

## Or Ordentlich

---

### CONTACT INFORMATION

Laboratory for Information & Decision Systems  
32-D569 Massachusetts Institute of Technology  
77 Massachusetts Ave  
Cambridge, MA 02139, USA  
E-mail: [ordent@mit.edu](mailto:ordent@mit.edu)  
Homepage: <http://www.mit.edu/~ordent>

### EDUCATION

Ph.D. from the Dept. of Electrical Engineering, Tel Aviv University (Thesis submitted Aug. 2015, approved Mar. 2016)  
M.Sc. from the department of Electrical Engineering, Tel Aviv University. Graduated June 2011, *summa cum laude*.  
B.Sc. from the department of Electrical Engineering, Tel Aviv University. Graduated Oct. 2010, *cum laude*.

### HONORS AND AWARDS

MIT - Technion Postdoctoral Fellowship Program (2015).  
Feder family award for outstanding research work in the field of communication technologies (2011, 2014).  
Thalheimer Scholarship for graduate students, awarded by the Wolf Foundation (2014).  
Fellowship from the Yitzhak and Chaya Weinstein research institute for Signal Processing at Tel Aviv University (2011, 2013, 2014).  
Adams Fellowship of the Israel Academy of Sciences and Humanities (2012-2015).  
Intel Award for excellent M.Sc. research work (2011).  
Scholarship for excellent M.Sc. students from the faculty of engineering, Tel Aviv University (2011).  
Independence day memorial scholarship of the faculty of engineering, Tel Aviv University (2008-2009).  
Intel Award for excellent B.Sc. students (2008).

### JOURNAL PUBLICATIONS AND PREPRINTS

O. Ordentlich and U. Erez, "Cyclic Coded Integer-Forcing Equalization", IEEE Trans. On Information Theory, vol. 58, no. 9, pp. 5804-5815, Sep. 2012.  
O. Ordentlich and U. Erez, "On the Robustness of Lattice Interference Alignment", IEEE Trans. On Information Theory, vol. 59, no. 5, pp. 2735-2759, May 2013.  
O. Ordentlich, U. Erez and B. Nazer, "The Approximate Sum Capacity of the Symmetric Gaussian  $K$ -User Interference Channel", IEEE Trans. On Information Theory, vol. 60, no. 6, pp. 3450-3482, June 2014.  
O. Ordentlich and U. Erez, "Precoded Integer-Forcing Universally Achieves the MIMO Capacity to Within a Constant Gap", IEEE Trans. on Information Theory, vol. 61, no. 1, pp. 323-340, Jan. 2015  
O. Ordentlich and O. Shayevitz, "Minimum MS. E. Gerber's Lemma", IEEE Trans. on Information Theory, vol. 61, no. 11, pp. 5883-5891, Nov. 2015

O. Ordentlich and O. Shayevitz, “An Upper Bound on the Sizes of Multiset-Union-Free Families”, *SIAM Journal on Discrete Mathematics*, vol. 30, issue 2, pp. 1032-1045, May 2016

O. Ordentlich and U. Erez, “A Simple Proof for the Existence of “Good” Pairs of Nested Lattices”, *IEEE Trans. on Information Theory*, vol. 62, no. 8, pp. 4439-4453, Aug. 2016

Y. Han, O. Ordentlich and O. Shayevitz, “Mutual Information Bounds via Adjacency Events”, *IEEE Trans. on Information Theory*, vol. 62, no. 11, pp. 6068-6080, Nov. 2016

O. Ordentlich and U. Erez, “Integer-Forcing Source Coding”, *IEEE Trans. on Information Theory*, accepted Oct. 2016

O. Ordentlich and U. Erez, “Performance Analysis and Optimal Filter Design for Sigma-Delta Modulation via Duality with DPCM”, submitted Jun. 2015.

CONFERENCE  
PAPERS

O. Ordentlich and U. Erez, “Cyclic Coded Integer-Forcing Equalization”, *Proc. of the 48th Annual Allerton Conference on Communication, Control, and Computing*, pp. 474–478, Monticello, Illinois, Sep. 2010

J. Zhan, B. Nazer, O. Ordentlich, U. Erez and M. Gastpar, “Integer-Forcing Architectures for MIMO: Distributed Implementation and SIC”, *Proceedings of the 44th Asilomar conference on Signals, Systems and Computers*, pp. 322–326, Pacific Grove, CA, Nov. 2010.

O. Ordentlich and U. Erez, “Achieving The Gains Promised by Integer-Forcing Equalization with Binary Codes”, *Proc. of the 26th Annual Convention of Electrical and Electronic Engineers in Israel*, pp. 703–707, Eilat, Israel, Nov. 2010.

O. Ordentlich, J. Zhan, U. Erez, M. Gastpar and B. Nazer, “Practical Code Design for Compute-and-Forward”, *Proceedings of the International Symposium on Information Theory (ISIT 2011)*, pp. 1876–1880, St. Petersburg, Russia, Aug. 2011.

O. Ordentlich and U. Erez, “Interference Alignment at Finite SNR for Time-Invariant Channels”, *Proceedings of the Information Theory Workshop*, pp. 442–446, Paraty, Brazil, Oct. 2011.

O. Ordentlich, U. Erez and B. Nazer, “The Compute-and-Forward Transform”, *Proceedings of the International Symposium on Information Theory (ISIT 2012)*, pp. 3008–3012, Cambridge, MA, USA, July 2012.

O. Ordentlich, U. Erez and B. Nazer, “The Approximate Sum Capacity of the Symmetric Gaussian  $K$ -User Interference Channel”, *Proceedings of the International Symposium on Information Theory (ISIT 2012)*, pp. 2072–2076, Cambridge, MA, USA, July 2012.

A. Khina, O. Ordentlich, U. Erez, Y. Kochman and G. W. Wornell, “Decode-and-Forward for the Gaussian Relay Channel via Standard AWGN Coding and Decoding”, *Proceedings of the Information Theory Workshop*, Lausanne, Switzerland, Sep. 2012.

O. Ordentlich and U. Erez, “A Simple Proof for the Existence of “Good” Pairs of Nested Lattices”, *Proc. of the 27th Annual Convention of Electrical and Electronic Engineers in Israel*, Eilat, pp. 1–12 Israel, Nov. 2012.

O. Ordentlich and U. Erez, “Precoded Integer-Forcing Universally Achieves the MIMO Capacity to Within a Constant Gap”, *Proceedings of the Information Theory Workshop*, pp. 442–446, Seville, Spain, Sep. 2013.

O. Ordentlich, U. Erez and B. Nazer “Successive Integer-Forcing and its Sum-Rate Optimality”, Proc. of the 51st Annual Allerton Conference on Communication, Control, and Computing, pp. 282–292, Monticello, Illinois, Oct. 2013

O. Ordentlich and U. Erez, “Integer-Forcing Source Coding”, Proceedings of the International Symposium on Information Theory (ISIT 2014), pp. 181–185, Honolulu, HI, USA, July 2014.

O. Ordentlich and O. Shayevitz, “Bounding Techniques for the Intrinsic Uncertainty of Channels”, Proceedings of the International Symposium on Information Theory (ISIT 2014), pp. 3082–3086, Honolulu, HI, USA, July 2014.

O. Ordentlich and O. Shayevitz, “Subset–Universal Lossy Compression”, Proceedings of the 2015 IEEE Information Theory Workshop, pp. 1–5 Jerusalem, Israel.

O. Ordentlich U. Erez and B. Nazer, “On Compute-and-Forward with Feedback”, Proceedings of the 2015 IEEE Information Theory Workshop, pp. 1–5 Jerusalem, Israel (invited paper).

O. Ordentlich and U. Erez, “Performance Analysis and Optimal Filter Design for Sigma-Delta Modulation via Duality with DPCM”, Proceedings of the 2015 International Symposium on Information Theory (ISIT 2015), pp. 321–325, Hong Kong, June 2016.

O. Ordentlich and O. Shayevitz, “A VC-dimension-based Outer Bound on the Zero-Error Capacity of the Binary Adder Channel”, Proceedings of the 2015 International Symposium on Information Theory (ISIT 2015), pp. 2366–2370, Hong Kong, June 2016. **Selected for presentation in a semi-plenary session (22/600 papers).**

O. Ordentlich, O. Shayevitz and O. Weinstein, “An Improved Upper Bound for the Most Informative Boolean Function Conjecture”, Proceedings of the 2016 International Symposium on Information Theory (ISIT 2016), pp. 500–504, Barcelona, Spain, July 2016.

O. Ordentlich, “Novel Lower Bounds on the Entropy Rate of Binary Hidden Markov Processes”, Proceedings of the 2016 International Symposium on Information Theory (ISIT 2016), pp. 690–694, Barcelona, Spain, July 2016.

B. Nazer and O. Ordentlich “Diophantine Approximation for Network Information Theory: A Survey of Old and New Results”, Proc. of the 54th Annual Allerton Conference on Communication, Control, and Computing, Monticello, Illinois, Oct. 2016

#### PATENTS

B. Rotbard, N. Sommer, S. Winter, O. Shalvi, D. Sokolov, O. Ordentlich, and M. Anholt, “Rejuvenation of analog memory cells”, U.S. Patent 8,248,831, issued Aug. 21, 2012.

M. Anholt, O. Ordentlich, N. Sommer, and O. Shalvi, “Error correction coding over multiple memory pages”, U.S. Patent 8,495,465, issued July 23, 2013.

B. Rotbard, N. Sommer, S. Winter, O. Shalvi, D. Sokolov, O. Ordentlich, and M. Anholt, “Read threshold setting based on temperature integral”, U.S. Patent 8,599,592, issued Dec. 3, 2013.

U. Erez and O. Ordentlich, “Transmission system with isi channel and method of operating thereof”, U.S. Patent 9,118,518, issued Aug. 25, 2015.

#### TEACHING

*Teaching Assistant* at Tel Aviv University.

Duties include frontal teaching, authoring and grading homework exercises and exam questions and other administrative responsibilities.

- 0510.6102 Coding, Modulation and Detection in Digital Communication, Spring 2015.
- 0512.3532 Introduction to Signal Analysis, Spring 2012, Spring 2013, Spring 2014.
- 0512.3632 Random Signals and Noise, Spring 2010, Winter 2011, Winter 2012, Winter 2013, Winter 2014, winter 2015.
- 0512.4100 Communication Systems, Spring 2010.

PROFESSIONAL  
EXPERIENCE

**Anobit Technologies**

May 2008 - Oct. 2009

*Algorithm team* (undergrad position)

Worked on MATLAB-based simulations and analysis of coded flash memory systems.  
Developed algorithms for coding and modulation for flash memories.