

# ARI TRACHTENBERG

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## Professional Preparation

### Education

1994-2000 UNIVERSITY OF ILLINOIS Urbana-Champaign, IL

- **Ph.D.** in computer science with CSE (January 2000). Thesis: "Error-correcting codes on graphs: lexicones, trellises, and factor graphs", advisors: Alexander Vardy and Edward Reingold.
- **M.S.** in computer science with CSE (August 1996). Thesis: "Computational methods in coding theory" advisors: Alexander Vardy and C.L. (Dave) Liu.

1990-1994 MASSACHUSETTS INSTITUTE OF TECHNOLOGY Cambridge, MA

- **S.B.** in mathematics with computer science awarded June 1994.

### Recent Experience

2000 - present BOSTON UNIVERSITY, ELEC. AND COMPUTER ENGINEERING Boston, MA

- **Assoc. Chair for MS program** (2016-on)
- **Affiliate** (2016-on) of the Department of Computer Science
- **Professor** (9/2013-on)
- **Assoc. Professor** with tenure (2006-2013)
- **Assoc. Chair for Graduate Studies** (2010-2012)
- **Assist. Professor** (2000-2006)

2015 - 2016 TRIPADVISOR Needham, MA  
**Software Engineering Contractor** - Application security, as part of a sabbatical from Boston University.

2007 - 2008, 2015 MIT LINCOLN LABORATORY Lexington, MA  
**Contractor** as part of a sabbatical from Boston University.

2013 - 2014 TECHNION - ISRAEL INSTITUTE OF TECHNOLOGY Haifa, Israel  
**Visiting professor** in the Faculty of Electrical Engineering in affiliation with the Technion Computer Engineering center.

1995 - 2000 UNIVERSITY OF ILLINOIS Urbana-Champaign, IL  
**Visiting lecturer** (2000) teaching *Discrete Mathematical Structures*, **Research Assistant** (1995-1999) with A. Vardy, E. Reingold, and C.L. Liu in coding theory, **Teaching Assistant** (1997,1998) and **Grader** (1994).

Summers 1998, 1999 JOHNS HOPKINS UNIVERSITY Baltimore, MD  
**Instructor** for *Introduction to the Theoretical Foundations of Computer Science* as part of the Institute for the Academic Advancement of Youth and the Center for Talented Youth.

*Summer 1997* HEWLETT PACKARD LABORATORIES Palo Alto, CA  
**Research Intern** involved in the *C* implementation of algebraic Galois field operations for elliptic curve cryptography.

*1993 - 1995* MASSACHUSETTS INSTITUTE OF TECHNOLOGY Cambridge, MA  
**Undergraduate Researcher** with F. Tom Leighton on the simulation and analysis of the routing algorithm for the massively parallel *J-Machine*.

## Record

### Honors

- **Distinguished Scientist Visitor** (2016) with the faculty of natural sciences at Ben Gurion university.
- **ECE Faculty excellence in teaching award** (2013, 2003) awarded by the BU ECE department for outstanding performance in teaching.
- **Kern Faculty Fellow** (2012) awarded through the Kern Family Foundation based on an ability to excite undergraduates to innovation and the entrepreneurial “mindset”.
- **Innovative Engineering Education Faculty Fellow** (2009) awarded by the BU college of engineering to innovative educators in engineering.
- **CAREER Award** (2002) awarded by the National Science Foundation to new faculty members on the basis of plans that integrate research and education.
- **Kuck Outstanding Thesis Award** (2000) awarded at UIUC to one PhD in the Department of Computer Science per year, based on quality and impact.
- **Mavis Memorial Fund Scholarship Award** (1999) given to 12 individuals at UIUC in the College of Engineering, based on academic performance, education, and research.
- **Computational Science and Engineering Fellowship** awarded 1995-1997. **University Fellowship** awarded 1994-1995.
- **NSF and DoD Fellowship**, honorable mention 1995.

### Selected Grants

*7/2016 - 6/2020* NATIONAL SCIENCE FOUNDATION \$779K  
A. Trachtenberg, D. Starobinski, M. Mitzenmacher - “CIF: NETS: Medium: Collaborative Research: Unifying Data Synchronization”.

*7/2010 - 7/2016* NATIONAL SCIENCE FOUNDATION \$3M  
M. Crovella, S. Goldberg, S. Homer, L. Reyzin, A. Trachtenberg - “TC: LARGE: Securing the Open Softphone”.

*8/2013 - 12/2014* GENERAL MOTORS ISRAEL LTD. \$333K  
D. Starobinski and A. Trachtenberg - “A Hybrid Wireline-Wireless In-Vehicle Architecture for Robust, Secure and Load Balanced Communication”.

*9/2012 - 9/2014* DEPARTMENT OF DEFENSE \$210K  
A. Trachtenberg and D. Starobinski - “FAUST: Finite-field Algebra for Unbeatable Situational-awareness in Tactical networks (Phase II SBIR)”.

*8/2011 - 12/2012* GENERAL MOTORS ISRAEL LTD. \$184K  
A. Trachtenberg and D. Starobinski - “Wireless Sensor Networks in an Automotive Environment”.

- 9/2009 - 8/2012 NATIONAL SCIENCE FOUNDATION \$467K  
D. Starobinski and A. Trachtenberg - "CIF: Small: Large-Scale Software Dissemination in Stochastic Wireless Networks" + Research Experiences for Undergraduates.
- 5/2010 - 9/2010 DoD \$6K  
D. Starobinski and A. Trachtenberg, subcontract from SSCI, "FAUST: Finite-field algebra for unbeatable situational-awareness in tactical networks."
- 3/2009 - 2/2011 NASA GODDARD \$113K  
D. Starobinski and A. Trachtenberg, subcontract from SSCI, "Self-Forming Extensible Lunar Extra Vehicular Activity Network (SELENE) Phase II."
- 9/2007 - 9/2010 DEUTSCHE TELEKOM \$161K  
D. Starobinski and A. Trachtenberg - "Secure and Efficient Data Distribution in Varying-Topology Networks."
- 9/2007 - 8/2010 NATIONAL SCIENCE FOUNDATION \$292K  
A. Trachtenberg and D. Starobinski - "A theory of monitoring based on identifying codes and their variants" + Research Experiences for Undergraduates.
- 9/2004 - 8/2007 NATIONAL SCIENCE FOUNDATION \$620K  
I. Paschalidis, D. Starobinski, and Ari Trachtenberg - "NeTS-NOSS: SensorNet Architectures for Indoor Location Detection: From Resolution to Robustness" + Research Experiences for Undergraduates + Intel Equipment grant.
- 6/2003 - 6/2006 NATIONAL SCIENCE FOUNDATION \$350K  
A. Trachtenberg and D. Starobinski - "A Scalable Middleware for Data Reconciliation in PDAs and Mobile Networks."
- 2/2002 - 2/2007 NATIONAL SCIENCE FOUNDATION \$364K  
A. Trachtenberg - "CAREER: Practical Data Synchronization: Minimizing Communication."

**Selected Publications (reverse chronological)** - more at <http://people.bu.edu/trachten>

## BOOKS AND CHAPTERS

- M. Laifenfeld, A. Trachtenberg, and D. Starobinski, "Robust Localization Using Identifying Codes" in *Localization Algorithms and Strategies for Wireless Sensor Networks: Monitoring and Surveillance Techniques for Target Tracking*, Guoqiang Mao and Baris Fidan editors, 2009.
- R. Lippmann, E. Kirda, and A. Trachtenberg (Ed.): *Proceedings of the 11th International Symposium on Recent Advances in Intrusion Detection*, Springer: Cambridge, MA, September 15-17, 2008.

## JOURNALS

- C. Spensky, J. Stewart, A. Yerukhimovich, R. Shay, A. Trachtenberg, R. Housley, and R.K. Cunningham, "SoK: Privacy on Mobile Devices—It's Complicated", *Proceedings on Privacy Enhancing Technologies*, **2016**:3, pp. 96-116.
- M. Hashemi, Y. Cassuto, and A. Trachtenberg, "Fountain Codes with Nonuniform Selection Distributions Through Feedback", *IEEE Transactions on Information Theory*, **62**:7, pp. 4054-4070.
- W. Si, D. Starobinski, M. Hashemi, M. Laifenfeld, and A. Trachtenberg, "Channel Sensitivity of LIFO-Backpressure: Quirks and Improvements", *IEEE Transactions on Control of Network Systems*, **3**: 2, pp. 192-205. 2015.

- W. Si, M. Hashemi, L. Xin, D. Starobinski, and A. Trachtenberg, “TeaCP: A toolkit for evaluation and analysis of collection protocols in wireless sensor networks”, *IEEE Transactions on Network and Service Management*, **12**:2, pp. 293-307.
- Y. Gilad, A. Herzberg, and A. Trachtenberg, “Securing Smartphones: A  $\mu$ TCB Approach”, *IEEE Pervasive Computing*, **13**:4, pp. 72-79, 2014.
- M. Hashemi, W. Si, M. Laifenfeld, D. Starobinski, and A. Trachtenberg, “Intra-car multihop wireless sensor networking: a case study”, *IEEE Communications Magazine*, **52**:12, pp. 183-191, 2014.
- A. Kontorovich, A. Trachtenberg, “Deciding unique decodability of bigram counts via finite automata”, *Journal of Computer and System Sciences*, **80**:2, pp. 450-456, 2014.
- A. Klausner, A. Trachtenberg, D. Starobinski and M. Horenstein, “An Overview of the Capabilities and Limitations of Smartphone Sensors”, *Int. Journal of Handheld Comput. Research*, **80**:2, pp. 450-456, 2013.
- W. Xiao, S. Agarwal, D. Starobinski, and A. Trachtenberg, “Reliable Rateless Wireless Broadcasting with Near-Zero Feedback”, *IEEE/ACM Transactions on Networking*, 2012, **20**:6, pp. 1924–1937.
- N. Fazlollahi, D. Starobinski and A. Trachtenberg, “Connected Identifying Codes”, *IEEE Transactions on Information Theory*, **58**:7, pp. 4814-4824.
- S. Agarwal, M. Laifenfeld, A. Hagedorn, A. Trachtenberg, and M. Alanyali, “Fair and Distributed Peer-to-peer Allocation of a Common, Refillable Resource”, *Journal of Parallel and Distributed Computing*, **69**:12, December 2009.
- M. Laifenfeld, A. Trachtenberg, R. Cohen, and D. Starobinski, “Joint Monitoring and Routing in Wireless Sensor Networks using Robust Identifying Codes,” *Springer Journal on Mobile Networks and Applications (MONET)*, **14**:4, pp. 415-432, August 2009.
- M. Laifenfeld, A. Trachtenberg, R. Cohen and D. Starobinski, “Joint Monitoring and Routing in Wireless Sensor Networks Using Robust Identifying Codes”, *Mobile Networks and Applications*, October 2008.
- M. Laifenfeld and A. Trachtenberg, “Identifying Codes and Covering Problem”. *IEEE Transactions on Information Theory* **54**:9, pp. 3929-3950, 2008.
- S. Agarwal, V. Chauhan, and A. Trachtenberg, “Bandwidth Efficient String Reconciliation using Puzzles”, *IEEE Trans. on Parallel and Distr. Systems*, November 2006.
- S. Ray, D. Starobinski, A. Trachtenberg, and R. Ungrangsi, “Robust Location Detection with Sensor Networks”, *IEEE JSAC (Special Issue on Fundamental Performance Limits of Wireless Sensor Networks)*, **22**:6, 2004.
- A. Trachtenberg and A. Vardy, “Full-rank Tilings of  $\mathbb{F}_2^8$  Do Not Exist”, *SIAM Journal on Discrete Math*, **16**:3, 2003.
- Y. Minsky, A. Trachtenberg, and R. Zippel, “Set Reconciliation with Nearly Optimal Communication Complexity”, *IEEE Trans. Inf. Theory*, **49**:9, September 2003.
- M. Karpovsky, L. Levitin, and A. Trachtenberg, “Data verification and reconciliation with generalized error-control codes”, *IEEE Trans. Inf. Theory*, **49**:7, July 2003.
- D. Starobinski, A. Trachtenberg, and S. Agarwal, “Efficient PDA synchronization”, *IEEE Trans. on Mobile Computing* **2**:1, January-March 2003.
- S. Agarwal, D. Starobinski, and A. Trachtenberg, “On the Scalability of Data Synchronization Protocols for PDAs and Mobile Devices”, *IEEE Network: the Magazine of Global Internetworking*, **16**:4, July 2002.
- A. Trachtenberg, “Designing Lexicographic Codes with a Given Trellis Complexity”, *IEEE Trans. Inf. Theory*, **48**:1, January 2002.
- T. Etzion, A. Trachtenberg, and A. Vardy, “Which Codes Have Cycle-free Tanner Graphs?” *IEEE Trans. Inf. Theory*, **45**:6, September 1999.

## CONFERENCES

- M. Hashemi and A. Trachtenberg, “CDP: a coded datagram transport protocol bridging UDP and TCP”, *ACM Syster* 2015.
- M. Timchenko and A. Trachtenberg, “Poster: Distributed anonymous data collection and feedback”, *ACM Syster* 2015.
- M. Hashemi and A. Trachtenberg, “Near Real-time Rateless Coding with a Constrained Feedback Budget”, *Allerton*, October 2014.
- A. Trachtenberg, “Say it ain’t so - An implementation of deniable encryption”, *Blackhat Asia*, March 2014.
- M. Hashemi, A. Trachtenberg, Y. Cassuto, “Delete-And-Conquer: Rateless Coding with Constrained Feedback”, *Allerton*, October 2013.
- W. Si, M. Hashemi, I. Warszawski, M. Laifenfeld, D. Starobinski, and A. Trachtenberg, “TeaCP: a Toolkit for Evaluation and Analysis of Collection Protocols in Wireless Sensor Networks”, *IEEE COMCAS*, October 2013.
- A Filtser, J. Jin, A. Kontorovich, and A. Trachtenberg, “Efficient determination of the unique decodability of a string”, *IEEE ISIT*, July 2013.
- M. Hashemi, W. Si, M. Laifenfeld, D. Starobinski, and A. Trachtenberg, “Intra-car Wireless Sensors Data Aggregation: A Multi-hop Approach”, *IEEE VTC*, June 2013.
- A. Kontorovich and A. Trachtenberg, “Unique decodability for string reconciliation”, *ITA*, February 5-10 2013 .
- J. Jin, A. Trachtenberg, and D. Starobinski, “Priority-based synchronization of distributed data”, *IEEE MILCOM*, October 2012.
- A. Kontorovich and A. Trachtenberg, “String reconciliation with unknown edit distance”, *IEEE Int. Symp. on Info. Theory*, July 2012.
- K. Lin, D. Starobinski, A. Trachtenberg, and S. Agarwal, “Scheduled algorithms and bounds for rateless data dissemination in dense wireless networks”, *46th Conf. on Inf. Sciences and Systems*, March 2012.
- A. Kontorovich and A. Trachtenberg, “Unique decodability for string reconciliation”, *ITA*, February 2012.
- A. Klausner, A. Trachtenberg, and D. Starobinski, “Poster: phones and robots: brains and brawn”, *ACM Sensys*, November 2011.
- M. Boyle, A. Klausner, D. Starobinski, A. Trachtenberg and H. Wu, “Poster: gait-based user classification using phone sensors”, *ACM MOBISYS*, June 2011.
- N. Fazlollahi, D. Starobinski, and A. Trachtenberg, “Connected Identifying codes for sensor network monitoring”, *IEEE WCNC*, Cancun, Mexico, March 2011.
- N. Fazlollahi, D. Starobinski, and A. Trachtenberg, “Connecting identifying codes and fundamental bounds”, *ITA*, February 2011.
- W. Xiao, S. Agarwal, D. Starobinski, and A. Trachtenberg, “Reliable wireless broadcasting with near-zero feedback”, *IEEE INFOCOM*, San Diego, CA, March 2010
- A. Hagedorn, S. Agarwal, S. Starobinski, and A. Trachtenberg, “Rateless Coding with Feedback”, *IEEE INFOCOM*, 2009.
- A. Hagedorn, D. Starobinski, A. Trachtenberg, “Rateless Deluge: over-the-air programming of wireless sensor networks using random linear codes”. *IEEE/ACM IPSN*, 2008, pp. 457-466.
- S. Agarwal, A. Hagedorn, and A. Trachtenberg, “Adaptive rateless coding under partial information”, *Info. Theory and Applications Workshop*, January 2008.
- D. Starobinski, W. Xiao, X. Qin, and A. Trachtenberg, “Near optimal data dissemination policies for multi-channel, single radio wireless sensor networks”, *IEEE INFOCOM*, 2007.

- M. Laifenfeld, A. Trachtenberg, R. Cohen and D. Starobinski, “Joint monitoring and routing in wireless sensor networks using robust identifying codes”, *IEEE Broadnets*, September 2007.
- S. Agarwal, A. Hagedorn, and A. Trachtenberg, “Near optimal update-broadcast of data sets”, *International Workshop on Data Intensive Sensor Networks*, May 2007.
- D. Starobinski, W. Xiao, X. Qin, and A. Trachtenberg, “Near optimal data dissemination policies for multi-channel, single radio wireless sensor networks”, *IEEE INFOCOM*, 2007.
- M. Laifenfeld, A. Trachtenberg, and T.Y. Berger-Wolf, “Identifying codes and the set cover problem”, *44th Allerton Conf. on Comm., Ctrl., and Comput.*, October 2006.
- S. Agarwal, M. Laifenfeld, A. Trachtenberg, and M. Alanyali, “Fast data access over asymmetric channels using fair and secure bandwidth sharing”, *IEEE International Conference on Distributed Computing Systems*, July 2006.
- S. Agarwal and A. Trachtenberg, “Approximating the number of differences between remote sets”, *IEEE Information Theory Workshop*, Punta del Este, Uruguay, 2006.
- M. Laifenfeld and A. Trachtenberg, “Disjoint identifying codes for arbitrary graphs”, *IEEE Int. Symp. on Info. Theory*, Sept. 2005.
- V. Chauhan and A. Trachtenberg, “Reconciliation puzzles”, *IEEE Globecom 2004*, Dallas, TX, 2004.
- R. Ungrangsi, A. Trachtenberg, and D. Starobinski, “An implementation of indoor location detection systems based on identifying codes”, *INTELLCOMM 2004*, Bangkok, Thailand, November 2004, pp. 175-189. Also in *Lecture Notes in Computer Science 3283*, Springer 2004.
- D. Sumorok, D. Starobinski, and A. Trachtenberg, “Simulation of TinyOS Wireless Sensor Networks using OPNET”, *OPNETWORK 2004*, Washington D.C., August 2004.
- S. Ray, R. Ungrangsi, F. De Pellegrini, A. Trachtenberg, D. Starobinski, “Robust location detection in emergency sensor networks”, *INFOCOM 2003*, San Francisco, CA, June 2003.
- Y. Minsky and A. Trachtenberg, “Scalable set reconciliation”, *40th Allerton Conf. on Comm., Ctrl., and Comput.*, October 2002.
- D. Starobinski, S. Ray, R. Ungrangsi, F. De Pellegrini and A. Trachtenberg, “Robust Location Detection in Emergency Sensor Networks,” in the proceedings of the 17th IEEE Annual Computer Communications Workshop, Santa Fe, NM, October 2002.
- S.K. Agarwal, A. Yaar, D. Starobinski, and A. Trachtenberg, “Fast network synchronization”, *ACM SIGCOMM Computer Communication Review*, **32:3**, p 14., July 2002.
- A. Trachtenberg, D. Starobinski, and S. Agarwal, “Fast PDA synchronization using characteristic polynomial interpolation”, *IEEE INFOCOM*, New York, NY, June 2002.
- M. Karpovsky, L. Levitin, and A. Trachtenberg, “Data verification and reconciliation with generalized error-control codes”, *39th Allerton Conf. on Comm., Ctrl., and Comput.*, Monticello, IL, 2001.
- A. Trachtenberg and M. Karpovsky, “Space-time turn prohibitions for low density parity-check codes”, *39th Allerton Conf. on Comm., Ctrl., and Comput.*, Monticello, IL, Oct 3-5, 2001.
- Y. Minsky, A. Trachtenberg, and R. Zippel, “Set Reconciliation with Nearly Optimal Communication Complexity”, *IEEE ISIT*, June 2001.
- T. Etzion, A. Trachtenberg, and A. Vardy, “Which codes have cycle-free Tanner graphs?”, *IEEE ISIT*, 1998.
- A. Trachtenberg and A. Vardy, “Lexicographic codes: constructions, bounds, and trellis complexity,” *31st Conf. on Inf. Sciences and Systems* (1997), pp. 521.

### Selected Talks

- MITRE, “Android-based Side-Channel Attacks”, 5/2017.

- **CyberSEED**, “Why aren’t smartphones secure - and will they ever be?”, 10/2015.
- **Workshop on Algorithms and Applications**, “Picking up the Pieces”, 10/2015.
- **New England Security Day**, “Sharing private information in public”, 9/2015.
- **MIT Lincoln Lab**, “In Defense of the Smartphone”, 2/2015.
- **Palo Alto Networks**, “Android Security?” , 9/2014.
- **Google, Cambridge**, “Say it Ain’t So: An Implementation of Deniable Encryption”, 5/2014.
- **Ben Gurion University, Distinguished Lecturer Series**, “Who pwns your phone?”, 12/2013.
- **General Motors Research Israel**, “(a few) Automobile Attack Surfaces”, 12/2013.
- **IBM Research, Haifa**, “Smartphone (In-) Security”, 10/2013.
- **Technion, TCE**, “In-Security of Smartphones”, 10/2013.
- **Jerusalem College of Technology**, “The data revealed in our footsteps”, 6/2013.
- **Ben Gurion University, CS**, “The elegant random (linear) code”, 6/2012.
- **Tel Aviv University, Eng**, “Identifying codes: from theory to practice... and back again”, 5/2011.
- **GM Research**, “Concrete cybersecurity”, 5/2011.
- **Bar Ilan University, CS**, “Non-trivial applications of trivial codes”, 5/2011.
- **InfraGard, Boston**, “Smartphone security through gait analysis”, 11/2010.
- **Tufts, ECE**, “Identifying codes: The ginsu of sensor networks?”, 11/13/2007.
- **MIT, Lincoln Lab**, “Using bandwidth sharing to fairly overcome channel asymmetry”, 1/25/2007.
- **Technion, EE**. “Mathematical approaches to efficient data reconciliation,” 11/23/2006.
- **Purdue, CWSA**. “Robust location detection: unconventional uses for error-correcting codes,” 3/10/2005.
- **AMS, sectional**, “Identifying codes and their cousins,” 10/24/2004.
- **MIT, LIDS**, “Mathematical reconciliation of similar data,” 10/12/2004.
- **Harvard, EE**, “Efficient reconciliation of distributed data: an information theoretic approach,” 1/31/2003.
- **IIT, CS**, “The set reconciliation problem or how to compare elephants by phone”, 10/2/2002.
- **Drexel, ECE**, “The ubiquitous data reconciliation problem,” 3/26/2002.
- **UIUC, CS theory**, “On the equivalence of data reconciliation, error-correction, and graph coloring,” 10/1/2001.
- **BU, CS theory**, ”Data reconciliation with nearly optimal communication complexity,” Fall 2001.
- **Northeastern, CS**, “Efficient reconciliation of unordered databases: ESP for computers,” 1/10/2000.
- **Franklin and Marshall College, CS**, “Attacking the RSA cryptosystem,” 11/29/1999.
- **Notre Dame, coding theory**, “Which codes have cycle-free Tanner graphs?” 3/22.1999.

**Selected Students** Supervised as primary or secondary advisor.

#### Postdoc

- R. Cohen
- S. Qin
- M. Laifenfeld

## Theses, advised and co-advised

- M. Hashemi, “Intra-car Wireless Sensor Data Aggregation”, PhD., 2015.
- W. Si, “Performance and Visualization in Wireless Sensor Networks”, PhD., 2015.
- M. Timchenko, “A Framework for Anonymous Background Data Delivery and Feedback”, MS 2015.
- J. Jin, “Prioritized Data Synchronization with Applications”, MS, 2012.
- K. Lin, “Scheduling Algorithms and Bounds for Data Dissemination in Wireless Mesh Networks”, MS, 2011.
- L. Ravindranathan, “A Study of Priority Based Rateless Codes with Applications to Video Transmission”, MS, 2011.
- N. Fazlollahi, “Resource Management Algorithms for Advanced Networking Applications”, PhD, 2011.
- W. Xiao, “Reliable Data Dissemination in Dense Wireless Networks”, PhD, 2009.
- A. Hagedorn, “Rateless Codes in Wireless Sensor Networks”, MS, 2008.
- M. Laifefeld, “Robust identifying codes and rateless codes in sensor and peer-to-peer networks: applications and theoretical results”, PhD, 2007.
- S. Agarwal, “Efficient Reconciliation of Unstructured and Structured Data over Networks”, PhD, 2005.
- V. Chauhan, “Reconciliation Puzzles”, MS, 2004.
- R. Ungrangsi, “Location detection in emergency sensor networks using robust identifying codes”, MS, 2003.
- S. Agarwal, “Data Synchronization in Mobile & Distributed Networks”, MS, 2002.

## Projects

- M. Andreev, “Side-Channel Web Traffic Analysis Attacks on Android”, 2017.
- J. Moore and Yihao Hu, “Implementing client-side encryption for popular collaborative web applications”, 2014-17.
- A. Klausner, “Smartphone Tracking via Leaky map Applications”, 2016.
- H. Jin, “Block-based Implementation of Deniable Encryption using Set and String Reconciliation”, 2014.
- J. Fucci, “Parasitic Computing Using Javascript”, 2013.
- B. Havey, “Finding Remnant Data in Flash”, 2013.
- C. Flegal, “iOS Sound Puzzle System”, 2013.
- T.K. Tso, “An investigation on Android-Based Lock Manipulation”, 2012.
- R. Roy, “Securing an Android Phone from Unauthorized Access”, 2012.
- X. Liu, “Android-based Fingerprint Identification”, 2012.
- X. Ma, “Android-based Acoustic Keylogger”, 2012.
- S. Ngan, “Android Spy Phone - Combination Lock Decoding Application”, 2011.
- K. Cui, “Parasitic distributed computing system using a web-base[d] framework”, 2010.
- D. Qijun and H. Lin, “Securing the Android smartphone”, 2010.
- T. Agboola and M. Schoen, “Development of an audio-based data transmission protocol for Android phones”, 2009.
- A. Koirala and S. Uprety, “Business intelligence transformation”, 2009.



- N. Narra, “String reconciliation using puzzles”, 2007.
- Y. Ke, “Location detection in sensor network[s] using [the] covering integer problem approach”, 2007.
- O. Dain, “Packet capture applications in environments with higher data rates”, 2004.
- J. Varghese, “Improving hardware reliability using Reed-Solomon codes for rollback”, 2004.
- M. Kulkarni, “Performance comparison of different algorithms for anti-join implementation”, 2002.
- J. Chu, “Email retraction system”, 2002.
- B. Onat, “Low Density Parity-Check codes and applying turn prohibitions for faster convergence”, 2001.

## Synergistic Activities

### Extramural

- Track/local chair for SSS 2017.
- TPC for CNS 2015-17, SYSTOR 2015, ISIT 2013, TPC and Pub. Chair for RAID 2008, TPC for INFOCOM 2007.
- Reviewer for book, journal and conference papers, including: *IEEE Trans. on Info. Theory*, *Vehic. Tech.*, *Mobile Computing*, *Info. Forensics & Security*; *SIAM Journal of Discrete Math*; *ACM Symp. on Princ. of Distributed Comp.*, *Trans. on Info. and System Security*; *IEEE INFOCOM*, *ISIT*...
- Senior member of the *IEEE*.

### Intramural

- Affiliate of the Hariri Institute.
- Founding member of the CISE, RISCs and the CISE SensorNet Consortium.
- Co-founder of the Lab. of Network and Info. Systems (<http://nislabs.bu.edu>).
- Developed or helped develop “Cybersecurity” (grad/ugrad), “Advanced Data Structures” (grad/ugrad), “Advanced Coding Theory” (grad), “Applied Algorithms and Data Structures for Engineers” (3rd year), “Introduction to Software Engineering” (2nd year), “Hacking: Networks, Hardware, and Software” (1st year).

### Other

- **Programming:** C++, C, Java, perl, php, MySQL, LaTeX, assembly, HTML, CSS...
- **Languages:** Fluent in English, Hebrew and Russian.
- **Web page:** <http://people.bu.edu/trachten>