List of Publications

Oded Goldreich

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Contents

1 Theses

- On the Complexity of Some Edge Testing Problems, M.Sc. thesis, Computer Science Department, Technion, Haifa, Israel.

  Thesis adviser: Prof. S. Even, 1982.

- On the Security of Cryptographic Protocols and Cryptosystems, D.Sc. thesis, Computer Science Department, Technion, Haifa, Israel.

  Thesis adviser: Prof. S. Even, 1983.

2 Original Papers in Refereed Journals

Published

[J1] S. Even and O. Goldreich, The Minimum Length Generator Sequence is NP-Hard, *Journal of Algorithms*, vol. 2, pp. 311–313, 1981.

[J2] S. Even and O. Goldreich, DES-Like Functions Can Generate the Alternating Group, *IEEE Trans. on Inform. Theory*, Vol. IT-29, No. 6, pp. 863–865, 1983.

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3 Original Papers in (Refereed) Conference Proceedings

The paper are ordered by the date of the conferences, and not by the date of the publication of its proceedings. This comment is relevant with respect to the early Crypto' conferences (i.e., of the 1980's). Also, till the late 1980's, simultanous publication in various conferences was allowed (and even encouraged).

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4 Other Work

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[O34] O. Goldreich and A. Tal, On Constant-Depth Canonical Boolean Circuits for Computing Multilinear Functions [2017]

[O35] O. Goldreich and G. Rothblum, Constant-Round Interactive Proof Systems for AC0[2] and NC1 [2018]

[O36] O. Goldreich, Flexible Models for Testing Graph Properties [2018]

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[O41] O. Goldreich, Y. Lustig and M. Naor, On Chosen Ciphertext Security of Multiple Encryptions, *Cryptology ePrint Archive*, Report 2002/089, 2002.

[O42] O. Goldreich and D. Ron, "On Estimating the Average Degree of a Graph", *ECCC*, TR04-013, 2004. (See follow-up J70.)

[O43] M. Bellare, O. Goldreich and A. Mityagin, The Power of Verification Queries in Message Authentication and Authenticated Encryption, Cryptology ePrint Archive, Report 2004/309.

[O44] O. Goldreich. Multi-pseudodeterministic algorithms, ECCC TR19-012, 2019.

[O45] O. Goldreich. Testing Bipartitness in an Augmented VDF Bounded-Degree Graph Model, arXiv 1905.03070, 2019.

[O46] O. Goldreich. On the Complexity of Estimating the Effective Support Size, ECCC TR19-088, 2019.

[O47] O. Goldreich. Testing Isomorphism in the Bounded-Degree Graph Model, ECCC TR19-102, 2019.

[O48] O. Goldreich and D. Ron. One-Sided Error Testing of Monomials and Affine Subspaces, ECCC TR20-068, 2020.

[O49] O. Goldreich. On Counting t-Cliques Mod 2, ECCC TR20-104, 2020.

[O50] O. Goldreich. On Testing Hamiltonicity in the Bounded Degree Graph Model, ECCC TR20-109, 2020.

[O51] O. Goldreich. On Testing Asymmetry in the Bounded Degree Graph Model, ECCC TR20-118, 2020.

[O52] O. Goldreich. Robust Self-Ordering versus Local Self-Ordering, ECCC TR21-034, 2021.

[O53] N. Bshouty and O. Goldreich. On properties that are non-trivial to test, ECCC TR22-013, 2022.

[O54] O. Goldreich and L. Tauber. Testing in the bounded-degree graph model with degree bound two, ECCC TR22-184, 2022.

[O55] O. Goldreich. On the Lower Bound on the Length of Relaxed Locally Decodable Codes, ECCC TR23-064, 2023.

[O56] O. Goldreich. On the complexity of enumerating ordered sets, ECCC TR23-134, 2023.

[O57] O. Goldreich and L. Tauber. On Testing Isomorphism to a Fixed Graph in the Bounded-Degree Graph Model, ECCC TR23-146, 2023.

[O58] O. Goldreich. On coarse and fine approximate counting of t-cliques, ECCC TR23-158, 2023.

[O59] O. Goldreich and L. Tauber. On Testing Group Properties, ECCC TR23-214, 2023.

[O60] O. Goldreich. On the query complexity of testing local graph properties in the bounded-degree graph model, ECCC TR24-047, 2024.

[O61] O. Goldreich. Solving Tree Evaluation in $o(\log n \cdot \log\log n)$ space, ECCC TR24-124, 2024.

[O62] O. Goldreich. On defining PPT-search problems, ECCC TR24-161, 2024.

4.4 Reports and Unpublished Manuscripts

Prior to the days of internet, these things were used.

Research Reports

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[O64] O. Goldreich, A Protocol for Sending Certified Mail, TR No. 239, Computer Science Department, Technion, Haifa, Israel, 1982.

[O65] O. Goldreich, On the Power of non-binary Block-Ciphers, TR No. 264, Computer Science Department, Technion, Haifa, Israel, 1983.

[O66] O. Goldreich, Sending Certified Mail Using Oblivious Transfer and a Threshold Scheme, TR No. 325, Computer Science Dept, Technion, Haifa, Israel, 1984.

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[O67] O. Goldreich and S. Micali, The Weakest Pseudo-Random Generator Implies the Strongest One, October 1984.

[O68] O. Goldreich and Y. Moses, Finding a Second Solution is NP-Complete for Almost All Known NPC Problems, May 1986.

5 Survey Papers

5.1 Chapters in Books

[S1] Randomness, Interaction, Proofs and Zero-Knowledge, in *The Universal Turing Machine: A Half-Century Survey*, R. Herken (ed.), Oxford University Press, London, 1988. Pages 377–406.

[S2] A Taxonomy of Proof Systems, in *Complexity Theory Retrospective II*, L.A. Hemaspaandra and A. Selman (eds.), Springer, 1997. Pages 109–134.

[S3] Combinatorial Property Testing – A Survey, in *DIMACS Series in Disc. Math. and Theoretical Computer Science*, Vol. 43 (Randomization Methods in Algorithm Design), 1998. Pages 45–59.

[S4] Fundamentals of Cryptography (Chap. 97.2), in *The Electrical Engineering Handbook*, CRC Press, 2000.

[S5] Property Testing in Massive Graphs, in *Handbook of Massive Data Sets*, Kluwer, 2002. Pages 123–147.

[S6] Computational Complexity, in *Mathematics Unlimited – 2001 and Beyond*, Springer, 2001. Pages 507–524.

[S7] Pseudorandomness – Part I, in *IAS/Park City Mathematics Series*, Vol. 10, 2000. Pages 253–285.

[S8] On Promise Problems – A Survey, in *Theoretical Computer Science: Essays in Memory of Shimon Even*, Festschrift series of Springer's LNCS (as Vol 3895), pages 254–290, March 2006.

[S9] Randomness and Computation, in *Handbook of Probability Theory with Applications*, Sage Publishers, 2008. Pages 131–147.

[S10] Computational Complexity (with A. Wigderson), in *The Princeton Companion to Mathematics*, Princeton University Press, pages 575–604, 2008.

[S11] Short Locally Testable Codes and Proofs (Survey), in *Property Testing*, Springer's LNCS, Vol 6390, pages 65–104, 2010.

[S12] Introduction to Testing Graph Properties, in *Property Testing*, Springer's LNCS, Vol 6390, pages 105–141, 2010.

[S13] General Cryptographic Protocols: The Very Basics, in *Secure Multi-Party Computation* (M.M. Prabhakaran and A. Sahai, eds), pages 1–27, IOS Press, Amsterdam, 2013.

[S14] A Short Tutorial of Zero-Knowledge, in *Secure Multi-Party Computation* (M.M. Prabhakaran and A. Sahai, eds), pages 28–60, IOS Press, Amsterdam, 2013.

[S15] On the foundations of cryptography, in *Providing Sound Foundations for Cryptography*, pages 411–496, 2019.

[S16] On the impact of cryptography on complexity theory, in *Providing Sound Foundations for Cryptography*, pages 497–526, 2019.

[S17] On some noncryptographic works of Goldwasser and Micali, in *Providing Sound Foundations for Cryptography*, pages 527–542, 2019.

5.2 Published in Periodicals or Conference Proceedings

[S18] A Taxonomy of Proof Systems, guest column, in two parts. Part 1 in *Sigact News – Complexity Theory Column 3*, Vol. 24, No. 4, December 1993, pp. 2–13. Part 2 in *Sigact News – Complexity Theory Column 4*, Vol. 25, No. 1, March 1994, pp. 22–30. (This is a preliminary version of No. S2.)

[S19] What is an Envelope, *Almost 2000* (a popular journal for Science and Technology), Vol. 1, pp. 15–17, 1994, (in Hebrew).

[S20] Probabilistic Proof Systems, in the *Proceedings of the International Congress of Mathematicians 1994*, Birkhäuser Verlag, Basel, 1995, pp. 1395–1406.

[S21] On the Foundations of Modern Cryptography (essay), in the proceedings of *Crypto97*, Springer LNCS, Vol. 1294, pp. 46–74.

(A brief summary has appeared in *CryptoBytes*, the technical newletter of RSA Laboratories, Vol. 3, No. 2, 1997.)

[S22] Pseudorandomness, in *Notices of AMS*, pages 1209–1216, November 1999. (This is an abbreviated version of No. S23.)

[S23] Pseudorandomness, in the *Proc. of the 27th ICALP*, Springer LNCS, Vol. 1853, pages 687–704, 2000.

[S24] Cryptography and Cryptographic Protocols, *PODC Jubilee Issue of Distributed Computing*, Vol. 16, No. 2–3, pages 177–199, 2003.

[S25] Zero-Knowledge: Abstract of a Tutorial, in the *Proc. of the 43rd FOCS*, page 3, 2002. (This is an abstract of No. S26.)

[S26] Zero-Knowledge twenty years after its invention, *Quaderni di Matematica*, Vol. 13 (Complexity of Computations and Proofs, ed. J. Krajicek), pages 249–304, 2004.

[S27] Foundations of Cryptography – A Primer, in *Foundations and Trends in Theoretical Computer Science*, Volume 1, Issue 1, 2005.

[S28] Bravely, Moderately: A Common Theme in Four Recent Results, guest column, in *Sigact News – Complexity Theory Column 51*, Vol. 37, Nr. 2, pages 31-46, June 2006.

[S29] Probabilistic Proof Systems – A Primer, in *Foundations and Trends in Theoretical Computer Science*, Volume 3, Issue 1, 2007.

[S30] Invitation to Complexity Theory, in *XRDS*, Vol. 18, No. 3, Spring 2012.

[S31] On Doubly-Efficient Interactive Proof Systems, in *Foundations and Trends in Theoretical Computer Science*, Volume 13, Issue 3, 2018.

5.3 Collected Works (LNCS Vol. 6650, 2011)

In addition to the surveys listed next, surveys number S9, S11, S12, and S28 also appear in this collection. The surveys collected in this volume were compeleted at different times, and were revised towards this publication. The year of the original version is mentioned in square brackets.

[S40] Basic Facts about Expander Graphs [2008]

[S41] A Brief Introduction to Property Testing [2010]

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Posted on *ECCC*, which resides at `https://eccc.weizmann.ac.il`.

[S42] "On the doubly-efficient interactive proof systems of GKR", *ECCC*, TR17-101, June 2017.

[S43] "Overview of the doubly-efficient interactive proof systems of RRR", *ECCC*, TR17-102, June 2017.

[S44] "Open Problems in Property Testing of Graphs", *ECCC*, TR21-088, June 2021.

[S45] "On the Locally Testable Code of Dinur et al. (2021)", *ECCC*, TR21-175, December 2021.

[S46] "The KW Games as a Teaser", *ECCC*, TR21-181, December 2021.

[S47] "On teaching the approximation method for circuit lower bounds", *ECCC*, TR23-034, March 2023.

[S48] "On locally-characterized expander graphs (a survey)", *ECCC*, TR24-013, January 2024.

[S49] "On the relaxed LDC of BGHSV: A survey that corrects the record", *ECCC*, TR24-078, April 2024.

[S50] "On the Cook-Mertz Tree Evaluation procedure", *ECCC*, TR24-109, June 2024.

6 Books, Lecture Notes, and Related Material

Books

[B1] *Modern Cryptography, Probabilistic Proofs and Pseudorandomness*, 1998.
Springer, Volume 17 of the Algorithms and Combinatorics series.

[B2] *Foundations of Cryptography – Basic Tools*, 2001.
Cambridge University Press.

[B3] *Foundations of Cryptography – Basic Applications*, 2004.
Cambridge University Press.

[B4] *Computational Complexity: A Conceptual Perspective*, 2008.
Cambridge University Press.

[B5] *P, NP, and NP-Completeness: The Basics of Complexity Theory*, 2010.
Cambridge University Press.

[B6] *A Primer on Pseudorandom Generators*, 2010.
AMS, ULECT series, Nr. 55.

[B7] *Introduction to Property Testing*, 2017.
Cambridge University Press.

Lecture Notes

[B8] *Foundations of Cryptography – Class Notes*, 1989.
Computer Science Department, Technion, 184 pages.
(Superseeded by B2 and B3.)

[B9] *Theory of Computation* (draft for a textbook in Hebrew), 1989.
Computer Science Department, Technion, 184 pages. (Third edition: 1992.)

[B10] *Introduction to Complexity Theory – Lecture Notes.*

1. For a two-semester course, 353 pages, 1999.
2. For a one-semester course, 104 pages, 2002.

Department of Computer Science and Applied Math., Weizmann Institute of Science.
(Superseeded by B4.)

[B11] *Randomized Methods in Computation – Lecture Notes*, 2001.
Department of Computer Science and Applied Math., Weizmann Institute, 155 pages.

Other Material

[B12] *Foundations of Cryptography – Fragments of a Book*, 1995.
Department of Computer Science and Applied Math., Weizmann Institute, 292 pages.
(This is a preliminary version of B2.)