Emrullah SONUÇ, Ph.D.

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Education:

Feb.2012 - Jul.2017	Karabuk University, Karabük, Türkiye Ph.D. in Computer Engineering, CGPA 3.65 Thesis Title: Parallelization of Simulated Annealing Algorithm on Graphics Processing Unit.
Feb.2010 - Feb.2012	Karabuk University, Karabük, Türkiye M.Sc. in Computer Engineering, CGPA 3.57 Thesis Title: Verification Of Regcm4 Regional Climate Model Data.
Sep.2006 - Jun.2008	Selcuk University, Konya, Türkiye (Undergraduate transfer) B.S. in Computer Engineering, CGPA 3.01
Sep.2004 - Jun.2006	European University of Lefke, Lefke, TRNC B.S. in Computer Engineering, CGPA 3.58
Sep.1996 - Jun.2003	Karabük Anatolian İmam-Hatip High School, Karabük, Türkiye

Research Interests:

Evolutionary Computation
Meta-heuristics
Combinatorial Optimization
High Performance Computing
Machine Learning

Teaching Interests:

Theory of Computation
Digital Logic Circuits and Design
Database Systems
Operating Systems
Web Services

Academic History:

Mar. 2024– Now	Assoc. Prof., Department of Computer Engineering, Karabuk University
Oct. 2022 – Now	Research Associate, School of Computer Science (COL Lab), University of Nottingham
Oct. 2022 – Mar. 2024	Assist. Prof., Department of Computer Engineering, Karabuk University
Oct. 2021– Oct.2022	Postdoctoral Researcher (Funded By TÜBİTAK), School of Computer Science (COL Lab), University of Nottingham Assist. Prof., Department of Computer Engineering, Karabuk University
Nov. 2017 – Oct. 2021	Assist. Prof., Department of Computer Engineering, Karabuk University
Oct. 2009 – Nov. 2017	Research Assistant, Department of Computer Engineering, Karabuk University

Skills:

Spoken Languages:	Intermediate English, native Turkish speaker.
Programming:	C, C++, Java, PHP, Python, CUDA, JavaScript, ...
Operating Systems:	Varius Distributions of Linux, Windows, Android.
Distributed Computing:	OpenMP, OpenMPI.
Database Administration:	MySQL, PostgreSQL, MariaDB, ...

International Journal Publications:

1. Saihood, Q., **Sonuç, E.**, Baydilli, Y. and Özcan, E., "Interpretable Multimodal Fusion for Skin Lesion Classification Using Dermoscopic Images and Patient Metadata". Frontiers in Medicine, 13, p.1871689, 2026.
2. Abdulelah, A.J., **Sonuç, E.**, Yassen, E.T. and Al-Andoli, M.N., "Uncertainty-aware deep reinforcement learning for sustainable electric vehicle routing: A hybrid optimization framework". Knowledge-Based Systems, p.116546, 2026.
3. Yıldız, K., **Sonuç, E.,** "Q-Learning Driven Artificial Bee Colony Algorithm for Solving the Weapon-Target Assignment Problem". Statistics, Optimization & Information Computing, 16(1), 684-697, 2026.
4. Jumaili, M. L. F., **Sonuç, E.**, "An Attention-Based CNN Framework for Alzheimer's Disease Staging with Multi-Technique XAI Visualization", Computers, Materials and Continua, 83(2), 2947-2969, 2025.
5. Jumaili, M. L. F., **Sonuç, E.,** "ML-Driven Alzheimer's disease prediction: A deep ensemble modeling approach", SLAS technology, 100298, 2025.

6. **Sonuç, E.**, Özcan, E., "Parallel late acceptance hill-climbing for binary-encoded optimization problems", An International Journal of Optimization and Control: Theories & Applications, 15(2), 311-329, 2025.
7. Kısaboyun, S., **Sonuç, E.**, "A Hybrid Genetic Algorithm and Simulated Annealing Approach for the Uncapacitated Facility Location Problem", Computer and Decision Making: An International Journal, 2, 546-557, 2025.
8. **Sonuç, E.**, Özcan, E., "CUDA-based parallel local search for the set-union knapsack problem", Knowledge-Based Systems, 112095, 2024.
9. Saihood, Q., **Sonuç, E.**, "A practical framework for early detection of diabetes using ensemble machine learning models", Turkish Journal of Electrical Engineering and Computer Sciences, 31(4), 722-738, 2023.
10. **Sonuç, E.**, Özcan, E., "An adaptive parallel evolutionary algorithm for solving the uncapacitated facility location problem", Expert Systems with Applications, 119956, 2023.
11. **Sonuç, E.**, "A novel binary crow search algorithm for the uncapacitated facility location problem", Neural Computing and Applications, 33, 14669–14685, 2021.
12. **Sonuç, E.**, "A modified crow search algorithm for the weapon-target assignment problem", An International Journal of Optimization and Control: Theories & Applications (IJOCTA), 10(2), 188-197, 2020.
13. **Sonuç, E.**, Sen, B., Bayir, S., "A cooperative GPU-based Parallel Multistart Simulated Annealing algorithm for Quadratic Assignment Problem", Engineering Science and Technology, an International Journal, 21 (5), 843-849, 2018.
14. **Sonuç, E.**, Sen, B., Bayir, S., "A Parallel Simulated Annealing Algorithm for Weapon-Target Assignment Problem", International Journal of Advanced Computer Science and Applications, 8 (4): 87-92, 2017.
15. **Sonuç, E.**, Sen, B., Bayir, S., "Solving Bin Packing Problem using Simulated Annealing", International Journal of Mechanical and Production Engineering (IJMPE), 5 (3): 21-23, 2017.
16. **Sonuç, E.**, Sen, B., Bayir, S., "A Parallel Approach for Solving 0/1 Knapsack Problem using Simulated Annealing Algorithm on CUDA Platform", International Journal of Computer Science and Information Security, 14 (12): 1096-1101, 2016.
17. Sen B., Kilinc R., Sen B., **Sonuç E.**, "Validation of a daily precipitation estimates of the regional climate model RegCM4 over the domains in Turkey with NWP verification techniques", Fresenius Environmental Bulletin, Parlar Scientific Publications, 2014.

International Conference/Workshop Publications:

1. Ozdemir, D., **Sonuç, E.**, an Ozcan, C., "An improved genetic algorithm for efficiently solving the uncapacitated facility location problem", The Ninth International Workshop on Computer Modeling and Intelligent Systems (CMIS), 2026.
2. Kısaboyun S., Kutucu H., **Sonuç E.**, "Deep Multi-Source Feature Aggregation for Insect Bite Classification". 6th International Conference on Problems of Cybernetics and Informatics (PCI) Aug 26 (pp. 1-4). IEEE, 2025.
3. Hashim S. M., **Sonuç E.**, Karaoglan K. M. "Performance Analysis of Simulated Annealing on the 0-1 Knapsack Problem". IEEE 9th International Conference on Engineering Technologies and Applied Sciences (ICETAS), 1-5, 2024.
4. Karaca H., **Sonuç E.**, Atasoy N. A. "Performance Analysis of Particle Swarm Optimization Algorithm with Bit-Flip Operator for 0-1 Knapsack Problem". 3rd International Congress of Electrical and Computer Engineering. (ICECENG), 355-370, 2024.
5. Akdağ Ş., **Sonuç E.**, Özcan C. "A Hybrid Ant Colony Optimization and Simulated Annealing for the Static Weapon-Target Assignment Problem", 3rd International Conference on Recent Academic Studies, 86-96, 2024.
6. Meşeci E., **Sonuç E.**, Özcan C. "Ensemble Approach with Multi-Agent and Swarm Based Algorithms in Quadratic Assignment Problem", 2nd International Conference on Trends in Advanced Research, 677-687, 2024.
7. Akyıldız B., **Sonuç E.**, Özcan C. "Optimizing Uncapacitated Facility Locations Problem: A Hybrid Approach with Genetic Algorithms and Tabu Search", 2nd International Conference on Trends in Advanced Research, 1-12, 2024.
8. Farzaliyev E., Saihood Q., **Sonuç E.** "Çocuklarda Anemi Hastalığının Teşhisinde Topluluk Öğrenme Yöntemlerinin Kullanılması", International Conference on Recent Academic Studies (Vol. 1, pp. 129-135), 2023.
9. Saihood Q., **Sonuç E.** "The Efficiency of Classification Techniques in Predicting Anemia Among Children: A Comparative Study", International Conference on Emerging Technology Trends in Internet of Things and Computing (pp. 167-181). Springer, Cham., 2022.
10. Ahmed, S. R., **Sonuç E.**, Ahmed, M. R., Duru, A. D. "Analysis Survey on Deepfake detection and Recognition with Convolutional Neural Networks.", International Congress on Human-Computer Interaction, Optimization and Robotic Applications (HORA). IEEE, 2022.
11. Salman K., **Sonuç E.** "Thyroid Disease Classification Using Machine Learning Algorithms", 2nd International Conference on Physics and Applied Sciences (ICPAS), 2021.
12. Özcan E., **Sonuç E.** "Predicting the Amount of Materials Used for Desulphurization Process using Machine Learning", 1st International Conference on Electrical-Electronics and Computer Engineering (ICEECE), 2021, Trabzon-Türkiye

13. Aswad S.A., **Sonuç E.** "Classification of VPN Network Traffic Flow Using Time Related Features on Apache Spark", 4th International Symposium on Multidisciplinary Studies and Innovative Technologies (ISMSIT), IEEE, 2020.
14. **Sonuç E.,** Dönmez H. "Binary optimization using duelist optimization algorithm for One Max Problem", 3rd International Conference on Advanced Technologies, Computer Engineering and Science (ICATCES20), June 3-5, 2020, Karabük - TURKEY.
15. **Sonuç E.,** "An Improved Crow Search Algorithm for Continuous Optimization Problems", 2nd International Conference on Advanced Technologies, Computer Engineering and Science (ICATCES19), Apr 26-28, 2019, Alanya - TURKEY.
16. **Sonuç E.**, "Artificial Bee Colony Algorithm for The Linear Ordering Problem", International Conference on Advanced Technologies, Computer Engineering and Science (ICATCES18), May 11-13, 2018, Safranbolu – TURKEY.
17. **Sonuç E.**, Sen B., Bayir S., "Comparison of Neighborhood Search Techniques for Solving Weapon-Target Assignment Problem using Simulated Annealing Algorithm", International Conference on Mathematics and Engineering (ICOME), 10-12 May 2017, Istanbul – TURKEY.
18. **Sonuç E.**, "An Efficient Heuristic for Subset Sum Problem", International Conference on Mathematics and Engineering (ICOME), 10-12 May 2017, Istanbul – TURKEY.
19. **Sonuç E.**, Sen B., Bayir S., "Solving Bin Packing Problem using Simulated Annealing", Proceedings of 65th ISERD International Conference, Mecca, Saudi Arabia, 23rd -24th January 2017, ISBN: 978-93-86291-92-96th.
20. Sen B., Sen B., **Sonuç E.**, Topcu S., Krichak S.O., Kilinc R., "Assessing the capturing capacity of RegCM4 for the precipitation over Med-CORDEX using boundary data with higher resolution and improved accuracy", 6th ICTP Workshop on The Theory and Use Of Regional Climate Models, 7-18 May 2012, Trieste – ITALY.
21. **Sonuç E.**, Sen Ba., Sen Bu., "Verifying Regional Climate Model Results with Web-Based Expert-System", 1st World Conference on Innovation and Software Development Bahcesehir University, 02-04 September 2011, Istanbul – TURKEY.
22. Menemencioglu O., Sen B., Atasoy F., **Sonuç E.**, "LMS (Moodle) Automatic Enrollment Approach by Flat File with Student Information System Data", 2nd World Conference On Informatıon Technology, 22-27 November 2011, Antalya – TURKEY.

National Journal Publications:

1. Özcan, E., **Sonuç E.**, "Makine Öğrenme Teknikleri Kullanılarak Kükürt Giderme İşleminde Kullanılan Malzeme Miktarının Tahmini", Zeki Sistemler Teori ve Uygulamaları, 5(1), 57-63, 2022.
2. Demirel, O., **Sonuç, E.**, "Yapay Zeka Teknikleri Kullanılarak Kemik Yaşı Tespiti", Türkiye Sağlık Enstitüleri Başkanlığı Dergisi, 4(3), 17-30, 2021.

National Conference Publications:

1. **Sonuç E.**, Sen B., Bayir S., "Simulated Annealing Method for Solving Traveling Salesman Problem Using Parallel Computing, Akademik Bilişim 2015, 04-06 Şubat 2015, Eskişehir.
2. **Sonuç E.**, ORTAKCI Y., ELEN A., "Android Application of Karabuk University Information System", Akademik Bilişim 2013, 23-25 January 2013, Antalya – TURKEY
3. Menemencioglu O., **Sonuç E.**, Karas I.R., Orak I.M., "Academic Curriculum Vitae Based Faculty Information System", Akademik Bilişim 2013, 23-25 January 2013, Antalya – TURKEY.
4. Sen B., Kilinc R., Sen B., **Sonuç E.**, "RegCM4 Climate Model Precipitation Verification For Niğde Region", 2-4 October 2013, İç Anadolu Bölgesi 1. Tarım ve Gıda Kongresi, Niğde-TURKEY.

Projects:

1. Coordinator, Karabuk University, SRCU, Project Number: KBÜBAP-24-ABP-047, Project Name: "Multi-thread Parallel Late Acceptance Hill Climbing Algorithm", 2026.
2. Researcher, Karabuk University, SRCU, Project Number: KBÜ-BAP-15/2-DR-027, Project Name: "Parallelization of Simulated Annealing Algorithm on Graphics Processing Unit and Its Implementation on NP-hard Problems", 2017
3. Assistant Personnel, (National) Industrial Theses Program (SAN-TEZ), Yıldırım Beyazıt University, Project Number: 1318.STZ.2012-1, Project Name: "e-Triage Decision Support System Software", 2012-2014
4. Researcher, Karabuk University, SRCU, Project Number: KBÜ-BAP-C-11-Y-016, Project Name: "Verification of Regcm4 Regional Climate Model Data", 2011

Academic Service:

Assistant Editor-in-Chief: Engineering Science and Technology, an International Journal (JESTECH, Q1), Elsevier

Reviewer: Swarm and Evolutionary Computation (Elsevier), Engineering Applications of Artificial Intelligence (Elsevier), Expert Systems with Applications (Elsevier), Applied Soft Computing (Elsevier), Computers & Industrial Engineering (Elsevier), Information Sciences (Elsevier), Parallel Computing (Elsevier), Biomedical Signal Processing & Control (Elsevier), Information Fusion (Elsevier), Turkish Journal of Electrical Engineering and Computer Sciences (TÜBİTAK) , Journal of Big Data (Springer), The Journal of Supercomputing (Springer), Multimedia Tools and Applications (Springer), Cluster Computing (Springer), Imaging Science Journal (Taylor & Francis), Computational Intelligence and Neuroscience (Wiley), Journal of Aerospace Information Systems, Applied Sciences, Pamukkale University Journal of Engineering Sciences, Akademik Bilişim Conferences.