Behrooz Koohestani

Associate Professor of Computer Science

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Educational Background

- Doctor of Philosophy in Computer Science (Intelligent Systems), University of Essex, United Kingdom, 2013.

  Title of PhD thesis: "Genetic Hyper-Heuristics for Graph Layout Problems"
  Supervisor: Professor Riccardo Poli

- Master of Science in Information Technology (Software Systems), Heriot-Watt University, United Kingdom, 2008.

  Title of MSc dissertation: "A New Study of the Bandwidth Minimization Problem Using Genetic Algorithms"
  Supervisor: Professor David Wolfe Corne

- Certificate in English for postgraduate purposes, Heriot-Watt University, United Kingdom, 2007.
- Bachelor of Science in Computer Engineering (Software) and Bachelor of Science in Agricultural Engineering (Plant Breeding), Azad University of Tabriz, Iran, 2004, 1993.

Awards/Achievements

- Received a Distinguished Teaching Award (University of Tabriz, 2017).
- Received an offer of employment to join the Department of Computer Science at the University of Stirling as a full-time researcher (United Kingdom, 2013).
- Awarded a MACS Scholarship to undertake postgraduate study (Heriot-Watt University, United Kingdom, 2008).
- Achieved the third highest dissertation mark in a cohort of 76 students from the School of Mathematical & Computer Sciences (Heriot-Watt University, United Kingdom, 2008).

Research Interests

- Heuristics, Meta-Heuristics and Hyper-Heuristics
- Combinatorial Optimization Problems
- Expert Systems
- Artificial Neural Networks
- Graph Theory
- Software Engineering

Programming Skills

- Procedural programming using Pascal , C
- System programming using Assembly , C , C++
- Object-oriented programming using C++ , Java , C# .NET
- Logic programming using Prolog
- Programming using MATLAB
- Concurrent programming using Java
- Windows programming using Visual Basic , C# .NET
- Database programming using Access , SQL , C# .NET
- Web application development using HTML , XML , ASP .NET
- Mobile and Handheld programming using Java , C# .NET

Teaching Experience

- Discrete and Combinatorial Mathematics
- Advanced Programming
- Evolutionary Computing
- Computational Intelligence
- Fundamentals of Soft Computing
- Artificial Intelligence and Expert Systems
- Neural Networks

Selected Publications

1) B. Koohestani and D. Corne. An improved fitness function and mutation operator for metaheuristic approaches to the bandwidth minimization problem. In Proceedings of the 1st International Conference on Bio-Inspired Computational (BICS), volume 1117, pages 21–28. AIP Conference Proceedings, 2009.

2) B. Koohestani and R. Poli. A genetic programming approach to the matrix bandwidth-minimization problem. In R. Schaefer, C. Cotta, J. Kolodziej, and G. Rudolph, editors, Parallel Problem Solving from Nature, PPSN XI, volume 6239 of Lecture Notes in Computer Science, pages 482–491. Springer Berlin / Heidelberg, 2010.

3) B. Koohestani and R. Poli. A hyper-heuristic approach to evolving algorithms for bandwidth reduction based on genetic programming. In M. Bramer, M. Petridis, and L. Nolle, editors, Research and Development in Intelligent Systems XXVIII, pages 93–106. Springer London, 2011.

4) B. Koohestani and R. Poli. A genetic programming approach for evolving highly-competitive general algorithms for envelope reduction in sparse matrices. In C. Coello, V. Cutello, K. Deb, S. Forrest, G. Nicosia, and M. Pavone, editors, Parallel Problem Solving from Nature - PPSN XII, volume 7492 of Lecture Notes in Computer Science, pages 287–296. Springer Berlin / Heidelberg, 2012.

5) B. Koohestani and R. Poli. On the application of genetic programming to the envelope reduction problem. In Computer Science and Electronic Engineering Conference (CEEC), 2012 4th, pages 53–58. IEEE, 2012.

6) B. Koohestani and R. Poli. Evolving an improved algorithm for envelope reduction using a hyper-heuristic approach. IEEE Transactions on Evolutionary Computation, 18 (4): 543-558, 2014.

7) B. Koohestani and R. Poli. Addressing the envelope reduction of sparse matrices using a genetic programming system. Computational Optimization and Applications, 60 (3): 789-814, 2015.

8) B. Koohestani. A new structure for organizing and storing data in graphs. Tabriz Journal of Electrical Engineering, 48 (1): 251-259, 2018.

9) B. Koohestani. A graph representation for search-based approaches to graph layout problems. International Journal of Computational Science and Engineering, 21 (3): 429-436, 2020.

10) B. Koohestani. A crossover operator for improving the efficiency of permutation-based genetic algorithms. Expert Systems with Applications, 151: 113381, 2020.

11) B. Koohestani. More effective reduction of the bandwidth of sparse symmetric matrices when using metaheuristics. Journal of Iranian Association of Electrical and Electronics Engineers, 18 (4): 167-174, 2021.

12) B. Koohestani. On the solution of the graph bandwidth problem by means of search methods. Applied Intelligence, 53 (7): 7988-8004, 2023.