E. J. Candès and D. L. Donoho. "Continuous curvelet transform: I. Resolution of the wavefront set". *Applied and Computational Harmonic Analysis* 19.2 (2005), pp. 162–197.
[25] E. J. Candès and L. Demanet. "The curvelet representation of wave propagators is optimally sparse". *Communications on Pure and Applied Mathematics* 58.11 (2005), pp. 1472–1528.
[26] E. J. Candès and J. Romberg. "Practical signal recovery from random projections". *Wavelet Applications in Signal and Image Processing XI*. Vol. 5914. Proc. SPIE. 2005.
[27] E. J. Candès and T. Tao. "Decoding by linear programming". *IEEE Transactions on Information Theory* 51.12 (2005), pp. 4203–4215.
[28] E. J. Candès, M. Rudelson, T. Tao, and R. Vershynin. "Error correction via linear programming". *Proceedings of the 46th Annual IEEE Symposium on Foundations of Computer Science (FOCS)*. IEEE. 2005, pp. 295–308.
[29] E. J. Candès, J. Romberg, and T. Tao. "Robust uncertainty principles: Exact signal reconstruction from highly incomplete frequency information". *IEEE Transactions on Information Theory* 52.2 (2006), pp. 489–509.
[30] E. J. Candès and J. Romberg. "Quantitative robust uncertainty principles and optimally sparse decompositions". *Foundations of Computational Mathematics* 6.2 (2006), pp. 227–254.
[31] E. J. Candès and T. Tao. "Near-optimal signal recovery from random projections: Universal encoding strategies?" *IEEE Transactions on Information Theory* 52.12 (2006), pp. 5406–5425.
[32] E. J. Candès, J. Romberg, and T. Tao. "Stable signal recovery from incomplete and inaccurate measurements". *Communications on Pure and Applied Mathematics* 59.8 (2006), pp. 1207–1223.
[33] E. J. Candès, L. Demanet, D. Donoho, and L. Ying. "Fast discrete curvelet transforms". *Multiscale Modeling & Simulation* 5.3 (2006), pp. 861–899.
[34] E. J. Candès and L. Ying. "The phase flow method". *Journal of Computational Physics* 220.1 (2006), pp. 184–215.
[35] E. J. Candès. "Modern statistical estimation via oracle inequalities". *Acta Numerica* 15 (2006), pp. 257–325.
[36] E. J. Candès and L. Ying. "Fast geodesics computation with the phase flow method". *Journal of Computational Physics* 220.1 (2006), pp. 6–18.
[37] E. J. Candès. "Compressive sampling". *Proceedings of the International Congress of Mathematicians*. Vol. 3. Madrid, Spain, 2006, pp. 1433–1452.

[38] E. J. Candès and T. Tao. "The Dantzig selector: Statistical estimation when $p$ is much larger than $n$". *Annals of Statistics* 35.6 (2007), pp. 2313–2351.

[39] E. J. Candès, L. Demanet, and L. Ying. "Fast computation of Fourier integral operators". *SIAM Journal on Scientific Computing* 29.6 (2007), pp. 2464–2493.

[40] E. J. Candès and J. Romberg. "Sparsity and incoherence in compressive sampling". *Inverse Problems* 23.3 (2007), p. 969.

[41] E. J. Candès and T. Tao. "Rejoinder: 'The Dantzig selector: Statistical estimation when $p$ is much larger than $n$'". *Annals of Statistics* 35.6 (2007), pp. 2392–2404.

[42] E. J. Candès, P. R. Charlton, and H. Helgason. "Detecting highly oscillatory signals by chirplet path pursuit". *Applied and Computational Harmonic Analysis* 24.1 (2008), pp. 14–40.

[43] E. J. Candès and P. Randall. "Highly robust error correction by convex programming". *IEEE Transactions on Information Theory* 54.7 (2008), pp. 2829–2840.

[44] E. Arias-Castro, E. J. Candès, H. Helgason, and O. Zeitouni. "Searching for a trail of evidence in a maze". *Annals of Statistics* 36.4 (2008), pp. 1726–1757.

[45] E. J. Candès and M. B. Wakin. "An introduction to compressive sampling". *Signal Processing Magazine* 25.2 (2008), pp. 21–30.

[46] E. J. Candès, M. B. Wakin, and S. P. Boyd. "Enhancing sparsity by reweighted $\ell_1$ minimization". *Journal of Fourier Analysis and Applications* 14.5-6 (2008), pp. 877–905.

[47] E. J. Candès. "The restricted isometry property and its implications for compressed sensing". *Comptes Rendus Mathematique* 346.9 (2008), pp. 589–592.

[48] E. J. Candès and T. Tao. "Reflections on compressed sensing". *IEEE Information Theory Society Newsletter* 58.4 (2008), pp. 14–17.

[49] E. J. Candès and Y. Plan. "Near-ideal model selection by $\ell_1$ minimization". *Annals of Statistics* 37.5A (2009), pp. 2145–2177.

[50] E. J. Candès and B. Recht. "Exact matrix completion via convex optimization". *Foundations of Computational Mathematics* 9.6 (2009), pp. 717–772.

[51] E. Candès, L. Demanet, and L. Ying. "A fast butterfly algorithm for the computation of Fourier integral operators". *Multiscale Modeling & Simulation* 7.4 (2009), pp. 1727–1750.

[52] J.-F. Cai, E. J. Candès, and Z. Shen. "A singular value thresholding algorithm for matrix completion". *SIAM Journal on Optimization* 20.4 (2010), pp. 1956–1982.

[53] E. J. Candès and T. Tao. "The power of convex relaxation: Near-optimal matrix completion". *IEEE Transactions on Information Theory* 56.5 (2010), pp. 2053–2080.

[54] E. J. Candès and Y. Plan. "Matrix completion with noise". *Proceedings of the IEEE* 98.6 (2010), pp. 925–936.

[55] A. Zymnis, S. Boyd, and E. Candès. "Compressed sensing with quantized measurements". *Signal Processing Letters* 17.2 (2010), pp. 149–152.

[56] A. Ganesh, J. Wright, X. Li, E. J. Candès, and Y. Ma. "Dense error correction for low-rank matrices via principal component pursuit". *Proceedings of International Symposium on Information Theory*. IEEE. 2010, pp. 1513–1517.

[57] Z. Zhou, X. Li, J. Wright, E. Candès, and Y. Ma. "Stable principal component pursuit". *Proceedings of International Symposium on Information Theory*. IEEE. 2010, pp. 1518–1522.

[58] S. Becker, J. Bobin, and E. J. Candès. "NESTA: A fast and accurate first-order method for sparse recovery". *SIAM Journal on Imaging Sciences* 4.1 (2011), pp. 1–39.

[59] E. J. Candès and Y. Plan. "Tight oracle inequalities for low-rank matrix recovery from a minimal number of noisy random measurements". *IEEE Transactions on Information Theory* 57.4 (2011), pp. 2342–2359.

[60] E. J. Candès, X. Li, Y. Ma, and J. Wright. "Robust principal component analysis?" *Journal of the ACM* 58.3 (2011), p. 11.

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