Davood Bakhshesh

Work Experience Academic

2017–present **Assistant Professor**, *Department of Computer Science, University of Bojnord, Iran.*

2017–present **Head of Department**, *Department of Computer Science, University of Bojnord, Iran.*

2012–2013 **Lecturer**, *Department of Computer Science, University of Bojnord, Iran.*

Education

2013–2016 **PhD, Computer Science**, *Yazd University*, Yazd, Iran.
Thesis title: Proposing Some Algorithms for Constructing Geometric Spanners
Adviser: Dr. Mohammad Farshi

2007–2010 **MS, Computer Science**, *Sharif University of Technology*, Tehran, Iran.
Thesis title: Multi-degree reduction of Bezier curves with constraints, using dual Bernstein basis polynomials
Adviser: Dr. Nezam Mahdavi-Amiri

2003–2007 **BA, Computer Science**, *Vali-e-Asr University of Rafsanjan*, Rafsanjan, Iran.

Research Interests

Computational Geometry

Geometric Sspanners — Greedy Spanner, Yao graph, Θ-graph and etc.

Triangulations — Delaunay triangulation, Greedy Triangulation

Graph Drawing — Greedy Drawing, Angle-monotone Drawing, Increasing-chord graphs

Data Structures

The well-separated pair decomposition — Split tree, Quad Tree

Honors and Awards

- Top researcher student at the Faculty of Mathematical Science, Yazd University (2016).
- Worthy Paper Award, Khayyam National Festival, Neyshabur, Iran. (2018)
- Erdős Number: 3. Link: Paul Erdős - Boris Aronov - Prosenjit Bose - me.

4 km along the road to Esfarayen – Bojnord, Iran
98-915-388-1269 • ✉ *d.bakhshesh@ub.ac.ir*
https://scholar.google.com/citations?user=b4zMzTIAAAAJ&hl=en

Teaching

C++ Programming	University of Bojnord, Fall 2017
Advanced C++ Programming	University of Bojnord, Winter 2018
Data Structures	University of Bojnord, Winter 2018
Algorithm Design	University of Bojnord, Winter 2019

Skills

Languages	**English: Spoken and written. Persian: Native**
Programming Languages	**C++, Java, C#**
Operating System	**Windows, Linux**

Publications

[1] Davood Bakhshesh and Mohammad Farshi. A greedy algorithm for constructing region-fault tolerant geometric spanners. *Electronic and Cyber Defense*, 10(4):75–80, 2023.

[2] Davood Bakhshesh and Mohammad Farshi. On the plane angle-monotone graphs. *Computational Geometry: Theory and Applications*, 100, 2022. doi:https://doi.org/10.1016/j.comgeo.2021.101818.

[3] D. Bakhshesh and M. Farshi. A lower bound on the stretch factor of yao graph Y_4. *Scientia Iranica*, 29(6):3244–3248, 2022. doi:10.24200/sci.2022.58892.5950.

[4] Davood Bakhshesh, Michael A Henning, and Dinabandhu Pradhan. On the coalition number of trees. *arXiv e-prints*, pages arXiv–2111, 2022.

[5] Saeid Alikhani, Davood Bakhshesh, Nasrin Jafari, and Maryam Safazadeh. Some new results on the number of fair dominating sets. *Journal of Algorithms and Computation*, 54(2):1–12, 2022. doi:10.22059/jac.2022.90381.

[6] Davood Bakhshesh. Isolate roman domination in graphs. *Discrete Mathematics, Algorithms and Applications*, 14(03):2150131, 2022. doi:10.1142/S1793830921501317.

[7] Davood Bakhshesh and Mohammad Farshi. Angle-monotonicity of Delaunay triangulation. *Computational Geometry: Theory and Applications*, 94:101711, 2021. doi:https://doi.org/10.1016/j.comgeo.2020.101711.

[8] Davood Bakhshesh. A quadratic-time algorithm for isolate domination in trees. *Iranian Journal of Science and Technology, Transactions A: Science*, 45:2063–2072, 2021. doi:https://doi.org/10.1007/s40995-021-01200-6.

[9] D. Bakhshesh and M. Farshi. A degree 3 plane 5.19-spanner for points in convex position. *Scientia Iranica*, 28(6):3324–3331, 2021. doi:10.24200/sci.2021.56576.4796.

[10] Davood Bakhshesh. k-adjacency domination in graphs. *Electronic and Cyber Defense*, 9(3):125–131, 2021.

4 km along the road to Esfarayen – Bojnord, Iran
98-915-388-1269 • *d.bakhshesh@ub.ac.ir*
https://scholar.google.com/citations?user=b4zMzTIAAAAJ&hl=en

[11] Davood Bakhshesh. Plane bounded-degree spanners among the obstacles for the points in convex position. *Journal of Algorithms and Computation*, 53(2):85–90, 2021. doi:10.22059/jac.2021.85252.

[12] Davood Bakhshesh. Characterization of some classes of graphs with equal domination number and isolate domination number. *Discrete Mathematics, Algorithms and Applications*, 12(05):2050065, 2020. doi:10.1142/S1793830920500652.

[13] Davood Bakhshesh and Mohammad Farshi. Fault tolerancy of continuous Yao graph of angle less than $2\pi/5$. *Information Processing Letters*, 148:13 – 18, 2019. doi:https://doi.org/10.1016/j.ipl.2019.03.014.

[14] Davood Bakhshesh and Mohammad Farshi. (Weakly) Self-approaching geometric graphs and spanners. *Computational Geometry: Theory and Applications*, 78:20 – 36, 2019. doi:https://doi.org/10.1016/j.comgeo.2018.10.002.

[15] Davood Bakhshesh, Mohammad Farshi, and Mahdieh Hasheminezhad. Complexity results for k-domination and α-domination problems and their variants. *Ars Combinatoria*, 145:11–27, 2019.

[16] Davood Bakhshesh, Mohammad Farshi, and Mohammad Reza Hooshmandasl. 2-domination number of generalized petersen graphs. *Proceedings - Mathematical Sciences*, 128(2):17, Apr 2018. doi:10.1007/s12044-018-0395-2.

[17] Davood Bakhshesh, Luis Barba, Prosenjit Bose, Jean-Lou De Carufel, Mirela Damian, Rolf Fagerberg, Mohammad Farshi, André van Renssen, Perouz Taslakian, and Sander Verdonschot. Continuous Yao graphs. *Computational Geometry: Theory and Applications*, 67:42–52, 2018. doi:10.1016/j.comgeo.2017.10.002.

[18] Davood Bakhshesh and Mohammad Farshi. Angle-constrained spanners with angle at least $\pi/3$. *Information Processing Letters*, 120:44 – 46, 2017. doi:http://dx.doi.org/10.1016/j.ipl.2017.01.002.

[19] Davood Bakhshesh and Mohammad Farshi. Improving space and time complexity of the gap-greedy spanner algorithm. *CSI Journal on Computer Science and Engineering*, 14(1):6 – 18, 2017.

[20] Hamidreza Moheghi, Seyed Taghi Akhavan Niaki, Behrang Bootaki, and Davood Bakhshesh. On the effect of inducted negative correlation rate for beta acceptance-rejection algorithms. *Communications in Statistics - Simulation and Computation*, 46(3):2152–2167, 2017. doi:10.1080/03610918.2015.1039128.

[21] Davood Bakhshesh and Mansoor Davoodi. Approximating of conic sections by DP curves with endpoint interpolation. *International Journal of Computer Mathematics*, 92(1):1–14, 2015. doi:10.1080/00207160.2014.889293.

[22] Natasha Dejdumrong and Davood Bakhshesh. A new univariate basis for curve construction and its multi-degree reduction. *Advanced Science Letters*, 19(5):1495–1499, 2013. doi:doi:10.1166/asl.2013.4463.

[23] Davood Bakhshesh and Mohammad Farshi. A degree 3 plane 5.19-spanner for points in convex position. In *Conference on Computational Geometry (CCCG 2020)*, page 226, 2020.

4 km along the road to Esfarayen – Bojnord, Iran
98-915-388-1269 • *d.bakhshesh@ub.ac.ir*
https://scholar.google.com/citations?user=b4zMzTIAAAAJ&hl=en

[24] Davood Bakhshesh and Mohammad Farshi. Some properties of continuous Yao graph. In Mohammad Taghi Hajiaghayi and Mohammad Reza Mousavi, editors, *Proceedings of the 1st Topics in Theoretical Computer Science, (TTCS 2015)*, Lecture Note of Computer Science, pages 44–55, Cham, 2016.

[25] Davood Bakhshesh and Mohammad Farshi. Geometric spanners merging and its applications. In *Proceedings of the 28th Canadian Conference on Computational Geometry (CCCG 2016)*, Simon Fraser University, Vancouver, Canada, 2016.

[26] Davood Bakhshesh, Mohammad Farshi, and «Mahdieh». A generalization of α-dominating set and its complexity. In *Proceedings of the 46th Annual Iranian Mathematics Conference (AIMC 46)*, Yazd University, Yazd, Iran, 2015.

[27] Davood Bakhshesh and Mohammad Farshi. The firm gap property and its applications. In *Proceedings of the47th Annual Iranian Mathematics Conference (AIMC 47)*, Kharazmi University, Karaj, Iran., 2016.

[28] Davood Bakhshesh and Mohammad Farshi. A plane region-fault tolerant 2.095-spanner for points in convex position. In *Proceedings of the 2nd Iranian Conference on Computational Geometry (ICCG 2019)*, Sharif University of Technology, Tehran, Iran, 2019.

[29] Davood Bakhshesh and Mohammad Farshi. Fault tolerancy of continuous Yao graph. In *Proceedings of the 1st Iranian Conference on Computational Geometry (ICCG 2018)*, Amirkabir University of Technology, Tehran, Iran, 2018.

[30] Davood Bakhshesh and Mohammad Farshi. A new construction of the greedy spanner in linear space. In *Proceedings of the 1st Iranian Conference on Computational Geometry (ICCG 2018)*, Amirkabir University of Technology, Tehran, Iran, 2018.

[31] Abolfazl Poureidi, Davood Bakhshesh, and Mohammad Farshi. Increasing-chord planar graphs for points in convex position. In *Proceedings of the 1st Iranian Conference on Computational Geometry (ICCG 2018)*, Amirkabir University of Technology, Tehran, Iran, 2018.

[32] Seyyed Abdolhamid Esfahani and Davood Bakhshesh. A combination method for image encryption based on hyper-chaos functions and evolutionary operators. In *Proceedings of the 8th International ISC Conference on Information Security and Cryptology (ISCISC 2011),*, Ferdowsi University of Mashhad, Mashhad, Iran, 2011.

4 km along the road to Esfarayen – Bojnord, Iran
98-915-388-1269 • ✉ *d.bakhshesh@ub.ac.ir*
https://scholar.google.com/citations?user=b4zMzTIAAAAJ&hl=en