Curriculum Vitae — Oded Lachish

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Research Interests Algorithms and their applications

Current Position **Senior Lecturer**,
Department of Computer Science and Information Systems,
Birbeck, University of London (from January 2011)

Education

2002-2006 **PhD** Computer Science (University of Haifa)
Topic: Property Testing
Title: On Properties of Strings
Advisors: Prof. Ilan Newmann and Dr. Yuri Rabinovich

1998-2000 **MSc** Computer Science (The Weizmann Institute of Science)
Topic: Circuit Complexity
Title: Explicit Lower Bound of 4.5n - o(n) for Boolean Circuits
Advisor: Prof. Ran Raz

1992-1995 **BSc** Mathematics and Physics (Hebrew University)

Honors

2007 PhD, Summa Cum Laude

2002 The Feinberg Graduate School Prize for MSc Students

Employment

2007-2010 **Post Doc**, Department of Computer Science, University of Warwick, UK

2006-2007 **Post Doc**, Department of Computer Science, Technion, Israel

2000-2003 **Researcher**, Verification Group, IBM Haifa Research Labs

1995-1998 **ASIC Designer**, Freescale (previously Motorola) Semiconductors

Teaching

2018- *Concepts of Computation (Graduate)*
BirkBeck, University of London (3 terms)

2015- *Math for Computing (Undergraduate)*
BirkBeck, University of London (5 terms)

2014-2017 *Software Engineering in Practice (Graduate)*
BirkBeck, University of London (3 terms)

2014-2015 *Software Design and Programming (Graduate)*
BirkBeck, University of London (1 term)

2012-2014 *Software and Programming 2 (Undergraduate)*
BirkBeck, University of London (2 terms)

2011-2014 *Introduction to Software Engineering: Tools and Environments (Graduate)*
BirkBeck, University of London (3 terms)

2011-2014 *Object Oriented Design and Programming (Graduate)*
BirkBeck, University of London (4 terms)

2009-2010 *Complexity of Algorithms (Undergraduate and Graduate)*
University of Warwick (with Harald Räcke) (2 terms)

2003-2006 *Discrete Mathematics (Undergraduate)*
University of Haifa (7 semesters)

Papers in Peer - Reviewed Journals

- **SIAM Journal on Computing** (2021)
  Tom Gur, Oded Lachish;
  On the Power of Relaxed Local Decoding Algorithms.
- **Algorithmica** (2019)
  Eldar Fischer, Oded Lachish and Yadu Vadusev;
  Improving and extending the testing of distributions for shape-restricted properties.
- **ACM Transactions on Computation Theory.** (2016)
  Eldar Fischer, Yonatan Goldhirsh and Oded Lachish;
  Testing Read-Once Formula Satisfaction.
- **Theory of Computing Systems** (2016)
  Trevor Fenner, Oded Lachish and Alexandru Popa;
  Min-Sum 2*-Paths Problems.*
- **Journal of Computer and System Sciences** (2013)
  Stephane Demri, Marcin Jurdzinski, Oded Lachish and Ranko Lazic;
  The Covering and Boundedness Problems.
- **ACM Transactions on Algorithms** (2012)
  Eldar Fischer, Oded Lachish, Arie Matsliah, Ilan newman and Orly Yahalom;
  On the Query Complexity of Testing Orientations for Being Eulerian.
- Oded Lachish and Ilan Newman; **Algorithmica** (2011)
  Testing Periodicity.
- **ACM Transactions on Computation Theory** (2009)
  Eli Ben-Sasson, Prahladh Harsh, Oded Lachish and Arie Matsliah;
  Sound 3*-Query PCPPs are long.*
- **Computational Complexity** (2008)
  Oded Lachish, Ilan Newman and Asaf Shapira;
  Space Complexity vs. Query Complexity.
- **Information Processing Letters** (2007)
  Oren Ben-Zwi, Oded Lachish and Ilan Newman;
  Lower Bounds for Testing Euclidian Minimum Spanning Tree.

Chapters in Books

- **System Specification & Design Languages** (2003)
  Oded Lachish and Avi Ziv; **FDL'02**
  Object-Oriented High-Level Modeling of an InfiniBand to PCI-X Bridge.

Papers in Peer - Reviewed Conference Proceedings

- Marcel de Sena Dall'Angol, Tom Gur and Oded Lachish; **SODA'21**
  A Structural Theorem for Local Algorithms with Applications to Coding, Testing, and Privacy.
- Tom Gur and Oded Lachish; **SODA'20**
  On the Power of Relaxed Local Decoding Algorithms.
- Eldar Fischer, Oded Lachish and Yadu Vadusev; **STACS'17**
  Improving and extending the testing of distributions for shape-restricted properties.
- Paolo Bolzoni, Sven Helmer and Oded Lachish; **GIScience'16**
  Fast Computation of Continental-Sized Isochrones.
- Eldar Fischer, Oded Lachish and Yadu Vadusev; **FOCS'15**
  Trading Query Complexity for Sample-based Testing and Multi-testing scalability.
- Oded Lachish; **FOCS'14**
  O(log log rank) Competitive-Ratio for the Matroid Secretary Problem.
- Eldar Fischer, Yonatan Goldhirsh and Oded Lachish; **ITCS'14**
  Partial Tests, Universal Tests and Decomposability.
- Trevor Fenner, Oded Lachish and Alexandru Popa; **WAOA'13**
  Min-Sum 2-Paths Problems.
- Trevor Fenner, Thidawan Klaysri, Oded Lachish, Mark Levene and Panagiotis Papapetrou; **IDA'13**
  Analysis of Cluster Structure in Large-Scale English Wikipedia Category Networks.
- Eldar Fischer, Yonatan Goldhirsh and Oded Lachish; **SWAT'12**
  Testing Formula Satisfaction.
- Sourav Chakraborty and Oded Lachish; **SODA'12**
  Improved Competitive Ratio for the Matroid Secretary Problem.
- John Fearnley and Oded Lachish; **MFCS'11**
  Parity Games On Graphs With Medium Tree-width.
- Sourav Chakraborty, Eldar Fischer, Oded Lachish, and Raphy Yuster; **STACS'10**
  Two-phase Algorithms for the Parametric Shortest Path Problem.
- Stephane Demri, Marcin Jurdzinski, Oded Lachish and Ranko Lazic; **FSTTCS'09**
  The Covering and Boundedness Problems for Branching Vector Addition Systems.
- Haris Aziz, Oded Lachish, Mike Paterson and Rahul Savani; **WINE'09**
  Wiretapping a Hidden Network.

Papers in Peer - Reviewed Conference Proceedings

- Kristoffer Arnsfelt Hansen, Peter Bro Miltersen and Oded Lachish; *Hilbert's Thirteenth Problem and Circuit Complexity.* **ISAAC'09**
- Haris Aziz, Oded Lachish, Mike Paterson and Rahul Savani; *Power Indices in Spanning Connectivity Games.* **AAIM'09**
- Eldar Fischer, Oded Lachish, Arie Matsliah, Ilan newman and Orly Yahalom; *On the Query Complexity of Testing Orientations for Being Eulerian.* **RANDOM'08**
- Eli Ben-Sasson, Prahladh Harsha, Oded Lachish and Arie Matsliah; *Sound 3-Query PCPPs are Long.* **ICALP'08**
- Sourav Chakraborty, Eldar Fischer, Oded Lachish, Arie Matsliah and Ilan newman; *Testing s-t Connectivity.* **RANDOM'07**
- Shirley Halevy, Oded Lachish, Ilan Newman and Dekel Tsur; *Testing Properties of Constraint-Graphs.* **CCC'07**
- Oded Lachish, Ilan Newman and Asaf Shapira; *Space Complexity vs. Query Complexity.* **RANDOM'06**
- Oded Lachish and Ilan Newman; *Testing Periodicity.* **RANDOM'05**
- Oded Lachish, Eitan Marcus, Shmuel Ur and Avi Ziv; *Hole Analysis for Functional Coverage Data.* **DAC'02**
- Oded Lachish and Avi Ziv; *Object-Oriented High-Level Modeling of an InfiniBand to PCI-X Bridge.* **FDL'02**
- Oded Lachish and Ran Raz; *Explicit Lower Bound of 4.5n - o(n) for Boolean Circuits.* **STOC'01**

Patents

- Oded Lachish , Ron Eliyahu , Marc Neustadter; United States Patent 6,014,761. *"Convolutional interleaving/de-interleaving method using pointer incrementing across predetermined distances and apparatus for data transmission"*, January 11, 2000.

Projects

- *Unilever software up-scaling project* -
  algorithms and software design and architecture.

- *Financial IT Infrastructure* -
  an initiative of the Warwick Institute for Financial Computing, with the goal of establishing an integrated IT infrastructure for hosting a large repository of financial data and for exploiting this data through new methods of super computing.

- *CDG - Coverage Directed test Generation*
  a software tool for automatically providing test generators with directives based on coverage analysis.

- *Meteor* -
  a software tool developed and maintained by IBM
  Stores and analyses cross-product functional coverage data, generated as part of the testing process hardware, software.
  It is/was used in IBM for architecture and micro-architecture testing of PowerPC, System S390, and SOC designs.

- *ODETTE - Object-oriented co-DEsign and functional Test TEchniques*
  a project financed by the European Commission.
  The goal of the project was to develop object-oriented hardware design methodology.

- *MC92052 and MC92053* -
  ASIC chips designed for the communications industry and manufactured by *Motorola (now Freescale) Semiconductors* .

Academic Activity

MRes program director (2019-).

Student Disability Lead (2014-2019).

Project Tutor (2013-).

Organizer of the DCSIS seminar (2011-).

MSc Programs Admission Tutor (2011-2013).

Co-organizer of the algorithms group seminar (2007-2009).

Co-organizer of DIMAP algorithms day October 24 (2008).

Research Visits

Aarhus University, Bonn University, University of Bristol,
Free University of Bozen-Bolzano, Haifa University, Kyoto University,
Rutgers University, Technion, Simon Fraser University.