

Ben-Moshe Boaz - Curriculum Vitae

Personal Details

Date of birth : April 2, 1971
Place of birth : Israel
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Education

2001 - 2004: Ph.D. Department of Computer Science
Ben-Gurion University of the Negev
Beer-Sheva, Israel

Thesis title: *Geometric Facility Location Optimization*

Advisor: *Prof. Matthew J. Katz*

Graduated with distinction

1998 - 2000: M.Sc. Department of Computer Science
Ben-Gurion University of the Negev
Beer-Sheva, Israel

Thesis title: *Computing the L_1 Diameter of a Set of Points in the Presence of Rectangular Obstacle and related problems*

Advisor: *Prof. Matthew J. Katz*

Graduated with distinction

1994 - 1997: B.Sc. Mathematics and Computer Science,
Ben-Gurion University of the Negev,
Beer-Sheva, Israel

Graduated with distinction

Employment

2005 - Present : Faculty member at the department of Computer Science Ariel University center.

2004 - 2005 : Postdoctoral at the School of Computing Science - SFU.

[2004-2005] Research group member & team leader: MITACS projects.

2001 - 2004 : Instructor at Ben-Gurion University of the Negev.

[2001-2004] Research Group member: LSRT Consortium; Large Scale Rural Telephony - locating fixed wireless networks.

1998 - 2000 : Teaching Assistant

1997 - 1998 : Software Engineer (Orbotech, Yavne)

[1997,1998] CAM project - Algorithms team.

1989 - 1993 : Military Service: An officer in a combat unit (IDF).

Research Statement

I am interested in both theoretical and applied aspects of Computational Geometry and Facility Location Optimization, including: Approximating Radio Maps, Locating Wireless Back-bone, Frequency Allocation, Visibility Graphs, Terrain Simplification, Allocation Problems, Vehicle Routing Problems, and GIS expert systems. In 2008 Dr. Nir Shvalb and I have founded the *Kinematics and Computational Geometry* lab in Ariel University Center: There are about 23 employees in the lab: 10 undergraduates students, 10 graduate students, and few qualified engineers. The lab is a growing source for Intellectual Property, having 6 patents and 3 start-up companies being founded, see: <http://www.ariel.ac.il/sites/kg/>

Currently, there are 6 major (founded) projects running in the lab:

- RESCUE: Magnet Consortium - wireless communication for first responders.
- NET-HD: Magnet Consortium - High Definition IPTV
- Climbing Robots: Mafat.
- Friendly Fire Prevention: Mafat.
- PEV: battery charging simulation: Simulation and optimization algorithms for electrical vehicles.
- Indoor Positioning algorithms: *InDoorGo ltd.*

I also cooperate with the following research groups:

Computational Geometry, Prof. Matya Katz and Paz Carmi(BGU).

Medical Simulation, Prof. Ronnie Tepper (Meir Medical Center).

Human Vision, Dr. Michael Vagner (Ariel UC.).

Indoor Wireless Communication, Prof. Yossi Pinhasi and Prof Asher Yahalom (Ariel UC).

Teaching Statement

I take my teaching duties seriously. During the last few years I have taught the following courses in computer science:

Mandatory courses: Introduction to computer science, Data Structures, Object Oriented, Computer Networking, Software Engineering, Algorithms, Data Bases.

Elective (graduate) course: Computational Geometry, Algorithms for Geographic Information Systems (GIS), parallel computing, wireless network optimization, Advance topics in software engineering, Advance topics in graph algorithms implementation, Web Application Design. I'm supervising about 10 undergraduate projects a year. And 4-6 graduate students in computer science and IEEE.

Graduated Students

- Current master students: Roi Yozevich, Dudy Asulin, Ayal Weisman, Itay Nagar, Yosi Rabinovich, Anders Branderud.
- Current Ph.D. students: Eran Shaham.
- Former master students: Moti Shani, Eyal Berliner.

Publications

Patents

- Boaz Ben-Moshe, Liad Serruya, Ariel Shamir
METHOD FOR COMPRESSING ELEVATION MAPS, National phase prosecution in US, EP and IL.
- Boaz Ben-Moshe, Nir Shvalb
METHOD AND DEVICES FOR IMPARTING INFORMATION, PCT.
- Nir Shvalb, Boaz Ben-Moshe, Barak Shamur, Alon Vardimon
ORIENTATION CONTROLLER ,MECHANICAL ARM, GRIPER AND COMPONENTS THEREOF, PCT.
- Boaz Ben-Moshe, Amit Dvir, Eyal Berliner *MULTIMEDIA BROADCASTING OVER WI-FI NETWORKS*, provisional.
- Boaz Ben-Moshe, Harel Levi *METHODS AND DEVICES FOR IMPROVING GLOBAL NAVIGATION SATELLITE SYSTEMS ACCURACY*, provisional.
- Boaz Ben-Moshe, Nir Shvalb
VIRTUAL WHITE CANE, prosecution in UK

Book Chapters

- Ian Davidson, Kiri Wagstaff, and Basu Sugato, *Constrained clustering: Advances in algorithms, theory, and applications*, Martin Ester, Rong Ge, Byron Gao, Zengjian Hu, Boaz Ben-moshe, Joint Cluster Analysis of Attribute Data and Relationship Data (2008). Chapman & Hall/CRC.

Journal publications

- B. Ben-Moshe, M.J. Katz and M. Segal, Obnoxious facility location: complete service with minimal harm, *International J. of Computational Geometry and Applications* 10 (2000), 581–592.
- B. Ben-Moshe, P. Carmi and M.J. Katz, Computing all large sums-of-pairs in \mathcal{R}^n and the discrete planar two-watchtower problem, *Inf. Proc. Letters*, 89 (2004), 137–139.

- B. Ben-Moshe, M.J. Katz, J.S.B. Mitchell and Y. Nir, Visibility preserving terrain simplification - An experimental study, *Comp. Geom. Theory and Appl.*, 28 (2004), 175-190.
- B. Ben-Moshe, Y. Ben-Shimol, Y. Ben-Yehzekel and A. Dvir, M. Segal, An Automated Wireless Fixed-Access Networks Antenna Positioning Algorithm, *Journal of Heuristics* 13(3): (2007), 243-263.
- B. Ben-Moshe, M.J. Katz and J.S.B. Mitchell, A Constant-Factor Approximation Algorithm for Optimal Terrain Guarding, *SIAM Journal on Computing*. 36(6): (2007), 1631-1647.
- B. Ben-Moshe, B. Bhattacharya, Qiaosheng Shi, A. Tamir Efficient Algorithms for Center Problems in Cactus Networks, *Theoretical Computer Science*. 378(3): (2007) 237-252.
- B. Ben-Moshe, P. Carmi and M.J. Katz, Approximating the Visible Region of a Point on a Terrain, *GeoInformatica* 12(1): (2008) 21-36.
- R. Ge, M. Ester, B. J. Gao, Z. Hu, B. K. Bhattacharya, B. Ben-Moshe, Joint Cluster Analysis of Attribute Data and Relationship Data: the Connected k-Center Problem, Algorithms and Applications, *ACM Transactions on Knowledge Discovery from Data* 2(2): (2008).
- A. Beimel, B. Ben-Moshe; Y. Ben-Shimol, P. Carmi; E. Chai; I. Kitroser, E. Omri. Matrix Columns Allocation Problems. *Theoretical Computer Science* 2174-2183, (2009) .
- E. Shaham, D. Sarne and B. Ben-Moshe, *Sleeved Co-clustering of Lagged Data*, Knowledge and Information Systems 31(2): 251-279 (2011).
- B. Ben-Moshe, *Geometric Heuristics for Rural Radio Maps Approximation*, Journal of Heuristics 18(2): 215-237 (2012).
- B. Ben-Moshe, A.Dvir, M. Segal, A. Tamir *Centdian Computation in Cactus Graphs*, Accepted to Journal of Graph Algorithms and Applications 16(2): 199-224 (2012).
- B. Ben-Moshe, P. Carmi, M. Shani, N. Shvalb *Efficient model for indoor radio paths computation*, Accepted to Simulation Modelling Practice and Theory (2012).
- B. Ben-Moshe, O. Medina, N. Shvalb *CONFIGURATION SPACE COMPRESSION*, Accepted to International Journal of Advanced Robotic Systems (2012).

Conference papers

- B. Ben-Moshe, M.J. Katz and J.S.B. Mitchell, Approximating the Diameter of a Set of Points in the Presence of Rectangular Obstacles, Proc. 17th European Workshop. on Computational Geometry, 2001, 154-157.
- B. Ben-Moshe, M.J. Katz and J.S.B. Mitchell, Farthest neighbors and center points in the presence of rectangular obstacles, Proc. 17th ACM Symp. on Computational Geometry, 2001, 164-171.
- B. Ben-Moshe, M.J. Katz, J.S.B. Mitchell and Y.Nir, Visibility preserving terrain simplification: an experimental study, Proc. 18th ACM Symp. on Computational Geometry, 2002, 303-311.
- B. Ben-Moshe, P. Carmi and M.J. Katz, Approximating the Visible Region of a Point on a Terrain, Proc. 6th Workshop on Algorithm Engineering and Experiments (ALENEX 04), 2004, 120-128.
- B. Ben-Moshe, O. Hall-Holt, M.J. Katz and J.S.B. Mitchell, Computing the visibility graph of points within a polygon, Proc. 20th ACM Symp. on Computational Geometry, 2004, 27-35.
- B. Ben-Moshe, M.J. Katz and J.S.B. Mitchell, A Constant-Factor Approximation Algorithm for Optimal Terrain Guarding, Proc. of the 16th annual ACM-SIAM symposium on Discrete algorithms, 2005
- B. Ben-Moshe, B. Bhattacharya and Qiaosheng Shi, Farthest Neighbor Voronoi Diagram in the Presence of Rectangular Obstacles, Proc. of the 17th Canadian Conference on Computational Geometry, 2005,
- B. Ben-Moshe, B. Bhattacharya and Qiaosheng Shi, Computing the Widest Empty Boomerang, Proc. of the 17th Canadian Conference on Computational Geometry, 2005
- B. Ben-Moshe, B. Bhattacharya and Qiaosheng Shi, Efficient algorithms for the weighted 2-center problem in a cactus graph, Proc. of the 16th International Symposium on Algorithms and Computation (ISAAC), 2005, 693-703.
- I. Ashkenazi, B. Ben-Moshe and J. El-Sana, Approximating Radio Maps - An experimental study, Proc. of the 17th Canadian Conference on Computational Geometry, 2005
- B. Ben-Moshe, Y. Ben-Shimol, Y. Ben-Yehzekel and A. Dvir, M. Segal, An Automated Wireless Fixed-Access Networks Antenna Positioning Algorithm, accepted to IEEE Consumer Communications and Networking Conference, 2006

- B. Ben-Moshe, B. K. Bhattacharya, Qiaosheng Shi, An Optimal Algorithm for the Continuous/Discrete Weighted 2-Center Problem in Trees, LATIN 2006, 166–177
- M. Ester, Rong Ge, B. J. Gao, Zengjian Hu, B. Ben-Moshe, Joint Cluster Analysis of Attribute Data and Relationship Data: the Connected k-Center Problem, Proc. 6th SIAM Conference on Data Mining (SDM), Bethesda, MD, USA, April 20 - 22, 2006.
- B. Ben-Moshe and Y. Dinitz, Fast Additive Constant Approximation Algorithms for Safe Deposit Boxes Problems with Two or Three Currencies, Proc. of the 19th Canadian Conference on Computational Geometry, 53-56, 2007
- B. Ben-Moshe, L. Serruya and A. Shamir Image Compression Terrain Simplification – An Experimental Study Proc. of the 19th Canadian Conference on Computational Geometry, 125-128, 2007.
- B. Ben-Moshe, M. J. Katz and I. Zaslavsky Distance Preserving Terrain Simplification – An Experimental Study Proc. of the 19th Canadian Conference on Computational Geometry, 129-132, 2007
- B. Ben-Moshe, B. K. Bhattacharya S. Das D. R. Gaur and Qiaosheng Shi Computing a planar widest empty -siphon in $o(n^3)$ time Proc. of the 19th Canadian Conference on Computational Geometry, 33-36, 2007
- B. Ben-Moshe, N. Shvalb, M. Shani, P. Carmi and E. Shifman *Computing Radio Paths in an Urban Environment* Proc. of IEEE Consumer Communications and Networking Conference (CCNC), 2010
- B. Ben-Moshe, A. Dvir, M. Segal, A. Tamir *Centdian Computation for Sensor Networks*, Theory and Applications of Model of Computation (TAMC) (2010)
- D. Ezri, S. Shilo, B. Ben-Moshe, E. Berliner *Performance Study of Green Cellular - An Architecture for Minimal Emission from Mobile Stations*, The 21st Annual IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC) (2010)
- B. Ben-Moshe, P. Carmi, L. Chaitman, M. J. Katz, G. Morgenstern, Y. Stein *Canadian Direction Assignment in Wireless Networks* Proc. of the 22nd Canadian Conference on Computational Geometry, 2010
- E. Shaham, D. Sarne and B. Ben-Moshe *Co-clustering of Lagged Data* Proc. 10th IEEE International Conference on Data Mining (ICDM) 2010

- B. Ben-Moshe, E. Berliner, A. Dvir and A. Gorodishker *A joint framework of passive monitoring system for complex wireless networks* Proc. 1st International IEEE Workshop on Emerging Densely Connected Networks (EDCN), 2011
- B. Ben-Moshe, A. Dvir and A. Solomon *Analysis and Optimization of Live Streaming for Over The Top Video* Proc. 1st International IEEE Workshop on Emerging Densely Connected Networks (EDCN), 2011
- B. Ben-Moshe, M. Elkin, E. Omri *Optimizing Budget Allocation in Graphs* Proc. of the 23rd Canadian Conference on Computational Geometry, 2011
- B. Ben-Moshe, E. Elkin, H. Levi, A. Weissman *Improving Accuracy of GNSS Devices in Urban Canyons* Proc. of the 23rd Canadian Conference on Computational Geometry, 2011
- B. Ben-Moshe, E. Berliner, A. Branderud, A. Dvir, *Modeling adaptive rate video transmission in Wi-Fi MANET* Proc. of the 15th ACM International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWIM 2012),