A. Karim Abu Affash — *Curriculum Vitae*

Contact Information

Software Engineering Department
Shamoon College of Engineering
Beer-Sheva 84100, Israel

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Research Interests

Computational and discrete geometry
Approximation algorithms
Operations research
Networks design

Education

Ph.D. in Computer Science **2008–2012**
Ben-Gurion University of the Negev
Beer-Sheva, Israel
Thesis Title: *Geometric Bottleneck Problems*
Advisor: Professor Matya Katz

M.Sc. in Computer Science **(Graduated with distinction)** **2006–2008**
Ben-Gurion University of the Negev
Beer-Sheva, Israel
Thesis Title: *Improved Bounds on the Average Distance to the Fermat-Weber Center of a Convex Object*
Advisor: Professor Matya Katz

B.Tec. in Software Engineering **(Graduated with distinction)** **2001–2005**
Shamoon College of Engineering
Beer-Sheva, Israel

Teaching Experience

Shamoon College of Engineering

Instructor **2009–present**
- Advanced Algorithms
- Introduction to Algorithms
- Randomized Algorithms
- Computability and Complexity

Teaching Assistant **2005–2006**
- Database Systems
- Reliability in Software Engineering

Ben-Gurion University of the Negev

Instructor **2009–2014**
- Automata and Formal Languages
- Automata and Formal Languages for Israeli Air Force

Teaching Assistant **2006–2009**
- Automata and Formal Languages
- Design of Algorithms

Research Students

Shamoon College of Engineering

***M.Sc. Students* (without thesis)**

- Meital Solomon **2015–2017**
- Avi Erel **2014–2016**

Ben-Gurion University of the Negev

Ph.D. Students

- Sujoy Bhore **2014–2018**
- Meytal Maman **2021–2024**

M.Sc. Students

- Aviad Baron **2019–2021**
- Meytal Maman **2019–2021**

Grants

Geometric Optimization Problems in Networks, ***132,000 USD*** ***2017–2021***
United States - Israel Binational Science Foundation (BSF), (joint with Prof. Paz Carmi from Ben Gurion University, Israel and Prof. Joseph Mitchell from Stony Brook University, USA)

Competitive Research Grant, ***90,000 NIS*** ***2016–2019***
Shamoon College of Engineering

Competitive Research Grant, ***90,000 NIS*** ***2013–2016***
Shamoon College of Engineering

Honors and Awards

Excellence in research, **2016**
Shamoon College of Engineering

Excellence in research, **2015**
Shamoon College of Engineering

Excellence in research, **2014**
Shamoon College of Engineering

Scholarship for advanced studies, **2011–2012**
The Israel Ministry of Science and Technology

Award for excellence in teaching, **2011**
Department of Computer Science, Ben-Gurion University of the Negev

Planning & Budgeting Committee Fellowship for Outstanding Doctoral Students, **2010–2012**
The Israel Council for Higher Education

Robert H. Arnow Center for Bedouin Studies and Development Grant, **2010**
Ben-Gurion University of the Negev

Excellence in research, **2010**
Department of Computer Science, Ben-Gurion University of the Negev

Friedman Ph.D. entrance award, **2008**
Department of Computer Science, Ben-Gurion University of the Negev

Award for excellence in studies, **2002–2005**
Department of Software Engineering, Shamoon College of Engineering

Refereed Journal Publications

A. K. Abu-Affash, G. Bar-On and P. Carmi. δ-Greedy t-spanner. *Computational Geometry: Theory and Applications*, 100:101807, 2022.

A. K. Abu-Affash, P. Carmi, A. Maheshwari, P. Morin, M. H. M. Smid and S. Smorodinsky. Approximating maximum diameter-bounded subgraph in unit disk graphs. *Discrete and Computational Geometry*, 66:1401–1414, 2021.

A. K. Abu-Affash, P. Carmi and M. J. Katz. Minimizing total interference in asymmetric sensor networks. *Theoretical Computer Science*, 889:171–181, 2021.

A. K. Abu-Affash, S. Bhore, P. Carmi and J. S. B. Mitchell. Planar bichromatic bottleneck spanning trees. *Journal of Computational Geometry*, 12(1):109–127, 2021.

A. K. Abu-Affash, S. Bhore and P. Carmi. Monochromatic plane matchings in bicolored pint set. *Information Processing Letters*, 153:105860, 2020.

A. K. Abu-Affash, S. Bhore, P. Carmi and D. Chakraborty. Bottleneck bichromatic full Steiner trees. *Information Processing Letters*, 142:14–19, 2019.

A. K. Abu-Affash, P. Carmi and A. Parush Tzur. Dual power assignment via second Hamiltonian cycle. *Journal of Computer and System Sciences*, 93:41–53, 2018.

A. K. Abu-Affash, P. Carmi and A. Parush Tzur. Strongly connected spanning subgraph for almost symmetric networks. *International Journal of Computational Geometry and Applications*,27(3):207–220, 2017.

A. K. Abu-Affash, A. Biniaz, P. Carmi, A. Maheshwari and M. H. M. Smid. Approximating the bottleneck plane perfect matching of a point set. *Computational Geometry: Theory and Applications*, 48(9):718–731, 2015.

A. K. Abu-Affash, P. Carmi and M. J. Katz. Bottleneck Steiner tree with bounded number of Steiner vertices. *Journal of Discrete Algorithms*, 30:96–100, 2015.

A. K. Abu-Affash. The Euclidean bottleneck full Steiner tree problem. *Algorithmica*, 71(1):139–151, 2015.

S. Sankararaman, **A. K. Abu-Affash**, A. Efrat , S. D. Eriksson-Bique, V. Polishchuk, S. Ramasubramanian and M. Segal. Optimization schemes for protective jamming. *Mobile Networks and Applications*, 19(1):45-60, 2014.

A. K. Abu-Affash, P. Carmi, M. J. Katz and Y. Trabelsi. Bottleneck non-crossing matching in the plane. *Computational Geometry: Theory and Applications*, 47(3):447–457, 2014.

A. K. Abu-Affash, P. Carmi, M. J. Katz and M. Segal. The Euclidean bottleneck Steiner path problem and other applications of (α, β)-pair decomposition. *Discrete and Computational Geometry*, 51(1):1–23, 2014.

A. K. Abu-Affash, R. Aschner, P. Carmi and M. J. Katz. The MST of symmetric disk graphs is light. *Computational Geometry: Theory and Applications*, 45(1-2):54–61, 2012.

A. K. Abu-Affash, P. Carmi, M. J. Katz and G. Morgenstern. Multi cover of a polygon minimizing the sum of areas. *International Journal of Computational Geometry and Applications*, 21(6):685-698, 2011.

A. K. Abu-Affash, R. Aschner, P. Carmi and M. J. Katz. Minimum power energy spanners in wireless ad hoc networks. *Wireless Networks*, 17(5):1251-1258, 2011.

A. K. Abu-Affash and M. J. Katz. Improved bounds on the average distance to the Fermat-Weber center of a convex object. *Information Processing Letters*, 109(6):329-333, 2009.

Conference Publications

A. K. Abu-Affash, S. Bhore, P. Carmi and J. S. B. Mitchell. Planar bichromatic bottleneck spanning trees. In *Proceedings of the European Symposium on Algorithms (ESA '20)*, pages 1:1-1:16, Pisa, Italy, September 2020.

A. K. Abu-Affash, P. Carmi and M. J. Katz. Minimizing total interference in asymmetric sensor networks. In *Proceedings of International Symposium on Algorithms and Experiments for Sensor Systems, Wireless Networks and Distributed Robotics (ALGOSENSORS '20)*, LNCS 12503, pages 1-16, Pisa, Italy, September 2020.

A. K. Abu-Affash, P. Carmi, A. Maheshwari, P. Morin, M. H. M. Smid and S. Smorodinsky. Approximating maximum diameter-bounded subgraph in unit disk graphs. In *Proceedings of the 34th International Symposium on Computational Geometry (SoCG '18)*, pages 2:1-2:12, Budapest, Hungary, June 2018.

A. K. Abu-Affash, S. Bhore and P. Carmi. Monochromatic plane matchings in bicolored pint set. In *Proceedings of the 29th Canadian Conference on Computational Geometry (CCCG '17)*, pages 7-12, Ottawa, Ontario, Canada, August 2017.

A. K. Abu-Affash, S. Bhore, P. Carmi and D. Chakraborty. Bottleneck bichromatic full Steiner trees. In *Proceedings of the 29th Canadian Conference on Computational Geometry (CCCG '17)*, pages 13-18, Ottawa, Ontario, Canada, August 2017.

A. K. Abu-Affash, P. Carmi and A. Parush Tzur. Strongly connected spanning subgraph for almost symmetric networks. In *Proceedings of the 27th Canadian Conference on Computational Geometry (CCCG '15)*, pages 256-261, Kingston, Ontario, Canada, August 2015.

A. K. Abu-Affash, P. Carmi, M. J. Katz and Y. Trabelsi. Bottleneck non-crossing matching in the plane. In *Proceedings of the European Symposium on*

Algorithms (ESA '12), LNCS 7501, pages 36-47, Ljubljana, Slovenia, September 2012.

S. Sankararaman, **A. K. Abu-Affash**, A. Efrat , S. D. Eriksson-Bique, V. Polishchuk, S. Ramasubramanian and M. Segal. Optimization schemes for protective jamming. In *Proceedings of the 13th International ACM Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc '12)*, pages 65-74, Hilton Head Island, South Carolina, USA, June 2012.

A. K. Abu-Affash, P. Carmi and M. J. Katz. Bottleneck Steiner tree with bounded number of Steiner vertices. In *Proceedings of the 23th Canadian Conference on Computational Geometry (CCCG '11)*, pages 39-42, Toronto, Canada, August 2011.

A. K. Abu-Affash. On the Euclidean bottleneck full Steiner tree problem. In *Proceedings of the 27th ACM Symposium on Computational Geometry (SoCG '11)*, pages 433-439, Paris, France, June 2011.

A. K. Abu-Affash, P. Carmi, M. J. Katz and M. Segal. The Euclidean bottleneck Steiner path problem. In *Proceedings of the 27th ACM Symposium on Comput- ational Geometry (SoCG '11)*, pages 440-447, Paris, France, June 2011.

A. K. Abu-Affash, P. Carmi, M. J. Katz and G. Morgenstern. Multi cover of a polygon minimizing the sum of areas. In *Proceedings of the Workshop on Algorithms and Computation (WALCOM '11)*, LNCS 6552, pages 134-145, New Delhi, India, February 2011.

A. K. Abu-Affash, R. Aschner, P. Carmi and M. J. Katz. The MST of symmetric disk graphs is light. In *Proceedings of the 12th Scandinavian Symposium and Workshops on Algorithm Theory (SWAT '10)*, LNCS 6139, pages 236-247, Bergen, Norway, June 2010.

A. K. Abu-Affash, R. Aschner, P. Carmi and M. J. Katz. Minimum power energy spanners in wireless ad hoc networks. In *Proceedings of the 29th IEEE Conference on Computer Communications (INFOCOM '10)*, pages 2411-2416, San Diego, California, USA, March 2010.

A. K. Abu-Affash and M. J. Katz. Improved bounds on the average distance to the Fermat-Weber center of a convex object. In *Proceedings of the 20th Canadian Conference on Computational Geometry (CCCG '08)*, pages 147-150, Montréal, Québec, Canada, August 2008.

Talks at international conferences & workshops

The 27th Canadian Conference on Computational Geometry (CCCG 2017), Ottawa, Canada	**July 2017**
The 27th Canadian Conference on Computational Geometry (CCCG 2015), Kingston, Canada	**August 2015**
The 27th ACM Symposium on Computational Geometry (SoCG 2011), Paris, France	**June 2011**

	The 29th IEEE Conference on Computer Communications (INFOCOM 2010), San Diego, California, USA	**March 2010**
	The 20th Canadian Conference on Computational Geometry (CCCG 2008), Montreal, Canada	**August 2008**
Invited Talks	*Algorithms Seminar* Department of Applied Mathematics and Statistics, Stony Brook University, USA	**April 2018**
	Research Seminar in Computational Geometry School of Computer Science, Tel Aviv University, Israel	**January 2011**
	Algorithms Seminar School of Computer Science, Carleton University, Canada	**August 2008**
Program Committees	The 30th European Workshop on Computational Geometry (EuroCG 2014) Dead Sea, Israel, March 3-5, 2014.	

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