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Academic Degrees

- 2006 – 2011: Ph.D. in Electrical and Computer Engineering
University of California, San Diego
Advisors: Prof. Paul H. Siegel, Prof. Alexander Vardy, and Prof. Jack K. Wolf
Thesis: “Coding for Flash Memories”
- 2005 – 2007: M.Sc. Summa cum Laude in Computer Science
Technion — Israel Institute of Technology
Advisor: Prof. Tuvi Etzion
Thesis: “Error Correction of Multidimensional Bursts”
- 2001 – 2005: B.A. Summa cum Laude in Computer Science
B.A. Summa cum Laude in Mathematics
Technion — Israel Institute of Technology

Academic Appointments

- July 2019 – Present: Associate Professor at the Technion — Israel Institute of Technology
- March 2014 – June 2019: Assistant Professor at the Technion — Israel Institute of Technology
- July 2012 – January 2014: Postdoctoral Researcher at the California Institute of Technology
Advisor: Prof. Jehoshua Bruck
- July 2011 – June 2012: Postdoctoral Researcher at
the California Institute of Technology and the University of California, San Diego
Advisors: Prof. Jehoshua Bruck (Caltech) and Prof. Paul H. Siegel (UCSD)

Graduate Students

Completed PhD theses

1. Sarit Buzaglo, Algebraic and Geometric Problems for Non-Volatile Memory, November 2014. Co-advised with Prof. Tuvi Etzion, I was the secondary advisor.
2. Michal Horovitz, Coding Schemes for Non-Volatile Memories, January 2018. Co-advised with Prof. Tuvi Etzion, I was the primary advisor.
3. Lev Yohananov, Codes for Graph Reconstruction, February 2022.

Completed MSc theses

1. Matan Liram, Evaluating Zigzag Code in a Distributed Storage System, July 2017. Co-advised with Prof. Assaf Schuster and Dr. Gala Yadgar, I was the primary advisor.
2. Ran Koretzki, Improving SSD-based Caches Lifetime with Write-Once Memory Codes, September 2017, Co-advised with Prof. Assaf Schuster, I was the secondary advisor.

3. Helal Assi, Constructions of PIR and Batch Codes for Distributed Storage, April 2018.
4. Roman Shor, Efficiently Combining Confidentiality and Availability in Distributed Storage Systems, May 2018. Co-advised with Prof. Assaf Schuster and Dr. Gala Yadgar, I was the primary advisor.
5. Maya Levy, Mutually Uncorrected Codes for DNA Storage, May 2018.
6. Mohammad Nassar, Array Codes for Functional PIR and Batch Codes.
7. Omer Sabary, Reconstruction Algorithms for DNA-based Storage Systems, September 2020.
8. Tal Shinkar, Clustering-Correcting Codes for DNA-based Storage Systems.

PhD theses in progress

1. Maria Abu Sini, Reconstruction Problems with Applications to DNA Storage.
2. Daniella Bar-Lev, The Deletion Channel and its Applications to Coding for DNA Storage.
3. Sagi Marcovich, Reconstructing Strings from their Substrings Spectrum.
4. Omer Sabary, Coding Techniques and Algorithms for Next-Generation DNA-based Storage Systems.

MSc theses in progress

1. Hadas Abraham.
2. Dvir Ben Shabat, Clustering Algorithms for Emerging DNA Synthesis Method.
3. Avital Boruchovsky, Coding Schemes for Clustering DNA Strands.
4. Dgnait Buchris, DNA Labelling for Genome Identification and DNA Storage Applications.
5. Besart Dollma, Reconstruction of Composite DNA Sequences.
6. Nadav Falicovich.
7. Adir Kobovich.
8. Boaz Moav, Error-Correcting Codes For DNA Storage Systems.
9. Iliia Smagloy, Single Deletion Single Substitution Codes.
10. Omer Yerushalmi.

Postdoctoral Researchers

Completed Postdoctoral Researchers

1. Dr. Hui Zhang, October 2015 – October 2017.
2. Dr. Netanel Raviv, September 2016 – September 2017.
3. Dr. Yiwei Zhang, October 2017 – January 2020.
4. Dr. Rawad Bitar, February 2020 – February 2022.

Current Postdoctoral Researchers

1. Dr. Itai Orr, April 2022 – .

Teaching Experience

Winter 2022: “Coding and Algorithms for Memories”.
 Spring 2022: “Seminar on DNA Data Storage”.
 Winter 2021: “Introduction to Departmental Research”.
 Winter 2021: “Coding and Algorithms for Memories”.
 Spring 2021: “Combinatorics for Computer Science”.
 Spring 2021: “Seminar on Erasure Coding in Distributed Storage Systems”.
 Winter 2020: “Introduction to Departmental Research”.
 Winter 2020: “Coding and Algorithms for Memories”.
 Spring 2020: “Combinatorics for Computer Science”.
 Spring 2020: “Seminar on Erasure Coding in Distributed Storage Systems”.
 Winter 2019: “Introduction to Departmental Research”.
 Winter 2019: “Coding and Algorithms for Memories”.
 Spring 2019: “Combinatorics for Computer Science”.
 Spring 2019: “Seminar on Erasure Coding in Distributed Storage Systems”.
 Winter 2018: “Introduction to Departmental Research”.
 Winter 2018: “Coding and Algorithms for Memories”.
 Spring 2018: “Combinatorics for Computer Science”.
 Spring 2018: “Seminar on Erasure Coding in Distributed Storage Systems”.
 Winter 2017: “Coding and Algorithms for Memories”.
 Spring 2017: “Seminar on Erasure Coding in Distributed Storage Systems”.
 Winter 2016: “Coding and Algorithms for Memories”.
 Spring 2016: “Seminar on Erasure Coding in Distributed Storage Systems”.
 Spring 2016: “Combinatorics for Computer Science”.
 Winter 2015: “Coding and Algorithms for Memories”.
 Winter 2015: “Introduction to Computer Science”.
 Spring 2015: “Seminar on Coding for Non-Volatile Memories”.
 Winter 2014: “Introduction to Computer Science”.
 Spring 2014: “Coding and Algorithms for Memories”.

Grants

1. ISF (Israel Science Foundation): Individual Research Grant 1624/14, “Coding for non-volatile memories,” \$237,400, 2014–2018.
2. ISF (Israel Science Foundation): Individual Equipment Grant 2148/14, “Lab equipment for the research of memories and storage systems,” \$100,000, 2014–2017.
3. SanDisk Cooperation Grant: A Joint Research Grant with Prof. Yuval Cassuto, “Toward agile, versatile NAND flash storage,” \$175,000, 2016–2018.
4. GIF (German-Israeli Foundation): A Joint Research Grant with Prof. André Brinkmann, “Not just ones and Zeroes: Bridging the gap between the theory of WOM codes and the practice of flash storage,” €160,000, 2017–2019.
5. BSF (Binational Science Foundation): A Joint Research Grant with Prof. Ron Roth, Prof. Paul Siegel, and Dr. Erik Ordentlich, “Coding techniques for emerging storage technologies,” \$170,000, 2016–2019.
6. Western Digital Cooperation Grant: A Joint Research Grant with Prof. Yuval Cassuto, “Toward agile, versatile NAND flash storage,” \$75,000, 2018–2019.

7. ISF (Israel Science Foundation): Individual Research Grant 1817/18, “Coding for private information retrieval,” \$244,400, 2018–2022.
8. The Technion Hiroshi Fujiwara Cyber Security Research Center and the Israel Cyber Directorate: A Joint Research Grant with Prof. Tuvi Etzion, “Functional private information retrieval,” \$85,000, 2019–2021.
9. BSF (Binational Science Foundation): A Joint Research Grant with Prof. Ron Roth, Prof. Paul Siegel, “Coding for reliable storage and computing,” \$107,000, 2019–2022.
10. The Technion Hiroshi Fujiwara Cyber Security Research Center and the Israel Cyber Directorate: Individual Research Grant, “Weakly private information retrieval,” \$115,000, 2020–2022.
11. Toga Networks Grant: Individual Research Grant, “Mixed usage of TLC/QLC NAND flash,” \$50,000, 2020.
12. The Technion Data Science Initiative: A Joint Research Grant with Prof. Tuvi Etzion, “Coding for DNA Storage,” \$6,250, 2020.
13. Israel Innovation Authority: Individual Research Grant, “DNA-based Storage Systems,” \$275,000, 2021–2023.
14. The Technion Data Science Initiative: A Joint Research Grant with Prof. Tuvi Etzion, “Deep DNA Storage: Scalable and Robust DNA Storage via Coding Theory and Deep Learning,” \$13,500, 2021.
15. European Research Council (ERC) Consolidator: Individual Research Grant, “Coding for DNA Storage,” €1,999,096, 2022–2027.
16. National Science Foundation (NSF): A Joint Research Grant with Dr. Ryan Gabrys, Prof. Henry Pfister, Prof. Paul Siegel, and Prof. Ido Tal, “Coding Theory for DNA Storage: Synthesis, Retention, and Reconstruction,” \$1,200,000, 2022–2026.

Academic Activity

Associate Editor, IEEE Transactions on Information Theory, 2020 –.

Co-General Chair for Non-volatile Memories Workshop (NVMW), 2015–2018, 2020–2023.

Program Committee Member for Int. Symp. on Inform. Theory (ISIT), 2019–2023.

Co-Chair for Munich Workshop on Coding and Cryptography (MWCC), TUM 2022.

Program Committee Member for the International Symposium on Topics in Coding (ISTC), 2021,2023.

Program Committee Member for Information Theory Workshop (ITW), 2018, 2019, 2022.

Program Committee Member for Int. Symp. on Inform. Theory and Its Applications (ISITA), 2020, 2022.

Program Committee Member for GLOBECOM, 2015, 2017–2020.

Program Committee Member for XVI Int. Symp. “Problems of Red. in Inform. and Control Sys.”, 2019.

Steering Committee for Non-volatile Memories Workshop (NVMW), 2019.

Program Committee Member for International Conference on Communications (ICC), 2017.

Co-General Chair of the TCE Conference on Coding for Storage and Information Systems, 2017.

Co-organizer for Workshop on Coding for Emerging Memories and Storage Technologies, Technion, 2015.

Program Committee Member for ICACCI Special Session on Recent Advances in Storage and File Sys., 2016.

Program Committee Member for the IEEE DCOSS Signal Processing and Information Theory Track, 2015.

Program Committee Member for International Conference on Communications (ICC), 2015.

Program Committee Member for Non-volatile Memories Workshop, 2013, 2014.

Honors and Awards

1. Int'l Symp. on Information Theory and Its Applications, Best Student Paper Award, 2022.
2. Non-Volatile Memories Workshop Memorable Paper Award, 2022.
3. Technion Excellence Teaching Award, 2021.
4. Non-Volatile Memories Workshop Memorable Paper Award, 2020.
5. The Henry Taub Prize for Academic Excellence, 2020.
6. Int'l Symp. on Information Theory and Its Applications, Best Student Paper Award, 2020.
7. Hans Fischer Fellowship at the TUM Institute for Advanced Study, 2019.
8. Non-Volatile Memories Workshop Memorable Paper Award, 2019.
9. Technion Excellence Teaching Award, 2016.
10. IEEE Data Storage Best Student Paper Award, 2015.
11. International ISEF Fellow, 2006-2013, <http://iseffoundation.org>.
12. The Schultz Prize for Excellence in Graduate Student Research, 2011, <http://cmrr.ucsd.edu/people/schultz/>.
13. Intel Ph.D. Fellowship, 2010-2011, (awarded in the US annually to 25-30 students)
<http://techresearch.intel.com/newsdetail.aspx?id=24>.
14. Marconi Society Young Scholar Award, 2009, (awarded worldwide annually to 3-5 students)
<http://www.marconisociety.org/youngscholars.html>.
15. Member of the Technion's Excellence Program, 2002-2005.

Publications

Journal Papers

- [J1] T. Etzion and **E. Yaakobi**, *Error-Correction of Multidimensional Bursts*, *IEEE Trans. Inform. Theory*, 55 (2009), 961–976.
- [J2] A. Jiang, R. Mateescu, **E. Yaakobi**, J. Bruck, P.H. Siegel, A. Vardy, and J.K. Wolf, *Storage Coding for Wear Leveling in Flash Memories*, *IEEE Trans. Inform. Theory*, 56 (2010), 5290–5299.
- [J3] **E. Yaakobi**, P.H. Siegel, A. Vardy, and J.K. Wolf, *Multiple Error-Correcting WOM-Codes*, *IEEE Trans. Inform. Theory*, 58 (2012), 2220–2230.
- [J4] **E. Yaakobi**, S. Kayser, P.H. Siegel, A. Vardy, and J.K. Wolf, *Codes for Write-Once Memories*, *IEEE Trans. Inform. Theory*, 58 (2012), 5985–5999.
- [J5] R. Gabrys, **E. Yaakobi**, and L. Dolecek, *Graded Bit-Error-Correcting Codes with Applications to Flash Memory*, *IEEE Trans. Inform. Theory*, 59 (2013), 2315–2327.
- [J6] M. Qin, **E. Yaakobi**, and P.H. Siegel, *Time-Space Constrained Codes for Phase-Change Memories*, *IEEE Trans. Inform. Theory*, 59 (2013), 5102–5114.
- [J7] T. Etzion, A. Vardy, and **E. Yaakobi**, *Coding for the Lee and Manhattan Metrics with Weighing Matrices*, *IEEE Trans. Inform. Theory*, 59 (2013), 6712–6723.

- [J8] **E. Yaakobi**, H. Mahdaviifar, P.H. Siegel, A. Vardy, and J.K. Wolf, *Rewriting Codes for Flash Memories*, *IEEE Trans. Inform. Theory*, 60 (2014), 964–975.
- [J9] M. Qin, **E. Yaakobi**, and P.H. Siegel, *Optimized Cell Programming for Flash Memories with Quantizers*, *IEEE Trans. Inform. Theory*, 60 (2014), 2780–2795.
- [J10] M. Qin, **E. Yaakobi**, and P.H. Siegel, *Constrained Codes that Mitigate Inter-cell Interference in Read/Write Cycles for Flash Memories*, *IEEE J. on Selected Areas in Comm.*, 32 (2014), 836–846.
- [J11] Y. Cassuto and **E. Yaakobi**, *Short Q-ary Fixed-Rate WOM Codes for Guaranteed Re-writes and with Hot/Cold Write Differentiation*, *IEEE Trans. Inform. Theory*, 60 (2014), 3942–3958.
- [J12] Y. Levi, J. Bruck, Y. Cassuto, E.G. Friedman, A. Kolodny, **E. Yaakobi**, and S. Kvatinsky, *Logic Operations in Memory Using a Memristive Akers Array*, *Microelectronics Journal (in press)*, 45 (2014), 1429–1437.
- [J13] **E. Yaakobi** and A. Shpilka, *High Sum-Rate Three-Write and Non-Binary WOM Codes*, *IEEE Trans. Inform. Theory*, 60 (2014), 7006–7015.
- [J14] R. Gabrys, **E. Yaakobi**, and L. Dolecek, *Correcting Grain-Errors in Magnetic Media*, *IEEE Trans. Inform. Theory*, 61 (2015), 2256–2272. **IEEE Data Storage Best Student Paper Award.**
- [J15] A. Fazeli, A. Vardy, and **E. Yaakobi**, *Generalized Sphere Packing Bound*, *IEEE Trans. Inform. Theory*, 61 (2015), 2313–2334.
- [J16] E. En Gad, **E. Yaakobi**, A. Jiang, and J. Bruck, *Rank-Modulation Rewriting Codes for Flash Memories*, *IEEE Trans. Inform. Theory*, 61 (2015), 4209–4226.
- [J17] F. Farnoud, **E. Yaakobi**, and J. Bruck, *Approximate Sorting of Data Streams with Limited Storage*, *Journal of Combinatorial Optimization*, (2015), 1–32.
- [J18] R. Gabrys, **E. Yaakobi**, F. Farnoud, F. Sala, J. Bruck, and L. Dolecek, *Codes Correcting Erasures and Deletions for Rank Modulation*, *IEEE Trans. Inform. Theory*, 62 (2016), 136–150.
- [J19] A. Wachter-Zeh and **E. Yaakobi**, *Codes for Partially Stuck-at Memory Cells*, *IEEE Trans. Inform. Theory*, 62 (2016), 639–654.
- [J20] S. Buzaglo and **E. Yaakobi**, *On the Capacity of Constrained Permutation Codes for Rank Modulation*, *IEEE Trans. Inform. Theory*, 62 (2016), 1649–1666.
- [J21] **E. Yaakobi**, J. Bruck, and P.H. Siegel, *Constructions and Decoding of Cyclic Codes over b-Symbol Read Channels*, *IEEE Trans. Inform. Theory*, 62 (2016), 1541–1551.
- [J22] M. Blaum, J. Plank, M. Schwartz, and **E. Yaakobi**, *Construction of Partial MDS (PMDS) and Sector-Disk (SD) Codes with Two Global Parity Symbols*, *IEEE Trans. Inform. Theory*, 62 (2016), 2673–2681.
- [J23] **E. Yaakobi** and R. Motwani, *Construction of Random Input-Output Codes with Moderate Block Lengths*, *IEEE Trans. Comm.*, 64 (2016), 1819–1828.
- [J24] S. Buzaglo, **E. Yaakobi**, T. Etzion, and J. Bruck, *Systematic Error-Correcting Codes for Permutations and Multi-Permutations*, *IEEE Trans. Inform. Theory*, 62 (2016), 3113–3124.
- [J25] Y. Cassuto, S. Kvatinsky, and **E. Yaakobi**, *Information-Theoretic Sneak-Path Mitigation in Memristor Crossbar Arrays*, *IEEE Trans. Inform. Theory*, 62 (2016), 4801–4813.
- [J26] P. Huang, **E. Yaakobi**, H. Uchikawa, and P.H. Siegel, *Binary Linear Locally Repairable Codes*, *IEEE Trans. Inform. Theory*, 62 (2016), 6268–6283.

- [J27] P. Huang, P.H. Siegel, and **E. Yaakobi**, *Performance of Multilevel Flash Memories with Different Binary Labelings: A Multi-User Perspective*, *IEEE J. on Selected Areas in Comm.*, 34 (2016), 2336–2353.
- [J28] C. Schoeny, A. Wachter-Zeh, R. Gabrys, and **E. Yaakobi**, *Codes Correcting a Burst of Deletions or Insertions*, *IEEE Trans. Inform. Theory*, 63 (2017), 1971–1985.
- [J29] M. Horovitz and **E. Yaakobi**, *On the Capacity of Write-Once Memories*, *IEEE Trans. Inform. Theory*, 63 (2017), 5124–5137.
- [J30] N. Raviv, **E. Yaakobi**, and M. Médard, *Coding for Locality in Reconstructing Permutations*, *Designs, Codes and Cryptography*, (2017), 1–32.
- [J31] M. Langberg, M. Schwartz, and **E. Yaakobi**, *Coding for the ℓ_∞ -Limited Permutation Channel*, *IEEE Trans. Inform. Theory*, 63 (2017), 7676–7686.
- [J32] S. Buzaglo, Y. Cassuto, P.H. Siegel, and **E. Yaakobi**, *Consecutive Switch Codes*, *IEEE Trans. Inform. Theory*, 64 (2018), 2485–2498.
- [J33] R. Gabrys, **E. Yaakobi**, and O. Milenkovic, *Codes in the Damerau Distance for DNA Storage*, *IEEE Trans. Inform. Theory*, 64 (2018), 2550–2570.
- [J34] J. Aspnes, K. Censor-Hillel, and **E. Yaakobi**, *Concurrent Use of Write-Once Memory*, *Journal of Parallel and Distributed Computing*, 113 (2018), 250–260.
- [J35] G. Yadgar, **E. Yaakobi**, F. Margaglia, Y. Li, A. Yucovich, N. Bundak, L. Gilon, N. Yakovi, A. Schuster, and A. Brinkmann, *An Analysis of Flash Page Reuse with WOM Codes*, *IEEE Trans. Storage*, 14 (2018) 10:1–10:39.
- [J36] R. Gabrys and **E. Yaakobi**, *Sequence Reconstruction over the Deletion Channel*, *IEEE Trans. Inform. Theory*, 64 (2018), 2924–2931.
- [J37] Y.-M. Chee, H.-M. Kiah, A. Vardy, V.-K. Vu, and **E. Yaakobi**, *Coding for Racetrack Memories*, *IEEE Trans. Inform. Theory*, 64 (2018), 7094–7112.
- [J38] H. Zhang, **E. Yaakobi**, and N. Zilberstein, *Multiset Combinatorial Batch Codes*, *Designs, Codes and Cryptography*, (2018), 1–16.
- [J39] N. Raviv, M. Schwartz, and **E. Yaakobi**, *Rank Modulation Codes for DNA Storage*, *IEEE Trans. Inform. Theory*, 65 (2019), 50–64.
- [J40] A. Lenz, A. Wachter-Zeh, and **E. Yaakobi**, *Duplication-Correcting Codes*, *Designs, Codes and Cryptography*, 87 (2019), 277–298.
- [J41] H. Asi and **E. Yaakobi**, *Nearly Optimal Constructions of PIR and Batch Codes*, *IEEE Trans. Inform. Theory*, 65 (2019), 947–964.
- [J42] M. Horovitz and **E. Yaakobi**, *Reconstruction of Sequences over Non-Identical Channels*, *IEEE Trans. Inform. Theory*, 65 (2019), 1267–1286.
- [J43] M. Levy and **E. Yaakobi**, *Mutually Uncorrelated Codes for DNA Storage*, *IEEE Trans. Inform. Theory*, 65 (2019), 3671–3691.
- [J44] **E. Yaakobi** and J. Bruck, *On the Uncertainty of Information Retrieval in Associative Memories*, *IEEE Trans. Inform. Theory*, 65 (2019), 2155–2165.
- [J45] R. Gabrys, **E. Yaakobi**, M. Blaum, and P.H. Siegel, *Constructions of Partial MDS Codes over Small Fields*, *IEEE Trans. Inform. Theory*, 65 (2019), 3692–3701.

- [J46] L. Yohananov and **E. Yaakobi**, Codes for Graph Erasures, *IEEE Trans. Inform. Theory*, 65 (2019), 5433–5453.
- [J47] O. Elishco, R. Gabrys, and **E. Yaakobi**, Bounds and Constructions of Codes over Symbol-Pair Read Channels, *IEEE Trans. Inform. Theory*, 66 (2020), 1385–1395.
- [J48] Y.-M. Chee, H.-M. Kiah, A. Vardy, and **E. Yaakobi**, Explicit and Efficient WOM Codes of Finite-Length, *IEEE Trans. Inform. Theory*, 66 (2020), 2669–2682.
- [J49] A. Lenz, P.H. Siegel, A. Wachter-Zeh, and **E. Yaakobi**, Coding over Sets for DNA Storage, *IEEE Trans. Inform. Theory*, 66 (2020), 2331–2351. **Non-Volatile Memories Workshop Memorable Paper Award.**
- [J50] N. Raviv, I. Tamo, and **E. Yaakobi**, Private Information Retrieval in Graph Based Replication Systems, *IEEE Trans. Inform. Theory*, 66 (2020), 3590–3602.
- [J51] P. Huang, **E. Yaakobi**, and P.H. Siegel, Multi-Erasure Locally Recoverable Codes over Small Fields: Algebraic and Probabilistic Views, *IEEE Trans. Inform. Theory*, 66 (2020), 2609–2624.
- [J52] L. Yohananov, Y. Efron, and **E. Yaakobi**, Double and Triple Node-Erasure-Correcting Codes over Graphs, *IEEE Trans. Inform. Theory*, 66 (2020), 4089–4103.
- [J53] Y. Zhang, **E. Yaakobi**, and T. Etzion, Bounds on the Length of Functional PIR and Batch codes, *IEEE Trans. Inform. Theory*, 66 (2020), 4917–4934.
- [J54] A. Lenz, C. Rashtchian, P.H. Siegel, and **E. Yaakobi**, Covering Codes for Insertions and Deletions, *IEEE Trans. Inform. Theory*, 67 (2021), 3376–3388.
- [J55] L. Yohananov and **E. Yaakobi**, Codes over Trees, *IEEE Trans. Inform. Theory*, 67 (2021), 3599–3622.
- [J56] O. Sabary, Y. Orlev, R. Shafir, L. Anavy, E. Yaakobi, and Z. Yakhini, SOLQC: Synthetic Oligo Library Quality Control Tool, *Bioinformatics*, 37 (2021) 720–722.
- [J57] S. Kurz and **E. Yaakobi**, PIR Codes with Short Block Length, *Designs, Codes and Cryptography*, 89 (2021), 559–587.
- [J58] S. Marcovich and **E. Yaakobi**, Reconstruction of Strings from their Substrings Spectrum, *IEEE Trans. Inform. Theory*, 67 (2021), 4369–4384.
- [J59] O. Elishco, R. Gabrys, M. Médard, and **E. Yaakobi**, Repeat-Free Codes, *IEEE Trans. Inform. Theory*, 67 (2021), 5749–5764.
- [J60] J. Chrisnata, H.-M. Kiah, S. Rao, A. Vardy, **E. Yaakobi**, and H. Yao, On the Number of Distinct k -Decks: Enumeration and Bounds, *SIAM Journal on Discrete Mathematics*, 2021.
- [J61] L. Holzbaaur, S. Puchinger, **E. Yaakobi**, and A. Wachter-Zeh, Partial MDS Codes with Local Regeneration, *IEEE Trans. Inform. Theory*, 67 (2021), 6425–6441.
- [J62] M. Abu Sini and **E. Yaakobi**, On Levenshtein’s Reconstruction Problem under Insertions, Deletions, and Substitutions, *IEEE Trans. Inform. Theory*, 67 (2021), 7132–7158.
- [J63] Y. Zhang, **E. Yaakobi**, and T. Etzion, Private Proximity Retrieval Codes, *IEEE Trans. Inform. Theory*, 67 (2021), 7458–7476.
- [J64] Y.-M. Chee, T. Etzion, H.-M. Kiah, S. Marcovich, V.-K. Vu, A. Vardy, and **E. Yaakobi**, Constrained de Bruijn Codes: Properties, Enumeration, Constructions, and Applications, *IEEE Trans. Inform. Theory*, 67 (2021), 7857–7875.

- [J65] R. Bitar, I. Smagloy, L. Welter, A. Wachter-Zeh, and **E. Yaakobi**, *Criss-Cross Insertion and Deletion Correcting Codes*, *IEEE Trans. Inform. Theory*, 67 (2021), 7999–8015.
- [J66] L. Holzbaur, R. Polyanskaya, N. Polyanskii, I. Vorobyev, and **E. Yaakobi**, *Lifted Reed-Solomon Codes and Lifted Multiplicity Codes*, *IEEE Trans. Inform. Theory*, 67 (2021), 8051–8069.
- [J67] H.-Y. Lin, S. Kumar, E. Rosnes, A. Graell i Amat, and **E. Yaakobi**, *The Capacity of Single-Server Weakly-Private Information Retrieval*, *IEEE Journal on Selected Areas in Inform. Theory*. 2 (2021), 415–427.
- [J68] K. Cai, H.-M. Kiah, T.-T. Nguyen, and **E. Yaakobi**, *Coding for Sequence Reconstruction for Single Edits*, *IEEE Trans. Inform. Theory*, 68 (2022), 66–79.
- [J69] M. Horovitz, **E. Yaakobi**, E. En Gad, and J. Bruck, *Iterative Programming of Noisy Memory Cells*, *IEEE Trans. Comm.* 70 (2022), 769–782.
- [J70] M. Nassar and **E. Yaakobi**, *Array Codes for Functional PIR and Batch Codes*, *IEEE Trans. Inform. Theory*, 68 (2022), 839–862.
- [J71] H.-Y. Lin, S. Kumar, E. Rosnes, A. Graell i Amat, and **E. Yaakobi**, *Multi-Server Weakly-Private Information Retrieval*, *IEEE Trans. Inform. Theory*, 68 (2022), 1197–1219.
- [J72] T. Shinkar, **E. Yaakobi**, A. Lenz, and A. Wachter-Zeh, *Clustering-Correcting Codes*, *IEEE Trans. Inform. Theory*, 68 (2022), 1560–1580.
- [J73] Y.-M. Chee, M. Horovitz, V.-K. Vu, **E. Yaakobi**, and A. Vardy, *Endurance-Limited Memories: Capacity and Codes*, *IEEE Trans. Inform. Theory*, 68 (2022), 1599–1613.
- [J74] R. Bitar, I. Smagloy, L. Welter, A. Wachter-Zeh, and **E. Yaakobi**, *Multiple Criss-Cross Insertion and Deletion Correcting Codes*, to appear *IEEE Trans. Inform. Theory*.
- [J75] L. Yohananov and **E. Yaakobi**, *Almost Optimal Construction of Functional Batch Codes Using Hadamard Codes*, to appear *IEEE Trans. Inform. Theory*.

Submitted/Under Revision Papers

- [J76] O. Sabary, A. Yucovich, G. Shapira, and **E. Yaakobi**, *Reconstruction Algorithms for DNA-Storage Systems*, submitted to *Bioinformatics*.
- [J77] S. Marcovich and **E. Yaakobi**, *The Zero Cubes Free and Cubes Unique Multidimensional Constraints*, submitted to *IEEE Trans. Inform. Theory*.
- [J78] A. Lenz, R. Bitar, A. Wachter-Zeh, and **E. Yaakobi**, *Function-Correcting Codes*, submitted to *IEEE Trans. Inform. Theory*.
- [J79] J. Chrisnata, H.-M. Kiah, and **E. Yaakobi**, *Correcting Deletions with Multiple Reads*, submitted to *IEEE Trans. Inform. Theory*.
- [J80] O. Sabary, D. Bar-Lev, Y. Gershon, A. Yucovich, and **E. Yaakobi**, *On The Decoding Error Weight of One or Two Deletion Channels*, submitted to *IEEE Trans. Inform. Theory*.
- [J81] I. Smagloy, L. Welter, A. Wachter-Zeh, and **E. Yaakobi**, *Single-Deletion Single-Substitution Correcting Codes*, submitted to *IEEE Trans. Inform. Theory*.
- [J82] A. Lenz, P.H. Siegel, A. Wachter-Zeh, and **E. Yaakobi**, *The Noisy Drawing Channel: Reliable Data Storage in DNA Sequences*, submitted to *IEEE Trans. Inform. Theory*.

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- [C112] S. Marcovich and **E. Yaakobi**, *Reconstruction of Strings from their Substrings Spectrum*, *IEEE Int'l Symp. on Information Theory*, Los Angeles, California, (June 2020), 658–663.
- [C113] M. Nassar and **E. Yaakobi**, *Array Codes for Functional PIR and Batch Codes*, *IEEE Int'l Symp. on Information Theory*, Los Angeles, California, (June 2020), 1024–1029.
- [C114] O. Sabary, **E. Yaakobi**, and A. Yucovich, *The Error Probability of Maximum-Likelihood Decoding over Two Deletion/Insertion Channels*, *IEEE Int'l Symp. on Information Theory*, Los Angeles, California, (June 2020), 763–768.
- [C115] I. Smagloy, L. Welter, A. Wachter-Zeh, and **E. Yaakobi**, *Single-Deletion Single-Substitution Correcting Codes*, *IEEE Int'l Symp. on Information Theory*, Los Angeles, California, (June 2020), 775–780.
- [C116] L. Yohananov and **E. Yaakobi**, *Codes over Trees*, *IEEE Int'l Symp. on Information Theory*, Los Angeles, California, (June 2020), 670–675.
- [C117] O. Sabary, A. Yucovich, G. Shapira, and **E. Yaakobi**, *Reconstruction Algorithms for DNA-Storage Systems*, *26th Int'l Conf. on DNA Computing and Molecular Programming*, (September 2020).
- [C118] R. Bitar, I. Smagloy, L. Welter, A. Wachter-Zeh, and **E. Yaakobi**, *Criss-Cross Deletion Correcting Codes*, *Int'l Symp. on Information Theory and Its Applications*, Kapolei, Hawai'i, (October 2020), 304 – 308.

- [C119] J. Chrisnata, H.-M. Kiah, and **E. Yaakobi**, *Optimal Reconstruction Codes for Deletion Channels*, *Int'l Symp. on Information Theory and Its Applications*, Kapolei, Hawai'i, (October 2020), 279 – 283. **Best Student Paper Award.**
- [C120] R. Gabrys, P.H. Siegel, and **E. Yaakobi**, *Segmented Reverse Concatenation: A New Approach to Constrained ECC*, *Int'l Symp. on Information Theory and Its Applications*, Kapolei, Hawai'i, (October 2020), 254 – 258.
- [C121] M. Abu-Sini and **E. Yaakobi**, *On List Decoding of Insertions and Deletions under the Reconstruction Model*, *IEEE Int'l Symp. on Information Theory*, Melbourne, Australia, (July 2021), 1706 – 1711.
- [C122] D. Bar-Lev, Y. Gershon, O. Sabary, and **E. Yaakobi**, *Decoding for Optimal Expected Normalized Distance over the t -Deletion Channel*, *IEEE Int'l Symp. on Information Theory*, Melbourne, Australia, (July 2021), 1847 – 1852.
- [C123] D. Bar-Lev, T. Etzion, and **E. Yaakobi**, *On Levenshtein Balls with Radius One*, *IEEE Int'l Symp. on Information Theory*, Melbourne, Australia, (July 2021), 1979 – 1984.
- [C124] Y.-M. Chee, A. Vardy, V.-K. Vu, and **E. Yaakobi**, *Coding for Transverse-Reads in Domain Wall Memories*, *IEEE Int'l Symp. on Information Theory*, Melbourne, Australia, (July 2021), 1924 – 1929.
- [C125] L. Holzbaur, S. Puchinger, **E. Yaakobi**, and A. Wachter-Zeh, *Correctable Erasure Patterns in Product Topologies*, *IEEE Int'l Symp. on Information Theory*, Melbourne, Australia, (July 2021), 2054 – 2059.
- [C126] A. Lenz, R. Bitar, A. Wachter-Zeh, **E. Yaakobi**, *Function-Correcting Codes*, *IEEE Int'l Symp. on Information Theory*, Melbourne, Australia, (July 2021), 1290 – 1295.
- [C127] S. Marcovich, T. Etzion, and **E. Yaakobi**, *Balanced de Bruijn Sequences*, *IEEE Int'l Symp. on Information Theory*, Melbourne, Australia, (July 2021), 1528 – 1533.
- [C128] L. Welter, R. Bitar, A. Wachter-Zeh, and **E. Yaakobi**, *Multiple Criss-Cross Deletion-Correcting Codes*, *IEEE Int'l Symp. on Information Theory*, Melbourne, Australia, (July 2021), 2798 – 2803.
- [C129] L. Yohanonov, **E. Yaakobi**, *Almost Optimal Construction of Functional Batch Codes Using Hadamard Codes*, *IEEE Int'l Symp. on Information Theory*, Melbourne, Australia, (July 2021), 3139 – 3144.
- [C130] D. Bar-Lev, O. Sabary, Y. Gershon, and **E. Yaakobi**, *The Intersection of Insertion and Deletion Balls*, *IEEE Information Theory Workshop*, Kanazawa, Japan, (October 2021).
- [C131] R. Shafir, O. Sabary, L. Anavy, **E. Yaakobi**, and Z. Yakhini, *Sequence Reconstruction Under Stutter Noise in Enzymatic DNA Synthesis*, *IEEE Information Theory Workshop*, Kanazawa, Japan, (October 2021).
- [C132] Y. Yehezkeally, S. Marcovich, and **E. Yaakobi**, *Multi-strand Reconstruction from Substrings*, *IEEE Information Theory Workshop*, Kanazawa, Japan, (October 2021).
- [C133] A. Banerjee, A. Wachter-Zeh, and **E. Yaakobi**, *Insertion and Deletion Correction in Polymer-Based Data Storage*, *IEEE Int'l Symp. on Information Theory*, Aalto, Finland, (June-July 2022), 742 – 747.
- [C134] D. Bar-Lev, S. Marcovich, **E. Yaakobi**, and Y. Yehezkeally, *Adversarial Torn-Paper Codes*, *IEEE Int'l Symp. on Information Theory*, Aalto, Finland, (June-July 2022), 2947 – 2952.
- [C135] A. Barg, O. Elishco, R. Gabrys, and **E. Yaakobi**, *Recoverable Systems on Lines and Grids*, *IEEE Int'l Symp. on Information Theory*, Aalto, Finland, (June-July 2022), 2656 – 2661.
- [C136] J. Chrisnata, H.-M. Kiah, A. Vardy, and **E. Yaakobi**, *Bee Identification for DNA Strands*, *IEEE Int'l Symp. on Information Theory*, Aalto, Finland, (June-July 2022), 909– 914.

- [C137] S. Marcovich, T. Etzion, and **E. Yaakobi**, *Covering Sequences for ℓ -Tuples*, *IEEE Int'l Symp. on Information Theory*, Aalto, Finland, (June-July 2022), 43 – 48.
- [C138] N. Raviv, R. Bitar, and **E. Yaakobi**, *Information Theoretic Private Inference in Quantized Models*, *IEEE Int'l Symp. on Information Theory*, Aalto, Finland, (June-July 2022), 1689 – 1694.
- [C139] E. Stylianou, L. Welter, R. Bitar, A. Wachter-Zeh, and **E. Yaakobi**, *Equivalence of Insertion/Deletion Correcting Codes for d -Dimensional Arrays*, *IEEE Int'l Symp. on Information Theory*, Aalto, Finland, (June-July 2022), 754 – 759.
- [C140] A. Kobovich, O. Leitersdorf, D. Bar-Lev, and **E. Yaakobi**, *Codes for Constrained Periodicity*, to appear *Int'l Symp. on Information Theory and Its Applications*, Tsukuba, Japan (October 2022).
- [C141] Y. Yehezkeally, D. Bar-Lev, S. Marcovich, and **E. Yaakobi**, *Reconstruction from Substrings with Partial Overlap*, to appear *Int'l Symp. on Information Theory and Its Applications*, Tsukuba, Japan (October 2022).
- [C142] S. Marcovich and **E. Yaakobi**, *The Zero Cubes Free and Cubes Unique Multidimensional Constraints*, to appear *IEEE Information Theory Workshop*, Bumbai, India, (November 2022).
- [C142] S. Sighvi, O. Sabary, D. Bar-Lev, and **E. Yaakobi**, *The Input and Output Entropies of the k -Deletion/Insertion Channel*, to appear *IEEE Information Theory Workshop*, Bumbai, India, (November 2022).

Patents

- [P1] **E. Yaakobi**, S. Kayser, P.H. Siegel, A. Vardy, J.K. Wolf, “Efficient Two Write WOM Codes, Coding Methods and Devices,” Patent No. US 2013/0080681 A1 (March 2013).
- [P2] **E. Yaakobi**, P.H. Siegel, A. Vardy, J.K. Wolf, “Strong Single and Multiple Error Correcting WOM Codes, Coding Methods and Devices,” Patent No. US 2013/0091402 A1 (April 2013).
- [P3] A. Jiang, E. En Gad, J. Bruck, **E. Yaakobi**, “Rank-Modulation Rewriting Codes for Flash Memories,” Patent No. US 2013/0254466 A1 (September 2013).
- [P4] A. Schuster, **E. Yaakobi**, G. Yadgar, “Reusable memory devices with WOM codes,” Patent No. WO2016116930 A1 (July 2016).

Selected Invited Talks

- * “Codes for Write-Once Memories,” *Information Theory and Applications Workshop, University of California, San Diego*, La Jolla, CA, February 2011.
- * “Error-Correcting Codes for Flash Memories,” *University of California, Los Angeles*, Los Angeles, CA, April 2011.
- * “Error-Correcting Codes for Write-Once and Flash Memories,” *Aspects of Coding Theory Workshop, EPFL*, Lausanne, Switzerland, July 2011.
- * “Coding for Non-Volatile Memories,” *Data Storage Institute*, Singapore, July 2011.
- * “Recent Advances in Coding for Flash Memories,” *Workshop on Coding for Flash Memories, University of Electro-Communications*, Tokyo, Japan, March 2012.

- * “On the Uncertainty of Information Retrieval in Associative Memories,” *University of Illinois Urbana Champaign*, Champaign, IL, May 2012.
- * “An Information-Theoretic Study of the Structure of Large Voting Systems,” *Workshop on Social Choice: Theory and Practice*, NIPS 2012, Lake Tahoe, CA, December 2012.
- * “Generalized Sphere Packing Bound,” *Technion*, Israel, March 2014.
- * “How to Enhance the Performance of SSDs by Coding Solutions,” *Hitachi*, San Jose, CA, August 2014.
- * “Generalized Sphere Packing Bound,” *Tel Aviv University*, Israel, December 2014.
- * “Coding for Emerging Non-Volatile Memories,” *Technion*, Israel, December 2014.
- * “Codes for Partially Stuck-at Memory Cells,” *Information Theory and Applications Workshop, University of California, San Diego*, La Jolla, CA, February 2015.
- * “Write-Once Memory Codes,” *Mainz University*, Mainz, Germany, May 2015.
- * “PIR with Low Storage Overhead: Coding instead of Replication,” *Tel Aviv University*, Israel, May 2015.
- * “When Do WOM Codes Improve the Erasure Factor in Flash Memories?,” *IBM*, Israel, June 2015.
- * “PIR with Low Storage Overhead: Coding instead of Replication,” *Technion*, Israel, May 2015.
- * “PIR with Low Storage Overhead: Coding instead of Replication,” *53-rd Annual Allerton Conference on Communication, Control and Computing*, Monticello, Illinois, September 2015.
- * “Coding for the ℓ_∞ -limited Permutation Channel,” *University of California, San Diego*, La Jolla, CA, October 2015.
- * “Codes in the Damerau Distance for DNA Storage,” *Information Theory and Applications Workshop, University of California, San Diego*, La Jolla, CA, February 2016.
- * “Codes in the Damerau Distance for DNA Storage,” *California Institute of Technology*, Pasadena, CA, February 2016.
- * “When Do WOM Codes Improve the Erasure Factor in Flash Memories?,” *SanDisk*, Israel, April 2016.
- * “Write-Once Memory Codes,” *Nanyang Technological University*, Singapore, April 2016.
- * “Codes in the Damerau Distance for DNA Storage,” *University of California, San Diego*, La Jolla, CA, October 2016.
- * “Nearly Optimal Constructions of PIR and Batch Codes,” *Information Theory and Applications Workshop, University of California, San Diego*, La Jolla, CA, February 2017.
- * “Tutorial on Private Information Retrieval (PIR): Coding Aspects,” *Workshop on Information theory and coding theory with applications to data security and privacy*, Stockholm, Sweden, May, 2017.
- * “Mutually Uncorrelated Codes for DNA Storage,” *Munich Workshop on Coding and Applications*, Munich, Germany, July, 2017.
- * “Coding over Sets for DNA Storage,” *Information Theory and Applications Workshop, University of California, San Diego*, La Jolla, CA, February 2018.
- * “On the Access Complexity of PIR Schemes,” *Munich Workshop on Coding and Cryptography*, Munich, Germany, April, 2018.

- * **Keynote speaker**, "Coding for Private Information Retrieval," *Workshop on Coding, Cooperation, and Security in Modern Communication Networks*, Technion, 2018.
- * "Private Information Retrieval," *Dagstuhl Seminar on Algebraic Coding Theory for Networks, Storage, and Security*, Germany, 2018.
- * "Tutorial on Private Information Retrieval (PIR): Coding Aspects," *International Symposium on Information Theory*, Paris, France, July, 2019.
- * "Coding for DNA Storage," *Alcoma*, March, 2020.
- * **Keynote speaker**, "Coding for DNA Storage," *International Symposium on Topics in Coding (ISTC 2020)*, Quebec, Canada, September, 2020.

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