Cynthia Dwork

Gordon McKay Professor of Computer Science, Harvard University
Professor by Affiliation, Harvard Law School
Professor by Affiliation, Department of Statistics, Harvard University
Distinguished Scientist, Microsoft Research

Education:

1983: Ph.D. in Computer Science, Cornell University
1981: M.Sc. in Computer Science, Cornell University
1979: BSE (with Honors), in Electrical Engineering and Computer Science, Princeton University

Employment

January, 2017 – present: Gordon McKay Professor of Computer Science at the Harvard Paulson School of Engineering

October, 2001 – present: Microsoft Research, Silicon Valley Campus; Current Title: Distinguished Scientist

January, 2017 – June 2022: Radcliffe Alumnae Professor at the Radcliffe Institute for Advanced Study

June, 2000 – October, 2001: Compaq Systems Research Center; Staff Fellow

August, 1985 – June, 2000: IBM Almaden Research Center, Research Staff Member

May, 1983 - May, 1985 Post-Doctoral Research Fellow, MIT Laboratory for Computer Science
Host: Nancy Lynch

Other Professional Affiliations

Consulting Professor, Stanford University, 1997 – 2006

1989-1990: Visiting Scientist, MIT Laboratory for Computer Science

Bantrell Post-Doctoral Fellowship (at MIT), 1983-1985

Honors and Awards:

30-Year Test-of-Time Award, STOC 2022, for *Non-Malleable Cyrptography*, Dolev, Dwork, and Naor

2022 ACM Paris Kanellakis Theory and Practice Award, for fundamental contributions to the development of differential privacy, with Blum, Dinur, McShderry, Nissim, and Smith

RSA Conference 2022 Award for Excellence in Mathematics, co-sponsored by the International Association of Cryptologic Research (IACR)

Donald E. Knuth Prize, 2020

Institute of Electrical and Electronics Engineers (IEEE) Richard W. Hamming Medal, 2020

Gödel Prize, 2017, for *Calibrating Noise to Sensitivity in Private Data Analysis*, by Dwork, McSherry, Nissim, and Smith

Theory of Cryptography Conference Test of Time Award, 2016, for *Calibrating Noise to Sensitivity in Private Data Analysis*, by Dwork, McSherry, Nissim, and Smith

PET Award for Outstanding Research in Privacy Enhancing Technologies, 2009

Edsger W. Dijkstra Prize, 2007, for *Consensus in the Presence of Partial Synchrony*, by Dwork, Lynch, and Stockmeyer

Fellow of the American Philosophical Society, elected 2016

Fellow of the Association for Computing Machinery, elected 2016

Member of the National Academy of Sciences, elected 2014

Fellow of the American Academy of Arts and Sciences, elected 2008

Member of the National Academy of Engineering, elected 2008

Fellow of the Association for Computing Machinery, elevated 2015

Charles Ira Young Tablet and Medal for Excellence in Independent Research, Department of Electrical Engineering and Computer Science, Princeton University, 1979

Grants

Alfred P. Sloan Foundation, "Towards Practicing Privacy," (with J. Mitchell and D. Nekipelov)

"Collaborative Proposal: Foundations of Adaptive Data Analysis," NSF CCF-1763665, Algorithmic Foundations (medium) award, with Aaron Roth, Adam Smith, and James Zou, 2018

"Representation via Representations," with Giovanni Parmigiani (Dana Farber), Harvard Data Science Initiative, 2018

Alfred P. Sloan Foundation, "Pseudo-Randomness and the Crystal Ball," (with O. Reingold), G-2020-13941, 2020

"The Theory of Algorithmic Fairness," a Simons Collaboration Project, with Avrim Blum, Constantinos Daskalakis, Shafi Goldwasser, Jon Kleinberg, Katrina Liett, Huijia (Rachel) Lin, Jamie Morgenstern, Moni Naor, Toni Pitassi, Omer Reingold (collaboration director), Aaron Roth, and Guy Rothblum, Simons Foundation 733782

Books and Book Chapters

Federal Statistics, Multiple Data Sources, and Privacy Protection: Next Steps. Panel on Improving Federal Statistics for Policy and Social Science Research Using Multiple Data Sources and State-of-the-Art Estimation Methods, National Academies of Sciences, Engineering, and Medicine, The National Academies Press, 2017.

Innovations in Federal Statistics: Combining Data Sources While Protecting Privacy. Panel on Improving Federal Statistics for Policy and Social Science Research Using Multiple Data Sources and State-of-the-Art Estimation Methods, National Academies of Sciences, Engineering, and Medicine, The National Academies Press, 2017.

Strengthening Data Science Methods for Department of Defense Personnel and Readiness Missions, Committee on Strengthening Data Science Methods for Department of Defense Personnel and Readiness Missions, National Academies of Sciences, Engineering, and Medicine, National Academies Press (2016)

The Algorithmic Foundations of Differential Privacy, with Aaron Roth, NOW Publishers, 2014

Differential Privacy: A Cryptographic Approach to Private Data Analysis, concluding chapter of *Privacy, Big Data, and the Public Good: Frameworks for Engagement*, Lane, Stoddard, Bender, and Nissenbaum, editors, Cambridge University Press, 2014

Protecting Individual Privacy in the Struggle Against Terrorism, Committee on Technical and Privacy Dimensions of Information for Terrorism Prevention and Other National Goals (National Research Council), National Academies Press (2008)

Professional Activities:

Co-founder (with Omer Reingold) of Symposium on Foundations of Responsible Computing

Member-at-Large of the 2016, 2017, and 2018 Class Membership Committee, National Academy of Sciences

Member of the National Academies Panel on Improving Federal Statistics for Policy and Social Science Research Using Multiple Data Sources and State-of-the-Art Estimation Methods, 2015 – present

Member of the National Research Council Committee on Strengthening Data Science Methods for Department of Defense Personnel and Readiness Missions, 2014 – 2016

Member of the National Research Council Committee on Technical and Privacy Dimensions of Information for Terrorism Prevention and Other National Goals (National Research Council), 2006-2008.

Member-at-Large, Executive Committee of ACM SIGACT, 2009-2011

SIGACT Committee for the Advancement of Theoretical Computer Science, 2008-2013

Founding Editor, *Journal of Privacy and Confidentiality*, 2008 – present; Editor-in-Chief since 2017

Member, Computing Community Consortium, 2016-2018

Editorial Boards. *Journal of Algorithms (1990 - 2006)*, *Information and Computation* (1991(?) - 2010), *J. Cryptology* (1999-2010)

Advisory Boards.

Institute for Quantitative Social Sciences (IQSS), April 2020–present

Center of Mathematical Sciences and Applications (CMSA), September 2019–present

Advisory Board, AI Now, 2017–2021

Advisory Board, Harvard Data Science Initiative, 2017–present

Inaugural Chair, Scientific Advisory Board, Alan Turing Institute, 2016–2019

Advisory Board, Berkman Klein Assembly for Internet and Society, Harvard, 2016–present

Science Advisory Board, Institute for Pure and Applied Mathematics (IPAM), 2015-present

Advisory Board, Advisory Board, Electronic Privacy Information Center (EPIC), 2015(?)-present

External Advisory Board, Simons Institute (at UC Berkeley), 2012 - 2015

Member of External Review Committee, Computer Science at IST Austria, 2013

External Advisory Board, Integrating Data for Analysis, Anoymization, and Sharing (iDASH; a National Center for Biomedical Computing), 2011 - 2015

External Advisory Board of DIMACS (1996 – 2008)

Scientific Advisory Board, Bertinoro International Center for Informatics (2004 – 2008)

IACR Fellows Committee (2004 – 2009)

Chair of the Steering Committee of the Symposium on Principles of Distributed Computing, 1993-1995;

Workshops, Programs, Conferences

1. "Who Counts? Sex and Gender Bias in Data," (with Ruha Benjamin and Patricia Williams), cross-disciplinary workshop held at the Institute for Pure and Applied Mathematics (IPAM), UCLA, 2022
2. co-founded the Symposium on Foundations of Responsible Computing (FORC), an annual conference dedicated to mathematically strong research in computation and society writ large; inaugural meeting will be at Harvard Center of Mathematical Sciences and Applications, June, 2020
3. Wrong at the Root: Racial Bias and the Tension Between Numbers and Words in Non-Internet Data (with Patricia Williams), cross-disciplinary workshop, part of Simons Institute Summer Cluster on Algorithmic Fairness, June, 2019
4. Simons Institute Summer Cluster on Algorithmic Fairness (with Sampath Kannan and Jamie Morgenstern), May-June, 2019
5. DP Deployed (with Abhishek Bhowmick, David O'Brien, and Abhradeep Thakurta), held at the American Academy of Arts and Sciences with funding from the Sloan Foundation, September, 2018
6. Adaptive Data Analysis, held at the Simons Institute with funding from the Sloan Foundation, July, 2018
7. Simons Institute Short Summer Cluster on Algorithmic Fairness (with Sampath Kannan and Guy Rothblum), July 2018
8. Algorithmic Fairness (with Guy Rothblum), workshop at STOC, June, 2018
9. Mathematical Foundations of Data Science (with Mark Bun, Toni Pitassi, Guy Rothblum, Thomas Steinke, and Kunal Talwar), Banff (Banff International Research Station), April-May, 2018
10. Algorithmic challenges in protecting privacy for biomedical data, with Anand Sarwate, Sriram Sankararaman, and James Zou, IPAM, January, 2018
11. Four Facets of Differential Privacy, Institute for Advanced Study and Sloan Foundation, Princeton, November 2016
12. Defining Fairness, with Urs Gasser and Alexandra Wood, Harvard University, November 2016

13. Session on Differential Privacy and Statistics, IMS/Bernoulli World Congress of Probability and Statistics 2016
14. Differential Privacy: Analyzing Sensitive Data and Implications, AAAS 2015 Annual Meeting (with S. Vadhan), February 2015
15. Big Data and Differential Privacy, Simons Institute (UC Berkeley) (with K. Talwar, A. Blum, K. Chaudhuri, and M. Jordan), December, 2013.
16. New Directions in the Science of Privacy, March 2013, Simons Foundation (with M. Naor)
17. Differential Privacy and Law and Policy, March 2013, funded by Sloan Foundation, Benjamin Cardozo School of Law (with M. Naor, P. Ohm, and F. Wu)
18. Differential Privacy and Economics and Social Sciences, March 2013, funded by Sloan Foundation, hosted at Simons Foundation (with M. Naor and D. Nekipelov)
19. Statistical and Learning-Theoretic Challenges in Data Privacy, February 2010, Institute of Pure and Applied Mathematics, UCLA (with A. Smith, S. Fienberg, and A. Slavkovic)
20. Microsoft Research, Asia, Theory Workshop, April, 2008 (with A. Bogdanov, W. Chan, and S. Teng)
21. Microsoft Research / Carnegie-Mellon Center for Computational Thinking Mindswap on Privacy, October, 2007 (with L. Cranor, K. Talwar, and R. Williams
22. NSF/Microsoft/IBM-Sponsored Workshop on Data Confidentiality, September, 2007 (with S. Fienberg, E. Bertino, E. Viegas, and L. Zayatz)
23. BICI workshop (Bertinoro): Computer Science / Statistics Workshop On Privacy and Confidentiality, July, 2005 (with S. Fienberg)
24. BICI and DIMACS workshop on Mathematics of Web Search and Meta-Search, Bertinoro, June 2004 (with A. Gelman and D. Sivakumar)
25. DIMACS workshop on Privacy-Preserving Data Mining, March, 2004 (with B. Pinkas and R. Wright)
26. IPAM Workshop on Cryptography, Los Angeles, CA, Jan 2002
27. MSRI Workshop on Number-Theoretic Aspects of Cryptography, Berkeley, CA, October, 2000
28. Workshop on Parallel and Distributed Computing, Dagstuhl, 1995
29. SIAM Minisymposium on Theory of Distributed Computing, 1992

Miscellaneous:

1. Hold first, second, and third Black Belt degrees in Chun do Kwon style of Tae Kwon Do (Korean Karate).

2. Instructor, Mountain View - Los Altos Adult School, Tae Kwon Do class, 1990 - 1995

3. Designed and Taught Seminar on Women's Self-Protection, a four-hour workshop teaching physical and non-physical avoidance of and defense against assault.

Selected Lectures

1. Ding Shum Lecture, Center of Mathematical Sciences and Applications, Harvard, planned, March 2023
2. Simons Lectures (3 lectures), MIT Department of Mathematics, September 2022
3. Green Family Lecture Series (3 lectures), Institute for Pure and Applied Mathematics, UCLA, July 2022
4. Special Sectional Lecture, International Congress of Mathematicians, June 2022
5. Keynote Talk, Beijing Academy of Artificial Intelligence Conference (BAAI), June, 2022
6. Simons Foundation Presidential Lecture, February 2022
7. Keynote talk, International Symposium on Artificial Intelligence and Mathematics (ISAIM), January 2022
8. Keynote talk, CCS 2021
9. Turing Lecture, Alan Turing Institute, September 30, 2021
10. Keynote talk, 40th ACM Conference on Principles of Distributed Computing (PODC), 2021
11. Inspirational Talk, TCS Women Workshop, STOC 2021
12. Differential Privacy: the Mathematical Bulwark against Reidentification and Reconstruction, Keynote talk, First SIAM Conference on Mathematics of Data Science (MDS), 2020
13. Outcome Indistinguishability, Knuth Prize Lecture, delivered at the IEEE Foundations of Computer Science (FOCS) conference, November, 2020
14. Differential Privacy and the US Census, Keynote talk, ACM Symposium on Principles of Database Systems (PODS) 2019
15. Differential Privacy and the US Census, Keynote talk, ACM Federated Computing Research Conference (FCRC) 2019
16. Differential Privacy and the People's Data, International Association for Cryptologic Research (IACR) Distinguished Lecture, 2019
17. Recent Developments in Algorithmic Fairness, Keynote talk, International Conference on Learning Representations (ICLR) 2019
18. Science briefing on Differential Privacy, Invited Lecture, National Association of Science Writers annual meeting, October 2018
19. "The Emerging Theory of Algorithmic Fairness," Keynote talk, ACM Symposium on Theory of Computing (STOC), June 2108

20. "Making Algorithms Play Fair," You and AI, flagship lecture series of the Royal Society, June 2018

21. "Fair Questions," Keynote talk, AAAI Conference on Artificial Intelligence, 2018

22. "Privacy in the Land of Plenty," AMS Josiah Willard Gibbs Lecture, AMS Joint Mathematics Meetings, January 2018

23. "Differential Privacy: Gateway Theory," Plenary talk, SIAM Symposium on Discrete Algorithms (SODA), 2018

24. "Theory for Society: Fairness in Classification," Invited talk, Theory of Cryptography Conference, 2017

25. "What's Fair?" Keynote talk, ACM Conference on Knowledge Discovery and Data Mining (KDD) 2017

26. "The Promise of Differential Privacy," Rothschild Lecture, Isaac Newton Institute, November 2016

27. "Theory for Society," Snowbird, July 2016

28. "Privacy in the Land of Plenty," SIAM General Meeting, July 2016

29. "Accuracy, Privacy, and Validity: When Right is Wrong and Wrong is Right," SIAM Meeting on Discrete Mathematics, June 2016

30. "The Mete and Measure of Privacy," Class III (Engineering and Applied Sciences) Research Briefing, National Academy of Sciences Annual Meeting, April 2015 (session highlighting the research of new members)

31. Plenary Lecture, "Differential Privacy and False Discovery Control," Information Theory and Applications (ITA), February 2015

32. Plenary Lecture, "Privacy in the Land of Plenty," NIPS, December 2014

33. "A Surprising Application of Differential Privacy," Celebration of the 50th Anniversary of Computer Science at Cornell, October, 2014

34. Plenary Lecture, "Pleasures, Pressures, and Surprises of Differential Privacy," Society of Epidemeologic Research, June 2014

35. "The State of the Art of Privacy Protection," Big Data Privacy Workshop Advancing the State of the Art in Technology and Practice, co-hosted by the White House Office of Science and Technology Policy and MIT, March 2014

36. "Differential Privacy Dreams and Nightmares," Celebration of the 70th Birthday of Butler Lampson, February, 2014

37. "Natural Differential Privacy," Verification, Model Checking, and Abstract Interpretation (VMCAI), January 2014

38. "The Mete and Measure of Privacy," Future of Statistical Sciences Workshop, (the Statistics2013 Capstone Event), November 2013

39. Keynote talk, "Privacy-Preserving Data Analysis: From Fallacious to Felicitous ... and to Fruition!" Very Large Databases (VLDB), August, 2013

40. Plenary Lecture, "Differential Privacy and the Power of (Formalizing) Negative Thinking," European Joint Conferences on Theory and Practice of Software (ETAPS), March, 2012

41. "The Promise of Differential Privacy," Keynote talk, International Conference on Data Mining (ICDM), 2011

42. "Privacy against many arbitrary low-sensitivity queries," International Congress of Mathematicians, 2010

43. "New Directions In Private Data Analysis," Plenary Lecture, SODA 2010

44. "Rethinking privacy and disclosure limitation from a cryptographic perspective," in invited session, "Oh privacy where art thou? Mapping the landscape of data confidentiality," Joint Statistics Meeting (JSM) 2009

45. "The Differential Privacy Frontier," Theory of Cryptography Conference (TCC) 2009

46. "Differential Privacy: A Survey of Results," Keynote talk, Theory and Applications of Models of Computation (TAMC) 2008, Xian, China, 4/2008.

47. "An *Ad Omnia* Approach to Defining and Achieving Private Data Analysis," Keynote talk, First ACM SIGKDD Workshop on Privacy, Security, and Trsut in KDD (PinKDD), 2007.

48. "Differential Privacy," Plenary Lecture, ICALP, 2006.

49. "Sub-Linear Queries (SuLQ) Statistical Databases: Privacy with Power," RSA, 2005

50. "Fighting Spam: The Science," LATIN 2004.

51. "Positive Applications of Lattices to Cryptography," Mathematical Foundations of Computer Science (MFCS'97), Bratislava, Slovakia, 8/1997.

52. "Copyright? Protection?" Plenary Lecture, Federated Computing Research Conference, 5/1996.

53. 25th Congress of the Mexican Mathematical Association, plenary lecture, Xalapa, Mexico, 1992

54. "Zero-Knowledge with Finite State Verifiers," CRYPTO '88, Santa Barbara, California, 1988

Publications

Publications in Journals

1. C. Dwork, P. Kanellakis, and J. Mitchell, "On the Sequential Nature of Unification," *J. of Logic Programming 1*(1), 1985

2. S. Cook, C. Dwork, and R. Reischuk, "Upper and Lower Time Bounds for Parallel RAMS Without Simultaneous Writes", *SIAM J. Computing 15*(1), 1986

3. D. Dolev, C. Dwork, and L. Stockmeyer, "On the Minimal Synchronism Needed for Distributed Consensus," *JACM 34*(1), 1987

4. C. Dwork and Y. Moses, "Knowledge and Common Knowledge in a Byzantine Environment: Crash Failures," *Information and Computation 88*(2) (1990)

5. B. Chor and C. Dwork, "Randomization in Byzantine Agreement" *Advances in Computing Research, Volume 4*, JAI Press Inc (1989)

6. C. Dwork, N. Lynch, and L. Stockmeyer, "Consensus in the presence of Partial Synchrony," *JACM, 35*(2), 1988

7. C. Dwork, P. Kanellakis, and L. Stockmeyer, "Parallel Algorithms for Term Matching," *SIAM J. Computing 17*(4), 1988

8. C. Dwork, D. Peleg, N. Pippenger, and E. Upfal, "Fault Tolerance in Networks of Bounded Degree," *SIAM J. Computing 17*(5), 1988

9. B. Coan, D. Dolev, C. Dwork, and L. Stockmeyer, "The Distributed Firing Squad Problem," *SIAM J. Computing 18*(5), 1989

10. C. Dwork, D. Shmoys, and L. Stockmeyer, Flipping persuasively in constant time, *SIAM J. Computing 19* (1990), 472–499.

11. C. Dwork and L. Stockmeyer, "A Gap Theorem for 2-Way Probabilistic Finite State Automata," *SIAM J. Computing 19*(6) (1990).

12. B. Coan, and C. Dwork, "Simultaneity is Harder Than Agreement," *Information and Computation 91*(2), 1991

13. A. Bar-Noy, D. Dolev, C. Dwork, and R. Strong, "Shifting Gears: Changing Algorithms on the Fly to Expedite Byzantine Agreement," *Information and Computation 97* (2), 1992, pp. 205-233

14. C. Dwork and L. Stockmeyer, "Finite State Verifiers I: The Power of Interaction" *JACM 39*(4), 1992, pp. 800–828

15. C. Dwork and L. Stockmeyer, "Finite State Verifiers II: Zero Knowledge" *JACM 39*(4), 1992, pp. 829–858

16. D. Dolev, C. Dwork, O. Waarts, and M. Yung, "Perfectly Secure Message Transmission," *JACM 40*(1), 1993, pp. 17-47

17. H. Attiya, D. Dwork, N. Lynch, and L. Stockmeyer, "Bounds on the Time to Reach Agreement in the Presence of Timing Uncertainty," *JACM 41*(1), pp. 122 – 152 (1994)

18. C. Dwork and M. Naor, "Efficient Existentially Unforgeable Signatures," *J. Cryptology 11*(3), pp. 187 – 208, 1998

19. C. Dwork, M. Herlihy, and O. Waarts, "Contention in Shared-Memory Algorithms," *JACM 44*(6), 1997

20. C. Dwork "Copyright? Protection?" *The Mathematics of Coding, Extraction, and Distribution*, *The IMA Volumes in Mathematics and its Applications 107* Editors: G. Cybenko, D. O'Leary, and J. Rissanen, Springer Verlag

21. C. Dwork and O. Waarts, "Simple and Efficient Bounded Concurrent Timestamping and the Traceable Use Abstraction *JACM 46*(5), pp. 633 – 666, 1999.

22. C. Dwork, J. Halpern, and O. Waarts, "Accomplishing Work in the Presence of Failures," *SIAM J. Computing 27*(5), pp. 1457 – 1491 (1998)

23. C. Dwork, M. Herlihy, S. Plotkin, and O. Waarts, "Time-Lapse Snapshots," *SIAM J. Computing 28*(5), pp. 1848 – 1874, 1999.

24. D. Dolev, C. Dwork, and M. Naor, "Non-Malleable Cryptography" *SIAM J. Computing 30*(2), pp. 391–437, 2000.

25. C. Dwork, M. Naor, O. Reingold, and L. Stockmeyer, "Magic Functions," *JACM 50*(6), pp. 852–921, 2003.

26. C. Dwork, M. Naor, and A. Sahai, "Concurrent Zero Knowledge," *JACM 51*(6), pp¿ 851–898, 2004

27. D. Dolev, C. Dwork, and M. Naor, "Non-Malleable Cryptography" to be reprinted by SIAM with a "pre-introduction" describing progress during the 13 years 1991–2003, in SIAM Review, 2003.

28. S. Chien, C. Dwork, S. Chien, C. Dwork, R. Kumar, D. Simon, and D. Sivakumar, Towards Exploiting Link Evolution, *Internet Mathematics 1* (3), 2003.

29. C. Dwork and M. Naor, Zaps and Their Applications, *SIAM J. Comput. 36*(6), pp. 1513–1543, 2007.

30. C. Dwork, A Firm Foundation for Private Data Analysis, *Communications of the ACM 54*(1), 2011.

31. C. Dwork and M. Noar, On the Difficulties of Disclosure Prevention in Statistical Databases or The Case for Differential Privacy, *Journal of Privacy and Confidentiality 2*(1), 2010.

32. C. Dwork, A firm foundation for private data analysis. *CACM 54*(1), 2011

33. L. Backstrom, C. Dwork, J.M. Kleinberg, Wherefore art thou R3579X?: anonymized social networks, hidden patterns, and structural steganography, *CACM 54*(12), 2011

34. C. Dwork and R. Pottenger, Toward practicing privacy, *JAMIA 20*(1), (2013)

35. C. Dwork, V. Feldman, M. Hardt, T. Pitassi, O. Reingold, and A. Roth, The reusable holdout: Preserving validity in adaptive data analysis, *Science, 349*(6248), 636-638. Winner of the 2015 Pat Goldberg Memorial Best Paper Award

36. C. Dwork, F. McSherry, K. Nissim, and A. Smith, Calibrating Noise to Sensitivity in Private Data Analysis, *J. Privacy and Confidentiality*, 2016

37. C. Dwork, A. Smith, T. Steinke, and J. Ullman, Exposed! A Survey of Attacks on Private Data, *Annual Reviews of Statistics and its Application*, 2016

38. C. Dwork, V. Feldman, M. Hardt, T. Pitassi, O. Reingold, and A. Roth, Guilt-Free Data Reuse, *CACM*, 2017

39. C. Dwork and J. Ullman, The Fienberg Problem, *J. Privacy and Confidentiality*, 2018

40. C. Dwork, N. Kohli, and D. Mulligan, Differential Privacy in Practice: Expose Your Epsilons!, *J. Privacy and Confidentiality, 9*(2), 2019

41. C. Dwork, W. Su, and L. Zhang, Differentially Private False Discovery Rate Control, *J. Privacy and Confidentiality, 2021*

Papers in Conference Proceedings

1. S. Cook and C. Dwork, "Bounds on the Time for Parallel RAMs to Compute Simple Functions," *Proceedings of the 14th Symposium on Theory of Computing*, 1982

2. D. Dolev, C. Dwork, N. Pippenger, and A. Wigderson, "Superconcentrators, Generalizers, and Generalized Connectors with Limited Depth," *Proceedings of the 15th Symposium on Theory of Computing*, 1983

3. C. Dwork and D. Skeen, "The Inherent Cost of Nonblocking Commitment," *Proceedings of the 2nd Symposium on Principles of Distributed Computing*, 1983

4. "D. Dolev, C. Dwork, and L. Stockmeyer, "On the Minimal Synchronism needed for Distributed Consensus," *Proceedings of the 24th Symposium on the Foundations of Computer Science*, 1983

5. C. Dwork, N. Lynch, and L. Stockmeyer, "Consensus in the presence of Partial Synchrony," *Proceedings of the 3rd Symposium on the Principles of Distributed Computing*, 1984

6. C. Dwork and D. Skeen, "Patterns of Communication in Consensus Protocols," *Proceedings of the 3rd Symposium on the Prinicples of Distributed Systems*, 1984

7. B. Coan, D. Dolev, C. Dwork, and L. Stockmeyer, "The Distributed Firing Squad Problem," *Proceedings of the 17th Symposium on Theory of Computing*, 1985

8. B. Coan and C. Dwork, "Simultaneity is Harder than Agreement", *Proceedings of the 5th IEEE Symposium on Reliability in Distributed Software and Database Systems*, 1986

9. C. Dwork and Y. Moses, "Knowledge and Common Knowledge in a Byzantine Environment I: Crash Failures," *Proceedings of the Conference on Theoretical Aspects of Reasoning About Knowledge*, 1986

10. C. Dwork, P. Kanellakis, and L. Stockmeyer, "Parallel Algorithms for Term Matching," *Proceedings of the 8th International Conference on Automated Deduction*, 1986

11. C. Dwork, D. Peleg, N. Pippenger, and E. Upfal, "Fault Tolerance in Networks of Bounded Degree," *Proceedings of the 18th Annual ACM Symposium on Theory of Computing*, 1986

12. C. Dwork, D. Shmoys, and L. Stockmeyer, "Flipping Persuasively in Constant Expected Time," *Proceedings of the 27th Annual Symposium on Foundations of Computer Science*, 1986

13. A. Bar-Noy, D. Dolev, C. Dwork, and R. Strong, "Shifting Gears: Changing Algorithms on the Fly to Expedite Byzantine Agreement," *Proceedings of the 6th Annual ACM Symposium on Principles of Distributed Computing*, 1987

14. C. Dwork and L. Stockmeyer, "Zero Knowledge with Finite State Verifiers," *Invited Paper, CRYPTO'88*

15. C. Dwork and L. Stockmeyer, "A Gap Theorem for 2-Way Probabilistic Finite State Automata," *Proceedings of the 30th Annual Symposium on Foundations of Computer Science*, 1989

16. D. Dolev, C. Dwork, O. Waarts, and M. Yung, "Perfectly Secure Message Transmission," *Proceedings of the 31st Annual Symposium on Foundations of Computer Science*, 1990

17. C. Dwork, "Strong Verifiable Secret Sharing," *Proceedings of the 4th International Workshop on Distributed Algorithms*, 1990

18. D. Dolev, C. Dwork, and M. Naor, "Non-Malleable Cryptography," *Proceedings of the 23rd Annual ACM Symposium on Theory of Comptuting*, 1991

19. H. Attiya, D. Dwork, N. Lynch, and L. Stockmeyer, "Bounds on the Time to Reach Agreement in the Presence of Timing Uncertainty," *Proceedings of the 23rd Annual ACM Symposium on Theory of Comptuting*, 1991

20. C. Dwork, "On Verification in Secret Sharing," *Proc. CRYPTO '91, Springer Verlag LNCS Vol. 576*, 1992

21. C. Dwork and O. Waarts, "Simple and Efficient Bounded Concurrent Timestamping, or, Bounded Concurrent Timestamp Systems are Comprehensible!" *Proceedings of the 24th Annual ACM Symposium on Theory of Computing*, 1992, pp. 655–666

22. C. Dwork, M. Herlihy, S. Plotkin, and O. Waarts, "Time-Lapse Snapshots," *Proceedings of the Israel Symposium on the Theory of Computing and Systems*, 1992, pp. 154–170

23. C. Dwork, J. Halpern, and O. Waarts, "Accomplishing Work in the Presence of Failures," *Proceedings of the 11th Annual ACM on Principles of Distributed Computing*, 1992, pp. 91–102

24. C.Dwork and M. Naor, "Pricing via Processing," *Proc. CRYPTO '92*

25. C. Dwork, U. Feige, J. Kilian, M. Naor, S. Safra, "Low Communication 2-Prover Zero-Knowledge Proofs for NP," *Proc. CRYPTO '92*

26. C. Dwork, M. Herlihy, and O. Waarts, "Contention in Shared-Memory Algorithms," *Proc. 25th Annual Symposium on Theory of Computing*, 1993

27. C. Dwork, M. Herlihy, and O. Waarts, "Bounded Round Numbers," *Proc. 12th Annual Symposium on Principles of Distributed Computing*, 1993, pp. 53–64

28. C. Dwork and M. Naor, "Efficient Existentially Unforgeable Signatures," February, 1994, CRYPTO '94

29. M. Ajtai, J. Aspnes, C. Dwork, O. Waarts, "The Competitive Analysis of Wait-Free Algorithms and its Application to the Cooperative Collect Problem," *35th IEEE Symposium on Foundations of Computer Science*, 1994

30. D. Choy, R. Dievendorff, C. Dwork, J. Lotspiech, R. Morris, L. Anderson, A. Bell, T. Griffin, B. Hoenig, J. McCrossin, A. Miller, N. Pass, F. Pestoni, D. Picciano, "The Almaden Distributed Digital Library System," ADL'95, 1995

31. C. Dwork, J. Lotspiech, and M. Naor, "Digital Signets for Protection of Digital Information," *Proc. 28th Annual Symposium on Theory of Computing*, 1996

32. C. Dwork, C-T. Ho, H. R. Strong, "Collective Consistency," *Proc. 10th Workshop on Distributed Algorithms*, 1996

33. D. Choy, C. Dwork, J. Lotspiech, L. Anderson, J. Boyer, R. Dievendorf, T. Griffin, B. Hoenig, M. Jackson, W. Kaka, J. McCrossin, A. Miller, R. Morris, N. Pass, A Digital Library System for Periodicals Distribution, ADL'96 (Advances in Digital Libraries '96)

34. R. Canetti, C. Dwork, M. Naor, R. Ostrovsky, Deniable Encryption, "Security in Communication Networks" workshop, Amalfi, Italy 1996 and CRYPTO'97

35. M. Ajtai and C. Dwork, "A Public-key Cryptosystem with Worst-case/Average-case Equivalence," STOC'97

36. C. Dwork, M. Naor, and A. Sahai, "Concurrent Zero-Knowledge," STOC'98

37. C. Dwork and A. Sahai, "Concurrent Zero-Knowledge: Reducing the Need for Timing Constraints," CRYPTO'98

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