

RESUME

Name: Shay Kutten
I.D. No.: 053432365
Date and place of birth: June 13, 1955, Afula, Israel
Marital status: Single
Web site: <http://ie.technion.ac.il/kutten.phtml>

ACADEMIC DEGREES

- 1981 B.A. (with distinction) in Computer Science, Technion—Israel Institute of Technology
1984 M.Sc. in Computer Science, Technion—Israel Institute of Technology
1987 D.Sc. in Computer Science from the Technion—Israel Institute of Technology

ACADEMIC APPOINTMENTS

- 2008–present Professor, Faculty of Industrial Engineering and Management (Information Systems Engineering Disciplinary Area), Technion, Israel Institute of Technology, Haifa, Israel
1999–2008 Associate Professor, Faculty of Industrial Engineering and Management (Information Systems Engineering Disciplinary Area), Technion, Israel Institute of Technology, Haifa, Israel
1996–1999 Senior Lecturer, Faculty of Industrial Engineering and Management (Information Systems Engineering Disciplinary Area), Technion, Israel Institute of Technology, Haifa, Israel
1984–1987 Instructor (actively working as lecturer), Dept. of Computer Science, Technion, Israel Institute of Technology, Haifa, Israel.

PROFESSIONAL EXPERIENCE

- 1989–2000 Research Staff Member, IBM T.J. Watson Research Center (on leave of absence, 1996-1999)
1990–1995 Project Leader and Manager for Network Architecture and Algorithms and for Network Security, IBM T.J. Watson Research Center
1987–1989 Post-doctoral Fellow with IBM's T.J. Watson Research Center
1980–1987 Teaching assistant and instructor, Faculty of Computer Science, Technion, Israel
1986 Consultant in research financed by the Ministry of Communication in Israel. Subject: Software development for computer communication.

RESEARCH INTERESTS

Distributed Algorithms
Network Algorithms
Communication Networks
Fault Tolerance
Network Security
Distributed Systems
Game Theory
Scheduling Algorithms.

TEACHING EXPERIENCE

Laboratory in Operating Systems
Distributed Algorithms (graduate, designed a new course)
Introduction to Computing for managers (graduate, designed a new course)
Distributed Information Systems (graduate and undergraduate, totally redesigned the course)
Communication Networks Control (graduate and undergraduate, designed a new course)
The Design and Implementation of Information Systems (undergraduate)
Laboratory in Operations Systems (undergraduate)
Seminar in Information Systems (undergraduate)
Data Structures and Algorithms (undergraduate)
Seminar in Information Systems (graduate and undergraduate)
Design project.

TECHNION ACTIVITIES

1996–1999	Member in the Technion Steering and Development committee for Computation and Communication
2000–2003 2008–2010 2016–2019 and 2016–	Head, Disciplinary Area of Information Systems Engineering, Faculty of Industrial Engineering and Management, Technion
2003–2005	Coordinator, undergraduate studies, Faculty of IE&M, Technion
2003, 2005	Coordinator, Information Systems and Knowledge Engineering major, IE program, Faculty of IE&M, Technion
2006–2010 and 2012–2017	Judge in the court for undergraduate students
2008–2010	Member of the interdisciplinary committee for systems engineering.
2015–2019	Senate member

PUBLIC PROFESSIONAL ACTIVITIES

- 1995–1999 Member of the editorial board, *ACM Wireless Networks Journal*
- 1998–2000 Member in a subcommittee of the Israeli Council for Higher Education (approval of the Communication Engineering degree in Ben Gurion University)
- 1999– Area Editor for Security, Reliability and Availability, *Springer Mobile Networks and Nomadic Applications*
- January 2003 Journal editor of a special issue (with Paul Spirakis), *Theoretical Computer Science*, Volume 291 (1).
- 2003–2005 Member of the editorial board, *Computer Networks*
- 2003–2007 Head of a subcommittee of the Israeli Council for Higher Education (approval of the Information Systems Engineering program of the Open University); after that, a committee that follows the program.
- March, 2006 Journal editor of a special issue of *Distributed Computing* devoted to PODC 2004, Volume 18 (4).
- 2007 Reviewer for the Israeli Council for Higher Education (approval of a graduate program in Ben Gurion University)
- 2009– Editor, Electronic Proceedings in Theoretical Computer Science.
- 2010 Journal editor of a special issue devoted to SIROCCO'09, *Theoretical Computer Science* Volume 444 (1).

REVIEWING: Reviewed papers for the following journals: *Algorithmica*, *Distributed Computing*, *ACM Transactions on Algorithms*, *Computer Networks*, *IBM Systems Journal*, *IEEE Communications Magazine*, *IEEE Transactions on Communications*, *IEEE Transactions on Computers*, *IEEE Transactions on Information Theory*, *IEEE Transactions on Networking*, *IJPP*, *Information and Computation*, *IPL*, *International Journal of Parallel Programming*, *J. of Algorithms*, *JACM*, *J. of Parallel Programming*, *JPDC*, *Networks*, *SIAM J. on Computing*, *TOPLAS*, *Wireless Networks*, and others.

Also reviewed papers for FOCS, INFOCOM, SIGCOMM, SPAA, SODA, STOC, ESA, SIROCCO, ICDCS, SSS, ICFCN, ICALP, ICDCN, WEA, OPODIS, and other conferences.

Reviewed grant proposals for various agencies in Israel and abroad.

MEMBERSHIP IN PROFESSIONAL SOCIETIES

Senior member, IEEE. Member, ACM SIGACT.

HONORS

- 1981 Gutwirth Fellowship (for the B.A.).
- 1984 Gutwirth Fellowship (for the M.Sc.).
- 1984 Faculty of CS Distinction Fellowship.
- 1986 Ministry of Communication Distinction Fellowship.
- 1988 Postdoctorate Fellowship, CS Dept., IBM T.J. Watson Research Center.
- 1992 First Invention Achievement Award, IBM Research Division.
- 1992 Second Invention Achievement Award, IBM Research Division.
- 1993 Outstanding Innovation Award (OIA), IBM Corporation (for distributed information update).
- 1994 Third Invention Achievement Award, IBM Research Division.
- 1994 Fourth Invention Achievement Award, IBM Research Division.
- 1994 Outstanding Innovation Award (OIA), IBM Corporation (for Network Security).
- 1994 IBM Research Division Award, IBM Research Division (for the IBM SAMBA wireless Local Area Network).
- 1994 Supplemental Outstanding Technical Achievement Award (for the IBM Networking BroadBand Services Architecture (NBBS); this is IBM's ATM).
- 1997 Selected the Alexander Goldberg Academic Lecturer in Industrial Engineering and Management, England.
- 2001 Mitchner Second Award in Quality Sciences and Quality Management (for a set of publications on "Checkability of Software Systems, and Increasing the Dependability of Communication Networks").
- 2002 Henry Taub Award for Excellence in Research (for Dynamic Information Update and Tree Maintenance).
- 2011 The William M. Davidson Chair in Industrial Engineering and Management
- 2013 Best paper award, the 14th International Conference on Distributed Computing and Networking (ICDCN), Tata Institute of Fundamental Research, Mumbai, January 3-6, 2013 (paper with Gopal Pandurangan, David Peleg, Peter Robinson, and Amitabh Trehan).

GRADUATE STUDENTS

Completed Theses

Sudhanshu Aggarwal (MSc). Co-supervised an M.I.T. graduate student. (First supervisor: Nancy Lynch). Time Optimal Self-Stabilizing Spanning Tree Algorithms. Graduated 1994.

Ran Soffer (MSc). Co-supervised a student at the Technion (EE). (First supervisor: Israel

Cidon). Optimal Allocation of Electronic Content in Networks. Graduated 1998.

Konstantin Papernov (MSc). Co-supervised. (First Supervisor: Shay Kutten; second supervisor: Opher Etzion). Distributed Knowledge Base of Metadata. Graduated 1999.

Avner Porat (MSc). Maintenance of a Spanning Tree in Dynamic Networks. Graduated 2002.

Yaron Spektor (MSc). PeerWeaver, a Testbed for Enhancements in Gnutella-like Networks. Graduated July 2004.

Amos Korman (PhD). Co-supervised a student at the Weizmann Institute. (First Supervisor: David Peleg). Static and Dynamic Labeling Schemes. Graduated: 2005.

David Ben Ami (MSc). Co-Supervised. (First Supervisor: Shay Kutten; second supervisor: Onn Schori). A Comparative Evaluation of Agent Location Mechanisms in Large Scale MAS. Graduated 2005.

Lior Zoref (MSc). Co-supervised. (First Supervisor: Shay Kutten; second supervisor: David Bregmann). A Model for Connecting Mobile Devices and PCs in Home Networks (the Connected Home). Graduated 2006.

Ayelet Yifrach (MSc). Improved Distributed Exploration of Anonymous Networks. Graduated 2006.

Erez Michalak (M.Sc). Level of Synchrony Adaptivity in Shared Counter Access. Completed: 2009.

Janna Burman (PhD). Designing Self Stabilizing Time Adaptive Algorithms for Distributed System. Defended: 2010.

Dmitry Zinenko (M.Sc). Faculty of CS, Technion. Low-Bandwidth Self-Stabilizing Algorithms. Defended: 2011.

Alex Kravchik (M.Sc). Faster Self Stabilization. Defended: 2013.

Chhaya Trehan (M.Sc). Verification and Self-stabilization of DFS. Defended: 2014.

Shaul Cemel (M.sc). Co-supervised with Amitabh Trehan. (First supervisor: Shay Kutten). Simulation and Analysis of “Growing half balls”. Defended: 2015

Theses in progress

Shimon Bitton (PhD). Co-supervising. (First supervisor: Yuval Emek).

Jiaqui Chen (MSc).

Postdoctorates

Esther Jennings (Finished 1998)

Danny Hendler (Finished 2006)

Amos Korman (Finished 2007)

Erez Kantor (Finished 2013)

Amitabh Trehan (Finished 2013)

Shantanu Das (Finished 2013)

Anais Durand (Finished 2018)
Yangguang Shi (Started 2016)
William Moses (Started 2018)
Fabien Dufoulon (Started 2019)

RESEARCH GRANTS

1. “Self Stabilizing Network Protocols”, funded by the Israel-France Foundation for Research, 1996–8 (Project Leader, and Principal Investigator). My share: \$36913. (The other PI: Prof. Joffroy Beauquier, Univ. Paris Sud).
2. “Communication Algorithms in Optical Networks”, funded by the Israel-France Foundation for Research, 1996–8 (A Weizmann Inst. grant, Principal Investigator at the Technion). My share: \$5000. (Other PIs: Prof. Jean Claude Bermond, Sophia Antipolis, Prof. David Peleg, Weizmann.)
3. “Distributed Search, Control, and Management on the Web”, funded by the MAGNET Consortium for Multi-Media (Principal Investigator), 1996–9. (Another PI: Prof. David Peleg, Weizmann.)
4. “Dynamic Resource Allocation”, funded by the MAGNET Consortium for Broad-Band Networks (Principal Investigator). 1996–8.
5. “Research on Scheduling in Optical Networks”, funded by the Strategic Infrastructure Research, Israeli Ministry of Science, 1997–2000 (Principal investigator). My share: \$19026+\$20629+\$20629. (Other PIs: Senior Lec. Shlomi Dolev, BGU, Assoc. Prof. Amotz Bar-Noy, Senior Lec. Dan Sadot, BGU, Prof. Yaron Silberberg, Weizmann, Prof. Moshe Tur Tel Aviv University.)
6. “Adaptation of Economical Models to the Internet”, funded by the Strategic Infrastructure Research, Israeli Ministry of Science, 1997–2000 (Principal investigator). My share: \$142995+\$151494+\$151582. (Other PIs: Lec. Yossi Ben Asher. Haifa Univ., Assoc. Prof. Dov Monderer Technion, Assoc. Prof. Moni Naor, Weizmann, Senior Lec. Doron Sonsino, Technion, Senior Lec. Moshe Tennenholtz, Technion.)
7. “Peer-to-Peer: a Combined Adaptive Stabilization and Game Theoretic Approach”, funded by the Israel Science Foundation—the Bikura “Special” path (Principal Investigator), 2003–2005. My share: \$33250+\$17500. (The Other PI: Prof. Dov Monderer.)
8. “Management of Radio Resources”, funded by the MAGNET Consortium REMON, 2004–2006 (Principal Investigator). 75,000 shekel per researcher per year. (The other PI: Prof. Yishay Mansour, Tel Aviv Univ.)
9. “Energy Saving Protocols in Sensor Networks by Localizing Data Computing and Transmissions”, funded by the Ministry of Science, “Strategic Infrastructure Research” (Principal Investigator). My share: 110,000 shekel (\$25,232) for 2005; 106,000 for 2006; 106,000 shekel for 2007. (The other PIs: Assco. Prof. Boaz Patt-Shamir, Tel Aviv Univ., Prof. David Peleg, Weizmann, Assoc. Prof. Assaf Schuster, Technion.)

10. “Highly Concurrent Implementation of Concurrent Objects”, funded by the SUN Corporation (Principal Investigator), 2005–, \$5000.
11. “Congestion Aware Complexity for the Emerging Paradigms in Distributed Computing”, funded by the Israel Science Foundation (Principal Investigator), 2006–2010. My share: 108,000 shekel per year. (The other PI: Prof. Nir Shavit, Tel Aviv Univ.)
12. “On the virtual topology of loosely coupled multicomputers”, funded by the Ministry of Science (MOST) (Principal Investigator), 2008-2010, My share: 10,000 Euro per year.
13. “Hierarchical caching and P2P protocols for expediting network video transmissions”. MAGNET consortium Net-HD. Principal investigator. Shared the following amounts with Reuven Bar Yehuda: 2009-2010 - 211,000 Shekel. 2010-2011 - 260,000 Shekel. 2011-2012 - 220,000 Shekel. 2012-2013 - 230,000 Shekel. 2013-2014 - 221,000 Shekel.
14. “Algorithmic Approaches to Saving Energy in Computations, Networking, and Computer Embedded Systems”, Ministry of Science (Principal Investigator, the other principal investigators are David Peleg from Weizmann Inst., Boaz Patt-Shamir from Tel Aviv U., and Dr. Zvi Lotker from Ben Gurion U.), 2009-2012. My share for 2009-2010: 160,000 shekel. Also 160,000 for 2010-2011, and 160,000 for 2011-2012.
15. “Dynamic Controlling and Monitoring in Highly Dynamic Networks”, Israel Science Foundation (Principal Investigator, the other principal investigator is Prof. Idit Keidar), 2011-2015. My share per year: 150050 Shekel (Grant 1549/11).
16. “ P2P Networks for the advantage of the peers and of society”, Microsoft Electronic Commerce center at the Technion (a Principal investigator, the other PI is Dr. Ron Lavi). My share for 2012 is \$10000.
17. “Congnizant abstractions for optimizing cloud computing”, Israel Ministry of Science (Israel- France program), 2013-2015, principal Investigator, together with Idit Keidar, 126,000 Shekel per year.
18. “Matching rational users with metric preferences”, Microsoft Economic Commerce center at the Technion (a Principal Investigator together with Yuval Emek), together \$15000 for 2014, \$15000 for 2015.
19. “Algorithms for location, coordination, and load reduction in programmable networks supporting satellite communication”, MAGNET NEPTUNE consortium, 238,932 Shekel for 2014-2015, 250,380 plus 10504 Shekel for 2015-2016, 258,034 for 2016-2017, all the above amounts are shared with Yuval Emek.
20. Peta-Cloud MAGNET Consortium, 2016-2017, 150516 shekel for 2016-2017, shared with Shmuel Zaks and Yuval Emek.
21. “Efficient survivability and uninterrupted operation of, data-dependng public utilities in spite of disasters and attacks”, Ministry of Science (in cooperation with Japan Science and Technology Agency), 2016-2019, shared 799,812 with Yuval Emek (on the Ministry of Science side, and together with Japanese researchers on the Japanese side).

22. National Knowledge Center for Emergency Situation, participating in the winning proposal of 3,000,000 Shekel, with multiple other researchers, led by Dvora Shmueli (Univ. of Haifa), 2017.
23. “Distributed Verification”, BSF, 2017-2021, Shared \$132,000 with Gopal Pandurangan (U. Texas at Huston).
24. “Constructing supply chain for data in food IoT networks”, Food-IoT MAGNET consortium of the Innovation Authority, 2019-2020, shared 342,143 Shekel with Erez Karpas and Ron Lavi.

SIGNIFICANT PROFESSIONAL PROJECTS

- 1987–1991, Initiated and participated in the design and analysis of the higher layer protocols for the IBM PARIS experimental fast network.
- 1988–1991, Participated in designing the architecture and algorithms, hardware and software, of IBM plaNET fast network as a part of the US national Aurora Gigabit testbed. This technologies were implemented in the IBM first Storage Area Network (SSA and ANSI X3.293-1996).
- 1988–1994, Initiated and led the security project of the Communication Department and participated in the development of network security mechanisms for IBM’s networks, including protocols for SNA session authentication protocols, consulting to IBM divisions on security, required hardware for Cryptographic operations, and more.
- 1989–1992, Participated in the design of the IBM NBBS (Networking Broad Band Services) ATM architecture and SNA architecture, including topology and utilization update, multicasting, internetworking, security and more. (Received IBM Outstanding Innovation Award for contributions in designing control protocols.)
- 1990–1994, Led the IBM T.J. Watson Network Security Project that developed, among other things, authentication protocols. The Internet payment protocol is based, to a large degree on protocols patented in this project. (For patent 92480018.8. in my list of patents below IBM had to issue a royalty free license so that this protocol can be adapted by the Internet.)
- 1990–1994, Led the Network Architecture and Algorithms group, that participated in the algorithmic parts of other IBM projects such as IBM’s local area networks, design of wireless networks, wireless networks, optical networking, consulted to IBM divisions and other groups in research, and more.
- 1991–1993, Led the protocol design for the NetSP security server product. (Received IBM Outstanding Innovation Award for NetSP.)
- 1992–1994, Led the development of the security architecture and protocols of the IBM SAMBA wireless network. (Received IBM Research Division Award.)
- 1994–1995, Participated in the design of the protocols for Phoenix, the IBM product for workstations group computing.

PUBLICATIONS

Theses

1. S. Kutten, “Efficient Methods for Distributed Leader Election and Spanning Tree Construction”, D.Sc. dissertation. Advisor: Prof. S. Moran (replaced by Dr. S. Zaks in a year when Prof. Moran was on a sabbatical); additional advisor: Dr. E. Korach.
2. S. Kutten, “On Broadcasting and Spatial Reuse in Multihop Radio Networks—Problem Analysis and the Design of Protocols with Provable Properties”, M.Sc. thesis. Advisor: Prof. I. Chlamtac.

Refereed Papers in Professional Journals

(* papers co-authored with students (or post or my docs); ** my students; † other students)

1. I. Chlamtac and S. Kutten, “On Broadcasting in Radio Networks: Problem Analysis and Protocol Design”, *IEEE Transactions on Communications*, Vol. COM-33, No. 12, December 1985.
2. I. Chlamtac and S. Kutten, “Tree Based Broadcasting in Multihop Radio Networks”, *IEEE Transactions on Computers*, Vol. C-36, No. 10, October 1987.
3. R. Bar-Yehuda and S. Kutten, “Fault-Tolerant Majority Commitment”, *Journal of Algorithms*, Vol. 9, pp. 568–582, 1988.
4. S. Kutten, “Optimal Fault-Tolerant Distributed Construction of a Spanning Forest”, *Information Processing Letters*, Vol. 27, pp. 299–307, May 1988.
5. E. Korach, S. Kutten, and S. Moran, “A Modular Technique for the Design of Efficient Distributed Leader Finding Algorithms”, *ACM Transactions on Programming Languages and Systems*, Vol. 12, No. 1, pp. 84–101, 1990.
6. A. Itai, S. Kutten, Y. Wolfstahl, and S. Zaks, “Optimal Distributed t -Resilient Election in Complete Networks”, *IEEE Transactions on Software Engineering*, Vol. 16, No. 4, April 1990.
7. R. Bird, I. Gopal, A. Herzberg, P. Janson, S. Kutten, R. Molva, and M. Yung, “Systematic Design of Two Party Authentication Protocols”, *IEEE J. on Selected Areas in Communications*, Vol. 11, No. 5, pp. 679–693, June 1993.
8. B. Awerbuch, S. Kutten, and D. Peleg, “On Buffer Economical Store and Forward Deadlock Prevention”, *IEEE Transactions on Communications*, Vol. 42, No. 11, November 1994.
9. A. Bar-Noy, F.K. Hwang, I. Kessler, and S. Kutten, “A New Competitive Algorithm for Group Testing”, *Discrete Applied Math.*, Vol. 52, pp. 29–38, 1994.
10. I. Cidon, S. Kutten, Y. Mansour, and D. Peleg, “Greedy Packet Scheduling”, *SIAM J. on Computing*, Vol. 24, No. 1, pp. 148–157, February 1995.
11. I. Cidon, I. Gopal, M. Kaplan, and S. Kutten, “A Distributed Control Architecture of High-Speed Networks”, *IEEE Transactions on Communications*, Vol. 43, No. 5, pp. 1950–1960, May 1995.

12. R. Bird, I. Gopal, A. Herzberg, P. Janson, S. Kutten, R. Molva, and M. Yung, “The KryptoKnight Family of Light-Weight Protocols for Authentication and Key Distribution”, *IEEE Transactions on Networking*, Vol. 3, No. 1, pp. 31–42, February 1995.
13. I. Cidon, I. Gopal, and S. Kutten, “New Models and Algorithms for Future Networks”, *IEEE Transactions on Information Theory*, Vol. 41, No. 3, pp. 769–780, May 1995.
14. J. Garay, I. Gopal, S. Kutten, Y. Mansour, and M. Yung, “Efficient On-Line Call Control Mechanism”, *Journal of Algorithms* Vol. 23, No. 1, pp. 180–194, April 1997.
15. Y. Afek, S. Kutten and M. Yung, “The Local Detection Paradigm and its Applications to Self Stabilization”, *Theoretical Computer Science* (special issue), Vol. 186, No. 1–2, pp. 199–230, 1997.
- *16. C. Blundo[†], A. De Santis, A. Herzberg, S. Kutten, U. Vaccaro, and M. Yung, “Perfectly-Secure Key Distribution for Dynamic Conferences”, *Information and Computation*, Vol. 146, No. 1, pp. 1–23, October 1998.
17. J. Garay, S. Kutten, and D. Peleg, “A Sub-Linear Time Distributed Algorithm for Minimum Weight Spanning Trees”, *SIAM Journal on Computing*, Vol. 27, No. 1, pp. 302–316, February 1998.
18. S. Kutten and D. Peleg, “Fast Distributed Construction of k -Dominating Sets and Applications”, *Journal of Algorithms*, Vol. 28, No. 1, pp. 40–66, 1998.
- *19. A. Gopal[†], I. Gopal, and S. Kutten, “Fast Broadcast in High Speed Networks”, *IEEE Transactions on Networking*, Vol. 7, No. 2, pp. 262–275, 1999.
20. B. Awerbuch, I. Cidon, S. Kutten, Y. Mansour, and D. Peleg, “Optimal Broadcast with Partial Knowledge”, *SIAM Journal on Computing*, Vol. 28, No. 2, pp. 511–524, 1999.
21. S. Kutten and D. Peleg, “Fault-Local Distributed Mending”, *Journal of Algorithms*, Vol. 30, pp. 144–165, 1999.
- *22. A. Bar-Noy, R. Canetti[†], S. Kutten, Y. Mansour, and B. Schieber, “Bandwidth Allocation with Preemption”, *SIAM Journal on Computing*, Vol. 28, pp. 1806–1828, 1999.
23. S. Kutten, and B. Patt-Shamir “Time Adaptive Self Stabilization”, *Theoretical Computer Science*, Vol. 220, No. 1, pp. 93–111, 1999.
24. O. Gerstel, G. Sasaki, S. Kutten, and R. Ramaswami, “Worst-Case Analysis of Dynamic Wavelength Allocation in Optical Networks”, *IEEE/ACM Transactions on Networking*, Vol. 7, No. 6, pp. 833–846, 1999.
25. S. Kutten, and D. Peleg, “Tight Fault Locality”, *SIAM Journal on Computing*, Vol. 30, No. 1, pp. 247–268, 2000.
26. S. Kutten, B. Patt-Shamir, and R. Ostrowsky, “The Las-Vegas Processor Identity Problem (How and When to be Unique)”, *Journal of Algorithms*, Vol. 37, No. 2, pp. 468–494, 2000.

27. A. Herzberg and S. Kutten, “Early Detection of Message Forwarding Faults”, *SIAM Journal of Computing*, Vol. 30, No. 4, pp. 1169–1196, 2000.
- *28. D. Sadot, Y. Nachmani[†], A. Bar-Noy, and S. Kutten, “Next Generation Tbit/Sec Routers and Switches: Traffic Modeling, Scheduling Algorithms, and Simulations”, *J. of High Speed Networks*, Vol. 11, No. 2, pp. 89–102, 2002.
- *29. I. Cidon, S. Kutten, and R. Soffer**, “Optimal Allocation of Electronic Content in Networks”, *Computer Networks*, Vol. 40, No. 2, pp. 205–218, October 2002 (invited and reviewed).
30. S. Kutten, D. Peleg, and U. Vishkin, “Deterministic Resource Discovery in Distributed Networks”, *Theory of Information Systems (TOCS)*, Vol. 36, No. 5, pp. 479–495, 2003. A special issue (by invitation) devoted to selected papers from the 13th ACM Symposium on Parallel Algorithms and Architectures (SPAA’2001).
31. J. Auerbach, P.M. Gopal, M. Kaplan, and S. Kutten, “Multicast Group Membership Management in High Speed Wide Area Networks”, *IEEE/ACM Trans. on Networking*, Vol. 11, No. 1, pp. 166–175, February 2003.
32. S. Kutten and D. Peleg, “Asynchronous resource discovery in peer-to-peer networks”, *Computer Networks*, Vol. 51, No. 1, pp. 190–206, January 2007.
33. S. Das[†], P. Flocchini, S. Kutten, A. Nayak, and N. Santoro. 2007. Map construction of unknown graphs by multiple agents. *Theoretical Computer Science* 385(1-3), pp. 34-48 (October 2007).
34. O. Gerstel, S. Kutten, E. Laber, R. Matichin, D. Peleg, A. Pessoa, and C. Souza, “Hotlink Enhancement Algorithms for Web Directories”, *ACM Transactions on Information Systems (TOIS)*, Vol. 25, No. 4 (October 2007).
35. B. Awerbuch, S. Kutten, Y. Mansour, B. Patt-Shamir, and G. Varghese, “A Time Optimal Self-Stabilizing Synchronizer Using a Phase Clock”, *IEEE Transactions on Dependable and Secure Computing (TDSC)* 4(3): 180-190 (2007).
36. A. Korman** and S. Kutten, “Distributed Verification of Minimum Spanning Trees”, *Distributed Computing* (in the special issue devoted to ACM PODC 2006) 20(4): 253-266 (2007).
37. B. Awerbuch, I. Cidon, and S. Kutten, “Optimal Maintenance of a Spanning Tree”, *The Journal of the ACM (JACM)*, Volume 55, Number 4, September 2008.
- *38. A. Korman** and S. Kutten, “A Note on Models for Graph Representations”, *TCS* (in the special issue devoted to SIROCCO’2007) 410(14): 1401-1412 (2009).
- *39. D. Hendler** and S. Kutten, “Bounded-Wait Combining: Constructing Robust and High-Throughput Shared Objects”, *Distributed Computing*, 21(6): 405-431 (2009).
40. Y. Azar, B. Patt-Shamir, and S. Kutten, “Distributed Error Confinement”, *ACM Transactions on Algorithms* 6(3): (2010).

- *41. A. Korman**, S. Kutten, and D. Peleg, “Proof Labeling Schemes”, *Distributed Computing*, 22(4), May 2010, pp. 215-233.
- 42. J. Beauquier, J. Burman**, and S. Kutten, “ A Self-stabilizing Transformer for Population Protocols with Covering”. *Theoretical Computer Science* (the special issue devoted to SSS 2009), *Theor. Comput. Sci.* 412(33): 4247-4259 (2011). (Online publication: 19-NOV-2010. DOI: 10.1016/j.tcs.2010.09.016.)
- *43 A. Korman** and S. Kutten, “Controller and Estimator for Dynamic Networks”, *Information and Computation*, Vol 223, February 2013, pp. 43-66.
- 44 Shay Kutten, Gopal Pandurangan, David Peleg, Peter Robinson, and Amitabh Trehan**, “Sublinear Bounds for Randomized Leader Election”, *Theoretical Computer Science*, Vol. 561, Part B, 4 January 2015.
- 45 Shay Kutten, Gopal Pandurangan, David Peleg, Peter Robinson, and Amitabh Trehan**, “On the Complexity of Universal Leader Election”, *Journal of the ACM (JACM)* 62(1): 7:1-7:27 (2015).
- 46 Amos Korman, Shay Kutten, and Toshimitsu Masuzawa, “Fast and Compact Self-Stabilizing Verification, Computation, and Fault Detection of an MST”, *Distributed Computing* 28(4), pp. 253-295 (2015).
- 47 Ofer Feinerman, Amos Korman, Shay Kutten and Yoav Rodeh, “Fast Rendezvous on a Cycle by Agents with Different Speeds,” *TCS*, 688: 77-85 (2017).
- 48* Reuven Bar-Yehuda, Erez Kantor**, Shay Kutten, and Dror Rawitz, “Growing Half-Balls: Minimizing Storage and Communication Costs in CDNs”, to appear in *SIAM Journal on Discrete Math (SIDMA)*. 32(3): 1903-1921 (2018).

Pending minor revisions

- 49* Yuval Emek, Shay Kutten, Ron Lavi, and Yangguang Shi**, “Approximating generalized network design under (dis) economies of scale with applications to energy efficiency”, submitted to *JACM*.

BOOKS

1. S. Kutten (Ed.), *Distributed Computing (12th International Symposium, DISC’98, Andros, Greece, September 1998, Proceedings)*. Springer Lecture Notes in Computer Science No. 1499 (ISBN 978-3-540-65066-9).
2. S. Kutten (Ed.), *Proceedings of the Twenty-Third Annual ACM Symposium on Principles of Distributed Computing*, St. John’s, Canada, 2004, ACM, (ISBN 1581138024).
3. S. Kutten and J. Zerovnik (Ed.), *Structural Information and Communication Complexity*, Proceedings of the 16th International Colloquium, SIROCCO 2009, Piran, Slovenia, May 25, Springer’s LectureNotes on Computer Science 5869.

PATENTS

1. R.F. Bird, I.S. Gopal, P.A. Janson, S. Kutten, R. Molva, and M. Yung, "Authentication Protocols in Communication Networks", US Patent number 5148479 (9/92), European patent number 92480018.8. Also Issued as patent number 2059172 in CA (1/16/96). Also issued as patent number 505302 in Fr (8/28/96). Also issued as patent number 6921306.4 in GE (8/281/96). Also issued as patent number 505302 in IT (8/28/96). Also issued as patent number 505302 in the UK (8/28/96).
2. D. Coppersmith, H. Krawczyk, A. Herzberg, S. Kutten, and Y. Mansour, "The Shrinking Generator: A New Pseudo Random Generator for Stream Cipher Cryptosystems", European Patent EP 0,619,659, 1994. Filed as Docket YO993005 in the US (4/8/93).
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15. Eli Biham, Rafael Chen, and Shay Kutten, A Method and device for identity verification in the cyberspace as well as in the physical world. US Patent No. 9,680,644 was issued on 13 June. 2017.

CONFERENCES

Invited Talks

- WDAG’91 (The conference was meanwhile renamed the International Symposium on DIStributed Computing (DISC)), “Control Algorithms for Fast Networks”, Delphi, Greece, October 7–9, 1991.
- SOFSEM Conference, “Scalable Fault Tolerance” (see also below a reference to the invited paper in the proceedings), Czech Republic, November 23–30, 1996.
- Workshop on Algorithm Engineering as a New Paradigm 2000, RIMS, “On Time Adaptivity and Stabilization”, Kyoto University, Kyoto, Japan, October 30–November 2, 2000.
- XXXI Spring School in Theoretical Computer Science, “Stabilization and Locality”, Porquerolles, France, May 4–8, 2003.
- The First DYNAMO Workshop (Introductory talk for the Peer-to-Peer track), “Structuring Overlay Networks in Parallel”, Paris, France, May 19–20, 2005.
- 4th IEEE International Conference on Information Technology: Research and Education (Keynote speaker), “Locality in Distributed Fault Tolerance”, Tel Aviv, October 16–19, 2006.
- 8th International Symposium on Distributed Computing and Networking (ICDCN’2006) (Keynote speaker), “On Distributed Verification”, Guwahati, India, December 27–30, 2006.
- The 1st International ICST Conference on Theory and Practice of Algorithms in (Computer) Systems (TAPAS 2011), Rome, Italy, April 2011.
- Keynote address at TADDS 2013, Jerusalem, October 2013.
- Special Track on Distributed Computing with Mobile Agents, as a part of ADHOC-NOW 2015.

- Keynote address at 20th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS 2018), Tokyo, November 2018.
- SSS 2018, Tokyo, Japan, 2018.

Refereed Papers in Conference Proceedings

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2. S. Kutten and Y. Wolfstahl, “Finding a Leader in a Distributed System where Elements May Fail”, Proceedings of the 17th Ann. IEEE Electronic and Aerospace Conference (EASCON), Washington, DC, pp. 101–104, September 1984.
3. S. Kutten, “A Unified Approach to the Construction of Efficient Distributed Leader Finding Algorithms”, Proceedings of the 3rd International IEEE Conference on Communication and Energy, Montreal, Canada, October 1984.
4. I. Chlamtac and S. Kutten, “A Spatial Reuse TDMA/FDMA for Mobile Multihop Radio Networks”, Proceedings of the IEEE INFOCOM’85, Washington, DC, USA, March 1985.
5. E. Korach, S. Kutten, and S. Moran, “A Modular Technique for the Design of Efficient Distributed Leader Election Algorithms”, Proceedings of the 4th ACM Symposium on Principles of Distributed Computing, Minaki, Ontario, Canada, August 1985.
6. R. Bar-Yehuda, S. Kutten, Y. Wolfstahl, and S. Zaks, “Making Distributed Algorithms Fault Resilient”, Proceedings of the 4th Symposium on Theoretical Aspects of Computer Science, Passau, FRG, pp. 432–444, February 1987.
7. I. Cidon, I. Gopal, and S. Kutten, “New Models and Algorithms for Future Networks”, Proceedings of the 7th Annual ACM Symposium on Principles of Distributed Computing (PODC’88), Toronto, Ontario, Canada, pp. 75–89, August 1988.
8. S. Kutten, “Stepwise Construction of an Efficient Distributed Traversing Algorithm for General Strongly Connected Directed Networks”, Proceedings of the 9th International Conference on Computer Communication, Tel Aviv, Israel, pp. 446–452, October–November 1988.
- *9. A. Herzberg[†] and S. Kutten, “Fast Isolation of Faults in Data Transfer”, Proceedings of the 8th Annual ACM Symposium on Principles of Distributed Computing (PODC’89), Edmonton, Canada, pp. 349–353, August 1989.
10. B. Awerbuch, I. Cidon, I. Gopal, M. Kaplan, and S. Kutten, “Distributed Control for PARIS”, Proceedings of the 9th Annual ACM Symposium on Principles of Distributed Computing (PODC’90), Quebec, Quebec, Canada, pp. 145–160, August 1990.

- *11. A. Gopal[†], I. Gopal, and S. Kutten, “Broadcast in Fast Network”, Proceedings of the IEEE INFOCOM’90, San Francisco, June 1990.
- 12. B. Awerbuch, I. Cidon, and S. Kutten, “Optimal Maintenance of Replicated Information”, Proceedings of the 31st Annual IEEE Symposium on Foundations of Computer Science (FOCS’90), St. Louis, MO, USA, pp. 492–502, October 1990.
- 13. I. Cidon, S. Kutten, Y. Mansour, and D. Peleg, “Greedy Packet Scheduling” in *Distributed Algorithms* (editors: J. Van Leeuwen and N. Santoro), Proceedings of the 4th International Workshop on Distributed Algorithms (renamed the International Symposium on Distributed Computing (DISC)), Bari, Italy, pp. 159–184, Springer-Verlag, September 1990.
- 14. Y. Afek, S. Kutten, and M. Yung, “Memory Efficient Self-Stabilizing” in *Distributed Algorithms* (editors: J. Van Leeuwen and N. Santoro), Proceedings of the 4th International Workshop on Distributed Algorithms, Bari, Italy (renamed the International Symposium on Distributed Computing (DISC)), pp. 15–28, Springer-Verlag, September 1990.
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- 16. J. Auerbach, P.M. Gopal, M. Kaplan, and S. Kutten, “Multicast Group Membership Management in High Speed Wide Area Networks”, Proceedings of the 11th International Conference on Distributed Computing Systems (ICDCS’91), Arlington, Texas, USA, May 1991.
- 17. A. Gopal, I. Gopal, and S. Kutten, “Hardware Flooding”, ACM SIGCOMM’91 Conference, Zurich, Switzerland, September 1991.
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- *26. S. Kutten, B. Patt-Shamir[†], and R. Ostrovsky[†], “The Las-Vegas Processor Identity Problem (How and When to be Unique)”, ISTCS’93 (2nd Israel Symposium on the Theory of Computing and Systems), Natanya, Israel, pp. 150–159, IEEE Computer Society Press, June 1993.
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- *30. A. Bar-Noy, R. Canetti[†], S. Kutten, Y. Mansour, and B. Schieber, “Bandwidth Allocation with Preemption”, Proceedings of the 27th ACM Symposium on the Theory of Computing (STOC’95), Los Vegas, NV, USA, pp. 616–625, May 1995.
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- *49. J. Burman**, S. Kutten, T. Herman, and B. Patt-Shamir, “Asynchronous and Fully Self-Stabilizing Time-Adaptive Majority Consensus”, Proceedings of the 9th International Conference on Principles of Distributed Systems (OPODIS’05), Pisa, Italy, December 12–14, 2005.
- 50. J.H. Hoepman, S. Kutten, and Z. Lotker, “Efficient Distributed Weighted Matchings on Trees”, Proceedings of the 13th International Colloquium on Structural Information and Communication Complexity, SIROCCO, Chester, UK, 2006.
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- *52. D. Hendler** and S. Kutten, “Bounded-Wait Combining: Constructing Robust and High-Throughput Shared Objects”, Proceedings of the Twenty EATCS International Symposium on Distributed Computing (DISC’06), Stockholm, Sweden, September 18–20, 2006.
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- *59. Joffroy Beauquier, Janna Burman**, Julien Clement[†], and Shay Kutten, “On Utilizing Speed in Networks of Mobile Agents”. ACM PODC 2010.

- *60. Dmitry Zinenko** and Shay Kutten. Low Communication Self-Stabilization Through Randomization, 24th International Symposium on Distributed Computing (DISC 2010) September 12-16, 2010, Cambridge, Massachusetts, USA.
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- *83. Yuval Emek, Shay Kutten, Ron Lavi, and William K. Moses Jr**. “Deterministic Leader Election in Programmable Matter,” ICALP 2019.
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- *85. “The Communication Cost of Information Spreading in Dynamic Networks”, Mo-hamad Ahmadi†, Fabian Kuhn, Shay Kutten, Anisur Rahaman Molla, and Gopal Pandurangan, ICDCS 2019.
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- *87 “Reducing the Number of Messages in Self-stabilizing Protocols”, Anais Durand** and Shay Kutten, SSS’2019, Pisa, Italy, October 2919.

Steering Committee Chair

- International Colloquium on Structural Information and Communication Complexity (SIROCCO), 2011-2015.

Steering Committee Member

- The International EATCS Symposium on DIStributed Computing (DISC), 1998–2003.
- The ACM Symposium on Principles of Distributed Computing (PODC), 2003–2006.
- International Colloquium on Structural Information and Communication Complexity (SIROCCO), 2010-2011

Program Committee Chair

- The 12th International Symposium on DIStributed Computing (DISC'98), 1998 (formerly known as WDAG).
- The 23rd ACM SIGACT-SIGOPS Symposium on Principles of Distributed Computing (PODC'04), 2004.
- The First IEEE International Workshop on Foundations and Algorithms for Wireless Networking (FAWN'06), 2006.
- The 15th International Colloquium on Structural Information and Communication Complexity (SIROCCO'09), 2009.

Program Committee Member

- The Ninth ACM International Workshop on Foundations of Mobile Computing (FOMC'2013).
- International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS): 2006, 2007, 2009, 2011, 2012, 2013, 2015, 2018.
- 1st Conference on Energy Efficiency in Large Scale Distributed Systems (EE-LSDS), Vienna, April 2013.
- IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS) 2008, 2011.
- 14th International Conference On Principles Of Distributed Systems (OPODIS 2010).
- SERVICE COMPUTATION 2009, The First International Conferences on Advanced Service Computing.
- 10th International Symposium on Distributed Computing and Networking (ICDCN'09), 2006, 2009.
- EATCS DISC (European Association of Theoretical Computer Science DISC— Symposium on DIStributed Computing) (DISC), as well as the same conference under its previous name: WDAG Conferences of 1991, 1992, 1994, and 1996.
- DYNAMO 2007, Workshop on Dynamic networks Salerno, Italy, May 7-8, 2007.
- FUN 2007—4th International Conference on Fun with Algorithms, Castiglioncello (LI), Tuscany, Italy, June 3–6, 2007.
- Data Processing in Ubiquitous Information Systems 2007—a Workshop of ICDE'07.
- 5th IEEE International Symposium on Network Computing and Applications, IEEE NCA'06, July 2006, Cambridge, Massachusetts.
- EATCS 4th Workshop on Efficient and Experimental Algorithms (WEA'05), Santorini Island, Greece, May 10–13 2005.
- ICDCS'04 The 23rd International Conference on Distributed Computing Systems.

- The 21st Symposium on Reliable Distributed Systems (SRDS'2002), sponsored by the IEEE Computer Society.
- ARACNE2002: 3rd Workshop on Approximation and Randomization Algorithms in Communication Networks, Rome, September 21, 2002.
- The First Workshop on Advanced Parallel and Distributed Algorithms (APDA'2002).
- The SIROCCO conferences (International Colloquium on Structural Information and Communication Complexity) of 2000, 2005, and 2008.
- ICE-98—First International Conference on Information and Computational Economies. Co-sponsored by IBM, NSF, ACM, and IEEE.
- ISTCS 1996—Israel Symposium on the Theory of Computing and Systems.
- IS&T/SPIE (The Society for Imaging Science and Technology and the International Society for Optical Engineering) 1994 Symposium on Electronic Imaging and Technology (The High Speed Networking and Multimedia Computing Conference; Co-sponsored by the IEEE Computer Society).
- PODC Conferences (Association for Computing Machinery, Symposium on the Principles of Distributed Computing) of 1993, 1994, 2000, 2015, and 2016.

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Available on request.