

# Curriculum Vita: Anat Bremler-Barr

## A. Personal Data



- Name: Anat Bremler-Barr
- Born: 1972 Israel
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- E-Mail: [bremler@idc.ac.il](mailto:bremler@idc.ac.il)
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- Marital status: married+2.

## B. Research Interests

- Networking: Network Algorithmics, Routing, IP-lookup & Classification, DPI, Routing Protocols, Network Measurements, NFV\SDN, Cloud
- Network Security: Denial of Service (DDOS), DNS security, IoT security

## C. Positions:

2003 - Current: Efi Arazi School of Computer Science, Reichman University (former named Interdisciplinary Center Herzliya, IDC)

2019-2021: Vice Dean Computer Science

2020 -current: Full Professor

2019- current: Academic Director (and founder) of [CONNECT](#) Industrial Affiliation Program (IAP)

2013-2020: Associate Professor

2010-current: Founder and director of the [Deepness-lab](#)

2007-2013: Senior Lecturer

2006-2020: Academic Director of the Security Specialty

2003-2007: Lecturer

2013-current: Visiting Professor Computer Science, Tel Aviv University

Summer 2005, 2006: Advisor at start-up companies (Allot and Commtouch).

2001 - 2004: **Riverhead Networks, Chief Scientist and Co-founder**. One of the inventors of the fundamental technology of the company. Riverhead Networks developed advanced solutions for Distributed Denial of Service attacks (DDoS). The company was acquired by CISCO in 2004.

2000: Summer Internship at AT&T Menlo Park under the supervision of Dr. Edith Cohen.

- 1992-2002: Tel-Aviv University Teaching Assistant
- 1998-1999: Tel-Aviv-Yafo college Teaching Assistant
- 1997-1998: RadView Programmer  
Programmer in C++, Developing multi-threaded applications for performance testing of web-server.

#### **D. Education**

1. **2002 Ph.D. (with distinction):**

Computer Science, Tel Aviv University, Israel  
Thesis title: Algorithm for Efficient and Reliable Routing in the Internet.  
**The title was awarded with distinction**  
Research supervised by Prof. Yehuda Afek

2. **1997 M.Sc (Summa Cum Laude):**

Computer Science, Tel Aviv University, Israel  
Graduated with honors (Summa Cum Laude)  
Thesis title: Self-Stabilizing Unidirectional Network Algorithms by Power Supply  
Research supervised by Prof. Yehuda Afek

3. **1994 B.Sc. (Magna Cum Laude):**

Mathematics and Computer Science, Tel Aviv University, Israel  
Graduated with honors (Magna Cum Laude)

4. **1999 LL.B:**

Law, Tel Aviv University, Israel

#### **E. Publications:**

I. Work in progress

- [P1] Yehuda Afek, Anat Bremler-Barr, Neta Peleg, "Measuring Open Resolvers Negative Caching", (brief announcement ) IMC 2021
- [P2] Eli Brosh, Elad Wasserstein, Anat Bremler-Barr, " Dynamic-Deep: ECG Task-Aware Compression," arXiv 2021 under submission
- [P3] Yehuda Afek, Anat Bremler-Barr, Daniel Dubnikov, "Adaptive DNSSEC" talk at ORAC 2022
- [P4] Daniel Bachar, Anat Bremler-Barr, David Hay, "Kubernetes Service Selection Optimization", 2021 under submission
- [P5] Yehuda Afek, Anat Bremler-Barr, Dor Israeli, Alon Noy "Eradicating Attacks on the Internal Network with Internal Network Policy", 2022 under submission

## II. Conferences and Workshops:

- [P6] Anat Bremler-Barr, Bar Meyuhas, Ran Shister, "One MUD to Rule them All", NOMS 2022
- [P7] Yehuda Afek, Anat Bremler-Barr, David Hay, Avraham Shalev, "MUDirect: Protecting P2P IoT Devices with MUD", in IEEE ithings-2021
- [P8] Ronen Ben David, Anat Bremler-Barr, "Kubernetes Autoscaling: YoYo Attack Vulnerability and Mitigation," CLOSER 2021
- [P9] Yehuda Afek, Anat Bremler-Barr, David Hay, Ran Goldschmidt, Lior Shafir, Gafnit Abraham, Avraham Shalev, "NFV-based IoT Security for Home Networks using MUD," NOMS 2020
- [P10] Anat Bremler-Barr, Haim Levy, Zohar Yakhini, "IoT or NoT: Identifying IoT Devices in a Short Time Scale," NOMS 2020
- [P11] Yehuda Afek, Anat Bremler-Barr, Lior Shafir, "NXNSAttack: Recursive DNS Inefficiencies and Vulnerabilities," USENIX Security 2020
- [P12] Shir Landau Feibish, Yehuda Afek, Anat Bremler-Barr, Edith Cohen, Michal Shagam: "Mitigating DNS random subdomain DDoS attacks by distinct heavy Hitters sketches," HotWeb 2017
- [P13] Anat Bremler-Barr, David Hay, Idan Moyal, and Liron Schiff, "Load Balancing Memcached Traffic Using Software Defined Networking," IFIP Networking 2017
- [P14] Anat Bremler-Barr, Eli Brosh, Mor Sides, "DDoS Attack on Cloud Auto-scaling Mechanisms," INFOCOM 2017
- [P15] Yehuda Afek, Anat Bremler-Barr, Lior Shafir, "Network Anti-Spoofing with SDN Data plane," INFOCOM 2017
- [P16] Anat Bremler-Barr, Yotam Harchol, David Hay: "OpenBox: A Software-Defined Framework for Developing, Deploying, and Managing Network Functions," in ACM SIGCOMM, August 2016.
- [P17] Anat Bremler-Barr, Yotam Harchol, David Hay, Yacov Hel-Or: "Encoding Short Ranges in TCAM Without Expansion: Efficient Algorithm and Applications," In ACM Symposium on Parallelism in Algorithms and Architectures (SPAA), July 2016
- [P18] Anat Bremler-Barr, David Hay, Daniel Krauthgamer, Shimrit Tzur-David: "Scalable URL Matching with Small Memory Footprint," in IFIP Networking, pages 476-484, 2016
- [P19] Alon Atari, Anat Bremler-Barr, "Efficient Round-Trip Time Monitoring in OpenFlow Networks," in INFOCOM, April 2016, **awarded best in session**

- [P20] Anat Bremler-Barr, Yotam Harchol, David Hay, "OpenBox: Enabling Innovation in Middlebox Applications", in ACM SIGCOMM HotMiddleboxes, August 2015
- [P21] Anat Bremler-Barr, Yotam Harchol, David Hay, Yacov Hel-Or, "Ultra-Fast Similarity Search Using Ternary Content Addressable Memory," in ACM DaMoN, June 2015
- [P22] Y. Afek, A. Bremler-Barr, and L. Schiff, "ORange: Multi-field openflow based range classifier," in ACM/IEEE ANCS, May 2015
- [P23] Michela Becchi, Anat Bremler-Barr, David Hay, Omer Kochba, and Yaron Koral: "Accelerating Regular Expression Matching Over Compressed HTTP" IEEE INFOCOM, 2015
- [P24] A. Bremler-Barr, Shimrit Tzur David, Yotam Harchol, and David Hay: "Leveraging Traffic Repetitions for High-Speed Deep Packet Inspection" IEEE INFOCOM, 2015
- [P25] A. Bremler-Barr, D. Hay, Y. Harchol, Y. Koral, "DPI as a Service", CoNEXT 2014
- [P26] Y. Afek, A. Bremler-Barr and S. Landau Feibish, "Automated Signature Extraction for High Volume Attacks," in ACM/EEE ANCS 2013 (**Shir won Broadcom Foundation University Research Competition Second Place**)
- [P27] Y. Afek, A. Bremler-Barr and L. Schiff, "Space Efficient Priority Queues: The TCAM Case," in SPAA 2013.
- [P28] Y. Afek, A. Bremler-Barr, D. Hay, Y. Harchol, Y. Koral, "MCA2: Multi Core Architecture for Mitigating Complexity Attacks", in ACM/EEE ANCS 2012.
- [P29] U. Ben-Porat, A. Bremler-Barr, H. Levy and B. Plattner," On the Vulnerability of Hardware Hash Tables to Sophisticated Attacks, "in Networking 2012.
- [P30] A. Bremler-Barr, S. Tzur-David, D. Hay, Y. Koral," Decompression-Free Inspection: DPI for Shared Dictionary Compression over HTTP, "in IEEE INFOCOM 2012 .
- [P31] U. Ben-Porat, A. Bremler-Barr, H. Levy, "Network and Computer Performance in Malicious Environments: The Good, the Bad and the Ugly," in NETGCoop 2011.
- [P32] A. Bremler-Barr, Y. Koral and V. Zigdon, "Shift-Based Pattern Matching for Compressed Web Traffic," in IEEE International Conference on High Performance Switching and Routing (HPSR), 2011.
- [P33] A. Bremler-Barr, Y. Harchol and D. Hay, "Space-time tradeoffs in Software-based Deep Packet Inspection," in IEEE International Conference on High-Performance Switching and Routing (HPSR), 2011.
- [P34] A. Bremler-Barr, O. Dekel, R. Goldschmidt, H. Levy, "Controlling P2P applications via Address Harvesting: the Skype story" in HOT-P2P workshop, 2011.
- [P35] Y. Afek, A. Bremler-Barr, Y. Koral, "Efficient Processing of Multi-Connection Compressed Web Traffic," in NETWORKING, 2011.
- [P36] A. Bremler-Barr, R. Goldschmidt, "On the stability of Skype Super Nodes," in Traffic Monitoring and Analysis Workshop (TMA), 2011.
- [P37] U. Ben-Porat, A. Bremler-Barr, H. Levy, B. Plattner, "On the Vulnerability of Proportional Fairness scheduler to retransmission attacks," in IEEE INFOCOM, 2011

- [P38] A. Bremler-Barr, D. Hay, and Y. Koral, "CompactDFA: Generic State Machine Compression for Scalable Pattern Matching," in IEEE INFOCOM, 2010.
- [P39] A. Bremler-Barr, Y. Koral, "Accelerating Multi-patterns Matching on Compressed HTTP Traffic," in IEEE INFOCOM, 2009.
- [P40] U. Ben-Porat, A. Bremler-Barr, H. Levy, "On the Exploitation of CDF based Wireless Scheduling" (mini-conference), in IEEE INFOCOM, 2009.
- [P41] A. Bremler-Barr, D. Hay, D. Hendler, R. Roth, "PEDS: A Parallel Error Detection Scheme for TCAM Devices," in (**runner up to best paper**) IEEE INFOCOM, 2009.
- [P42] A. Bremler-Barr, D. Hay, D. Hendler, B. Ferber, "Layered Interval Codes for TCAM-based Classification," (poster session) in SIGMETRICS, 2008; (full paper) in IEEE INFOCOM, 2009.
- [P43] U. Ben-Porat, A. Bremler-Barr, H. Levy, "The Vulnerability of Network Mechanisms to Sophisticated DDOS attacks," in IEEE INFOCOM (mini-conference), 2008.
- [P44] A. Bremler-Barr, D. Hendler, "Efficient TCAM-based Packet Classification using Gray Code", in IEEE INFOCOM, 2007.
- [P45] A. Bremler-Barr, R. Halacmi-Bekel and J. Kangasharju, "Unregister Attacks in SIP", in NPSec Workshop, 2006.
- [P46] A. Bremler-Barr, H. Levy and N. Halachmi, "Aggressiveness Protective Fair Queueing for Bursty Applications", (short paper) in IWQoS Workshop, 2006.
- [P47] A. Bremler-Barr and H. Levy "Spoofing Prevention Method", Brief Announcement in PODC 2004, full paper in IEEE INFOCOM, 2005.
- [P48] A. Bremler-Barr and L. Epstein, "Path layout on tree networks: Tight bounds in different label switching model," in SIROCCO, 2004.
- [P49] Y. Afek, R. Brooks, N. Fischbach, P. Quinn, A. Friedrich, M. Binderberger, A. Bremler-Barr, B. Elgar, R. Hermoni, "MPLS-Based Synchronous Traffic Shunt", in NANOG, 2003.
- [P50] A. Bremler-Barr, Y. Afek, and S. Schwartz, "Improved BGP Convergence via Ghost Flushing," in IEEE INFOCOM, 2003.
- [P51] Y. Afek, A. Bremler-Barr, O. Ben-Shalom, "On the structure and application of BGP Policy Atoms," in Internet Measurement Workshop, 2002.
- [P52] A. Bremler-Barr, E. Cohen, H. Kaplan, and Y. Mansour, "On the predictability and by-passability of end to end delays," in Internet Measurement Workshop, 2002.
- [P53] Y. Afek, A. Bremler-Barr, H. Nussbacher, D. Touitou "Diversion and Sieving Techniques to Defeat DDOS," in NANOG, 2001.
- [P54] A. Bremler-Barr, Y. Afek, H. Kaplan, E. Cohen, and M. Merrit, "Restoration by Path Concatenation: Fast recovery of MPLS paths," in SIGMETRIC 2001 (short abstract) full paper in PODC, 2001.
- [P55] A. Bremler-Barr, Y. Afek, "Trainet: A new label switching scheme," in IEEE INFOCOM, 2000.

- [P56] A. Bremler-Barr, Y. Afek, S. Har-Peled, "Routing with a Clue," in ACM SIGCOMM, 1999.
- [P57] Y. Afek and A. Bremler, "Self-Stabilizing Unidirectional Network Algorithms by Power Supply," in SODA, 1997.

## II. Brief Announcements, Posters and Demos

- [P58] Anat Bremler-Barr, Bar Meyuhas, Ran Shister, "IoT Location Impact on Network Behavior and MUD", (brief announcement) IMC 2021
- [P59] Yehuda Afek, Anat Bremler-Barr, David Hay, Lior Shafir, Ihab Zhaika, "Demo: NFV-based IoT Security at the ISP Level." Demo, NOMS 2020
- [P60] Lior Shafir, Yehuda Afek, Anat Bremler-Barr, Neta Peleg, Matan Sabag, "DNS Negative Caching in the Wild," short abstract, SIGCOMM 2019 (**Lior won third place in the ACM SIGCOMM Student Research Competition**)
- [P61] Y. Afek, A. Bremler-Barr, S. Landau Feibish, L. Schiff, "Sampling and Large Flow Detection in SDN " in (poster session) SIGCOMM '15
- [P62] Mor Sides, Anat Bremler-Barr, Elisha Rosensweig " Yo-Yo Attack - Vulnerability in auto-scaling mechanism" in (poster session) SIGCOMM '15
- [P63] Netanel Cohen, Anat Bremler-Barr, "Graph-based Cloud Resource Cleanup", in ACM SoCC Poster Session, August 2015
- [P64] Yehuda Afek, Anat Bremler-Barr, Liron Schiff: Cross-Entrance Consistent Range Classifier with OpenFlow (short abstract) ONS 2014 HotSDN 2014
- [P65] A. Bremler-Barr , O. Mokryn, J. Kangasharju, N. Chen and Y. Shavitt "Bringing Order To BGP: Decreasing Convergence Message Complexity", (brief announcements) in PODC, 2007.

## III. Journals Papers:

- [J1] Yehuda Afek, Anat Bremler-Barr, Shir Landau Feibish, " Zero-Day Signature Extraction for High Volume Attacks", IEEE/ACM Transactions on Networking, January 2019
- [J2] Yehuda Afek, Anat Bremler-Barr, Shir Landau Feibish, Liron Schieff, "Detecting Heavy Flows in the SDN Match and Action Model", Computer Networks 2018
- [J3] Anat Bremler-Barr, Yotam Harchol, David Hay, Yacov Hel-Or, "Encoding Short Ranges in TCAM Without Expansion: Efficient Algorithm and Applications". In IEEE/ACM Transactions on Networking (January 2018)

- [J4] Yehuda Afek, Anat Bremler-Barr, Yotam Harchol, David Hay, and Yaron Koral. "Making DPI Engines Resilient to Algorithmic Complexity Attacks". In *IEEE/ACM Transactions on Networking*. 2016
- [J5] Yehuda Afek, Anat Bremler-Barr, Liron Schiff, "Recursive design of hardware priority queues.", *Computer Networks* 66: 52-67, 2014
- [J6] Udi Ben-Porat, Anat Bremler-Barr, Hanoach Levy, "Computer and network performance: Graduating from the Age of Innocence ". *Computer Networks* 66: 68-81, 2014
- [J7] A. Bremler-Barr, D. Hay and Y. Koral, "CompactDFA: Scalable Pattern Matching using Longest Prefix Match solution", 22(2): 415-428 (2014) *IEEE Transaction on Networking*, 2014
- [J8] U. Ben-Porat, A. Bremler-Barr, H. Levy , "On the Exploitation of CDF based Wireless Scheduling", *Computer Networks*, special issue 2013.
- [J9] U. Ben-Porat, A. Bremler-Barr, H. Levy, "The Vulnerability of Network Mechanisms to Sophisticated DDOS attacks", *IEEE Transactions on Computers*, 2013.
- [J10] A. Bremler-Barr, D. Hay, D. Hendler, B. Ferber, "Layered Interval Codes for TCAM-based Classification", *Computer Networks*, special issue on Challenges in High-Performance Switching and Routing in the Future Internet, 56(13):3023-3039, 2012.
- [J11] A. Bremler-Barr, D. Hendler "Space-Efficient TCAM-based Classification Using Gray Coding", *IEEE Transactions on Computers*, 61(1): 18-30, 2012.
- [J12] A. Bremler-Barr, Y. Koral , "Accelerating Multi-patterns Matching on Compressed HTTP Traffic", *IEEE Transactions on Networking*, 20(3): 970-983, 2012.
- [J13] Y. Afek, A. Bremler-Barr, Y. Koral "Efficient Processing of Multi-Connection Compressed Web Traffic", *Computer Communication*, 35(7): 810-819, 2012.
- [J14] A. Bremler-Barr, D. Hay, D. Hendler, R. Roth, "'PEDS: A Parallel Error Detection Scheme for TCAM Devices", *IEEE Transactions on Networking*, 18(5): 1665-1675, 2010.
- [J15] A. Bremler-Barr , O. Mokryn, J. Kangasharju, N. Chen and Y. Shavitt "Bringing Order To BGP: Decreasing Convergence Message Complexity", *Computer Networks*, 53(12): 2241-2256, 2009.
- [J16] A. Bremler-Barr, H. Levy and N. Halachmi, "Protecting Bursty Applications Against Traffic Aggressiveness", *Computer Networks* 2007, Volume 51 , Issue 13 Pages 3864-3877, 2007.
- [J17] A. Bremler-Barr and L. Epstein, "Path layout on tree networks: Bounds in different label switching models", *Nord. J. Comput.* 14(1-2): 109-125, 2007.

- [J18] A. Bremler-Barr, Y. Afek, and S. Schwartzs, "Improved BGP Convergence via Ghost Flushing", IEEE Journal on Selected Areas in Communications, 22(10): 1933-1948, 2004.
- [J19] A. Bremler-Barr, E. Cohen, H. Kaplan, and Y. Mansour, "Predicting and bypassing end-to-end Internet service degradations", IEEE Journal on Selected Areas in Communications, 21(6): 961-978, 2003.
- [J20] A. Bremler-Barr, Y. Afek, H. Kaplan, E. Cohen, and M. Merrit, "Restoration by Path Concatenation: Fast recovery of MPLS paths", Special Issue of Distributed Computing, 15 (4): 273-283, 2002.
- [J21] Y. Afek and A. Bremler and S. Har-Peled, "Routing with a clue", IEEE/ACM Transactions on Networking, vol. 9 pp. 693-705. Dec. 2001.
- [J22] Y. Afek and A. Bremler, "Self-Stabilizing Unidirectional Network Algorithms by Power Supply," Special Issue for Self-stabilizing, Chicago Journal of Theoretical Computer Science, Dec. 1998.

## VI. Manuscripts

- A. Bremler-Barr, Y. Mansour, and Y. Rosenbaum, "Towards automatic root cause analysis of connection degradation" (Y. Rosenbaum, thesis manuscript), 2005
- A. Bremler-Barr, O. Dekel, R. Goldschmidt, H. Levy "The Super Nodes of Skype: Measurements, Behavior and Vulnerability," 2010.
- A. Bremler-Barr, N. Solomon, "Mitigating Layer 2 Attacks: Re-Thinking the Division of Labor", (Nir Solomin project manuscript), 2015
- A. Bremler Barr, P. Lazar, "Design and Implementation of a Data Plane for the OpenBox Framework," (Pavel Lazar, project manuscript), 2016
- A. Bremler-Barr, G. Parashi, "Efficient Automated Signatures Extraction Implementation," (Golan Parahi, project manuscript), 2016
- A. Bremler-Barr, L. Barak, "Implementing a prototype for the Deep Packet Inspection as a Service Framework," (Lior Barak, project manuscript), 2016
- A. Bremler-Barr, Y. Harchol, Asher Gruber, "Snort Virtual Network Function With DPI Service" (Asher Gruber project manuscript). 2016
- A. Bremler-Bar D. Shmidt, "The Openbox Controller - Northbound API," (Dan Shmidt project manuscript), 2017
- A. Bremler-Barr S. Nissim, "GRAMI Software Enhancement on SDN Networks, (Shlomi Nisim project manuscript), 2018



- A.Bremler-Barr H. Iserovich, "Empowering Network Infrastructure Cybersecurity" (Hanan Iserovich project manuscript), 2021

## F. Patents:

- Anat Bremler-Barr, David Hay, Yaron Koral, Yotam Harchol, "**Method and System for providing Deep Packet Inspection as a service**", US Application No. 15/321,472 national phase of PCT/IL2015/050641, year 2015.
- Yehuda Afek, Anat Bremler-Barr, Yaron Koral, "**Efficient processing of compressed communication traffic**", US Patent 8,909,813, year 2014.
- A Bremler-Barr, Y. Koral, V. Zigdon, "**Multi-pattern matching in compressed communication traffic**" US Patent 8,458,354, year 2012
- Anat Bremler-Barr, David Hay and Yaron Koral "**State machine compression for scalable pattern matching**", US Patent 8,504,510, year 2012.
- A Bremler-Barr, H Levin, O Dekel, "**Detecting and controlling peer-to-peer traffic**", US Patent App. 12/739,738, year 2010
- Anat Bremler-Barr, David Hay, Danny Hendler and Ron M. Roth. "**TCAM with Fast Error Detection**". U.S. Provisional Patent Application No. 61/130129, May 2008.
- Anat Bremler-Barr, Keren Horvitz, Dan Touitou, Rafi Zadikario, Yehuda Afek, "**Weighted fair queuing-based methods and apparatus for protecting against overload conditions on nodes of a distributed network**", United States Patent Application 20030076848, 2003.
- Guy Pazi, Anat Bremler-Barr, Rami Rivlin, Dan Touitou, "**Protecting against distributed denial of service attacks**" (PCT/IL02/00714, 10/232,993) , United States Patent Application 20030076848, 2003.
- Anat Bremler-Barr, Touitou Dan, Rafi Zadikario, Yehuda Afek, "**Protecting against malicious traffic**" (PCT/IL02/00996), 2002.
- Rafi Zadikario, Dan Touitou, Anat Bremler-Barr, "**Protecting against and stopping the spread of malicious worm traffic on the Internet**", (60/445,605), 2003.
- Anat Bremler-Barr, Dan Touitou, Rami Rivlin, "**Detecting and protecting against worm traffic on a network**", United States Patent Application 20030076848, 2005.
- Anat Bremler-Bar, Hank Nussbacher, Roi Hermoni, "**Selective diversion and injection of communication traffic**", United States Patent Application 20030076848, 2006.
- Y. Afek, A. Bremler-Barr, S. Har-Peled "**Method for fast IP-lookup - routing with a clue**", United States Patent Application 6876655, 2005.
- Y. Afek, A. Bremler-Barr, S. Har-Peled, "**Method for Fast Multi-Dimensional Packet Classification**", United States Patent Application 6633860, 2003.

## G. Grants:

- Consortium, " Encrypted Networks Traffic Monitoring (ENTM)", the Office of the Chief Scientist of the Ministry of Industry, 300K NIS a year (with Prof. David Hay) 2021-2024
- RedHat grant, Multi-cloud service Selection, 200,000NIS, 2021
- Cisco Research grant, MUD-based IoT Security in SD-WAN, 100,000\$ (with Prof. Yehuda Afek and Prof. David Hay), 2021
- Blavatnik Interdisciplinary Cyber Research Center, Tel Aviv University, "Attack Resilient and Efficient DNS infrastructure", 2019-2021, 124,000 \$ (with Prof. Yehuda Afek)
- Neptune consortium, " Quality of experience in NFV and SDN environment", the Office of the Chief Scientist of the Ministry of Industry, 300K NIS a year (with Prof. Yehuda Afek and Prof. David Hay) 2014-2018.
- Kabrnit consortium, "Algorithms for automatically defining and finding signatures for news attacks," the Office of the Chief Scientist of the Ministry of Industry, 300K NIS a year (with Prof. Yehuda Afek) 2012-2014.
- ERC starting grant, " Deep Packet Inspection of Next Generation Network Devices," 990,400 Euro, Grant agreement no 259085, 2010-2016, **funded [Deepness-lab](#)**.
- Checkpoint research grant, "Deep Packet Inspection (DPI) with a Small Memory Footprint: Software Approach to CompactDFA Implementation, "50K NIS,2009.
- SNF (Swiss) Grant, "The Vulnerability of Networks and Computers to DDoS Attacks: Quantifications, Evaluation and Solutions," with B. Plattner (ETH), H. Levy (Tel-Aviv University), 2009-2011, 142,725 CHF.
- Cisco Research Grant, 2007, 75,000\$ "Fault-Resilient TCAMs" with Danny Hendler (Ben Gurion University) and Ronny Roth (Technion).
- REMON 4G Wireless consortium, "Resilience of Scheduling Algorithm", the Office of the Chief Scientist of the Ministry of Industry, Trade and Labor, Magnet 1.5.2007-30.4.2009, 180K NIS a year.
- Young G.I.F 2005, 32,500 Euro, "The cost of securing BGP, the Internet Routing protocol".

## **H. Professional Activities**

- 2017- Editor at Large of IEEE/ACM Transaction on Networking
- 2013-2017 Associate Editor of IEEE/ACM Transaction on Networking (number 1 networking journal).
- 5. Conference Program Committee: INFOCOM 2008-2022, PODC 2008,2011,HPSR 2010-2013,Networking 2013, DISC 2013,ICNP 2014, CSCML 2017-2018, CANS 2020
- Co-organizer (with Prof. Isaac Keslassy) of Israeli Networking Day 2007. Steering Committee Israeli Networking Day 2021.
- Reviewers for the following journals: IEEE Transactions on Parallel and Distributed Systems,

IEEE Transactions on Computers, Theoretical Computer Science, Computer Networks, IEEE Transactions on Dependable and Secure Computing, IEEE Transaction on Networking, IEEE Communication letters.

▪ Non-academic Conferences:

- Co-organizer of the **Panel on the Biometry Repository**, September 2009, where ministers and researchers from computer science and social science presented their opinion about the Knesset's (the Israeli legislative authority) attempts to legislate the Biometry Repository Law.
- Co-organizer of **OWASP-IL (Open Web Application Security Project) Conference** at IDC years 2007-2014 - The conference was attended by 250 people from the application security industry.

**I. Honors & Awards :**

- My students received the following awards on research under my supervision:
  - Lior Shafir, third place SIGCOMM research competition, 2019
  - Alon Atary, best in session, INFOCOM 2016
  - Shir Landau-Feibish, Broadcom Foundation University Research Competition Second Place, 2014
- Runner-up for the best INFOCOM paper award (2009)
  - One of the best 3 papers in the conference, out of 282 accepted papers and 1435 total submissions.
- Excellent Researcher IDC (2007,2103)
- Eshkol fellowship for Ph.D. (2000)
- Excellence prize for Ph.D. research, Tel Aviv University (1999)
- An Intel Fellowship for distinguished graduate students, Tel-Aviv University (1998)
- A Wolf Fellowship for M.Sc. (1996)
- Annual Dean's list mentioning, faculty of Exact Sciences, Tel Aviv University, for every year of study for the B.Sc. and M.Sc (1991-1996).

**J. Students:**

I. Current students

Postdoc Students

- Tal Shapira, IDC

PhD Students

- Bar Meyuhas, IDC

## Master Students

- Daniel Bachar, IDC (co-advisor with Prof. David Hay)
- Matan Sabag, IDC
- Neta Peleg, IDC
- Daniel Dubnikov, TAU (co-advisor with Prof. Yehuda Afek)
- Shani Ben Atia, IDC
- Ran Shister, IDC
- Shoham Danino, IDC
- Elad Wasserstein, IDC (co-advisor with Dr. Eli Brosh)

## II. Alumni Students:

### Alumni Post Doc

- [Shimrit Tzur](#), IDC 2011 - 2014, CTO and Co-Funder at Secret Double Octopus Secret Double Octopus

### Alumni Ph.D. students:

- [Udi Ben-Porat](#), ETH Zurich, co-advisor with Prof. Levy and Prof. Plattner, 2009 - 2014, Security Architect SIX group
- [Yaron Koral](#), Tel-Aviv University, co-advisor with Prof. Yehuda Afek, 2010 - 2013, post-doc at Princeton University with Prof. Jennifer Rexford 2014-2016, currently Lead Inventive Scientist at AT&T
- [Yotam Harcol](#), Hebrew University, co-advisor with Prof. David Hay 2010 -2016, a postdoctoral scholar at UC Berkeley, working at the NetSys group with Prof. Scott Shenker 2016-2019, a research scientist at the EPFL 2019-2020, currently a research scientist at DFINITY
- [Liron Schiff](#), Tel-Aviv University, co-advisor with Prof. Yehuda Afek, 2011-2015, currently Chief Scientist at GuardiCore
- [Shir Landau Feibish](#), Tel-Aviv University, advisor Prof. Yehuda Afek with the collaboration of Prof. Anat Bremler-Barr, 2011-2016, post-doc at Princeton University with Prof. Jennifer Rexford 2017-2020, currently Senior Lecturer (Assistant Professor), Open University of Israel

### Alumni Master Students (thesis):

- Omer Ben-Shalom, Tel-Aviv University, co-advisor with Prof. Afek, 2003
- Shemer Schwartz Tel-Aviv University, co-advisor with Prof. Afek, 2005
- Yaron Rosenbaum, IDC, co-advisor with Prof. Yishay Mansour, 2006
- Nir Halacmi, IDC, 2006
- Ronit Halachmi, IDC, 2007
- Omer Dekel, IDC, 2008
- Farber Boris, IDC, 2008
- Nir Chen, IDC, 2008
- Udi Ben- Poret, Tel-Aviv University, co-Advisor with Prof. Levy, 2008
- Yaron Koral, IDC, 2009
- Ran Goldschmit, Haifa University, co-Advisor with Benny Pinkas, 2009
- Victor Zidon, IDC, 2010
- Adam Mor, IDC, 2012

- Mor Sides, IDC,2016
- Omer Kochba, IDC,2016
- Daniel Krauthgamer, IDC, 2016
- Alon Atary, IDC,2016
- Idan Moyal, IDC, 2017
- Lior Shafir, TAU, 2017, co-advisor with Prof. Yehuda Afek
- Haim Levy, IDC, 2019, co-advisor with Prof. Zohar Yakhini
- Alon Noy, TAU, 2020, co-advisor with Prof. Yehuda Afek
- Ronen Ben-David, IDC 2021
- Avraham Shalev, IDC 2021
- Dor Israeli, TAU 2021 (co-advisor with Prof. Yehuda Afek)

## **K. Teaching Experience**

- Lecturer at the following courses:
  - *Operating system at IDC 2007-2021*
  - *Workshop: Network Security at IDC 2007,2008*
  - *Workshop: Advanced Topics in IP Networks at IDC 2013*
  - *Workshop: Projects with the Industry and academia at IDC 2020-2021*
  - *Workshop: Networks & Internet at IDC 2015*
  - *Data Structure at IDC 2004-2007*
  - *Advanced topics in IP Networks at IDC 2004,2005,2007,2009-2013,2015,2018,2021*
  - *Seminar: Internet Attacks - On worms and DDOS at IDC 2006,2007,2011*
  - *Seminar: Network Algorithmics at IDC 2012*
  - *Seminar: Clouds and Networking at IDC 2013*
  - *Seminar: Network Virtualization, 2016*
  - *Advanced topics in Computer Architecture at IDC 2004,2006,2008*
  - *Computer structure course at Tel-Aviv University,1998-2002.*
  - *Operating system course at Tel-Aviv University, 1998-2002, MTA (Tel-Aviv-Yafo college) 1998-1999.*
  - *Seminar: Advanced Topics in IP network at Tel-Aviv University, 1999-2002, IDC 2012*
  - *Distributed Algorithm in MTA (Tel-Aviv-Yafo college) 1999.*
  - *Introduction to System Programming - at Tel-Aviv University, 1995-1998.*
- Teaching assistant at Tel-Aviv University: 1996-1999.

## **L Media**

- **DNS Research**
  - [Web Giants Scrambled to Head Off a Dangerous DDoS Technique, WIRED 2020](#)
  - [Israeli researchers stop cyberattacks with discovery of major DDoS exploit, The Jerusalem Post, 2020](#)
- **Cloud Research & Open-source research**
  - [When one plus one makes more than two: how open source builds a bridge between universities and Industry. Red Hat Research Quarterly,2021](#)

- **Promoting Women in STEM**
  - [Women on the rise in Efi Arazi School of Computer Science, The Jerusalem Post, 2021](#)
- **Riverhead (I was a co-founder and chief scientist)**
  - [Cisco Buys Riverhead for \\$39 Million, Haaretz 2014](#)