ADIS ALIHODZIC

CONTACT INFORMATION

Department of Mathematics
Faculty of Science
Office: 437
Zmaja od Bosne, 71000, Sarajevo
Bosnia and Herzegovina

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PERSONAL INFORMATION

Citizenship: Bosnia-Herzegovina
Gender: Male

EMPLOYMENT

Faculty of Science in Sarajevo

2007-2011 *Teaching Assistant*
2011-2015 Senior Teaching Assistant
2016-2019 *Assistant Professor*
2020- Present *Associate Professor*

EDUCATION

University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Ph.D. in Computer Science, January 2016
Thesis: "The improvements of metaheuristic Bat-inspired algorithm for constrained problems."

University of Sarajevo, Sarajevo, Bosnia and Herzegovina
M.Sc. in Applied Mathematics-Computer Science, July 2011
Master Thesis: "The reconstruction of multidimensional images from the projections using integral transforms with the applications in medicine."

University of Sarajevo, Sarajevo, Bosnia and Herzegovina
B.Sc. in Applied Mathematics-Computer Science, December 2006
"The Fortune's algorithm for computing of Voronoi diagrams.**"**

RESEARCH INTERESTS

Swarm Intelligence, Bio-inspired Computation, Optimization Problems, Computer Vision, Computer Graphics, Computational Geometry, Mathematical Modeling, Fuzzy Logic, Image Processing, Fuzzy Image Processing, Data Compression, Stereo Matching, High Dynamic Range Imaging, Image Compression, Object Recognition, Machine Learning, Algorithms, Data Structures.

PUBLICATIONS

1. Adis Alihodzic, Damir Hasanspahic, Fikret Cunjalo and Haris Smajlovic, Adjusted Bare Bones Fireworks Algorithm To Guard Orthogonal Polygons, Computing Conference, 2021, London, United Kingdom, 15-15 July, 2021, Accepted.

2. Adis Alihodzic, Damir Hasanspahic, Eva Tuba and Milan Tuba, Application of Adjusted Differential Evolution In Optimal Sensor Placement For Interior Coverage, 6th International Congress, ICICT 2021, London, United Kingdom, February 25-25, 2021, Accepted.

3. Dž. Gušić, A. Alihodžić and S. Nesimović, On Some Applications of h-generated Fuzzy Implications, WSEAS Trans. on Systems and Control 15 (2020), 490-507.

4. S. Delalić, A. Alihodžić, M. Tuba, E. Selmanović and D. Hasić, "Discrete Bat Algorithm for Event Planning optimization," 2020 43rd International Convention on Information, Communication and Electronic Technology (MIPRO), Opatija, Croatia, 2020, pp. 1085-1090, doi: 10.23919/MIPRO48935.2020.9245276.

5. S. Delalić, E. Žunić, A. Alihodžić and E. Selmanović, "The Order Batching Concept Implemented In Real Smart Warehouse," 2020 43rd International Convention on Information, Communication and Electronic Technology (MIPRO), Opatija, Croatia, 2020, pp. 1685-1690, doi: 10.23919/MIPRO48935.2020.9245256.

6. A. Alihodzic, S. Delalic and D. Hasic, "An Exact Two-Phase Method For Optimal Camera Placement In Art Gallery Problem," 2020 15th Conference on Computer Science and Information Systems (FedCSIS), IEEE, Sofia, Bulgaria, 2020, pp. 215-222, doi: 10.15439/2020F79.

7. A. Alihodzic, S. Delalic and D. Gusic, "An Effective Integrated Metaheuristic Algorithm For Solving Engineering Problems," 2020 15th Conference on Computer Science and Information Systems (FedCSIS), IEEE, Sofia, Bulgaria, 2020, pp. 207-214, doi: 10.15439/2020F81.

8. Tuba E., Capor Hrosik R., Alihodzic A., Jovanovic R., Tuba M. (2020) Support Vector Machine Optimized by Fireworks Algorithm for Handwritten Digit Recognition. In: Simian D., Stoica L. (eds) Modelling and Development of Intelligent Systems. MDIS 2019. Communications in Computer and Information Science, vol 1126. Springer, Cham

9. Delalić Sead, Chahin, Malek, Alihodžić Adis. (2019). Optimal City Selection and Concert Tour Planning Based on Heuristic Optimization Methods and the Use of Social Media Analytics. (ICAT 2019, Sarajevo, Bosnia and Herzegovina)

10. Delalić Sead, Alihodžić Adis, Selmanović Elmedin. (2019). Innovative Usage of Online Platforms Analytics on Event Planning based on the Genetic Algorithm with Greedy Approach. (ICAT 2019, Sarajevo, Bosnia and Herzegovina)

11. Adis Alihodzic, Eva Tuba, Milan Tuba, An Improved Extreme Learning Machine Tuning by Flower Pollination Algorithm, Studies in Computational Intelligence, vol. 855, 855. Springer, Cham, 2019, DOI: 10.1007/978-3-030-28553-1_5.

12. Vanes Mešić, Knut Neumann, Ivica Aviani, Elvedin Hasović, William J. Boone, Nataša Erceg, Vladimir Grubelnik, Ana Sušac, Džana Salibašić Glamočić, Marin Karuza, Andrej Vidak, Adis Alihodžić, and Robert Repnik, *Measuring students' conceptual understanding of wave optics: A Rasch modeling approach*, Phys. Rev. Phys. Educ. Res. 15, 010115 – Published 25 February 2019.

13. Adis Alihodzic, Damir Hasic, Elmedin Selmanovic, An Effective Guided Fireworks Algorithm for Solving UCAV Path Planning Problem, NMA 2018: Numerical Methods and Applications, International Conference on Numerical Methods and Applications, vol. 11189, pp 29-38, ISBN: 978-3-030-10691-1, DOI: 10.1007/978-3-030-10692-8_3, Springer Nature Switzerland AG, 2019.

14. Alihodzic A., Smajlovic H., Tuba E., Capor Hrosik R., Tuba M. (2019) Adjusted Artificial Bee Colony Algorithm for the Minimum Weight Triangulation. In: Yadav N., Yadav A., Bansal J., Deep K., Kim J. (eds) Harmony Search and Nature Inspired Optimization Algorithms. Advances in Intelligent Systems and Computing, vol. 741, pp. 305-317, 2018, Springer, Singapore.

15. Adis Alihodzic, Eva Tuba, Dana Simian, Viktor Tuba, Milan Tuba, Extreme Learning Machines for Data Classification Tuning by Improved Bat Algorithm, International Joint Conference on Neural Networks (IJCNN), IEEE, ISBN: 978-1-5090-6014-6, DOI: 10.1109/IJCNN.2018.8489546, 2018.

16. Nedzad Dukic, Dzenan Gusic, Amela Muratovic-Ribic, Adis Alihodzic, Edin Tabak, Haris Dukic, From Fuzzy Dependences to Fuzzy Formulas and Vice Versa, for Kleene-Dienes Fuzzy Implication Operator, WSEAS Transactions on Systems and Control ,Volume 13, 2018.

17. Eva Tuba, Raka Jovanovic, Romana Capor-Hrosik, Adis Alihodzic and Milan Tuba: Web Intelligence Data Clustering by Bare Bone Fireworks Algorithm Combined with K-Means, In: Proceedings of the 8th International Conference on Web Intelligence, Mining and Semantics, WIMS '18, pp. 1-8, ACM, 2018, ISBN: 978-1-4503-5489-9, DOI: 10.1145/3227609.3227650

18. Eva Tuba, Ira Tuba, Diana Dolicanin-Djekic, Adis Alihodzic and Milan Tuba: Efficient Drone Placement for Wireless Sensor Networks Coverage by Bare Bones Fireworks Algorithm, IEEE 6th International Symposium on Digital Forensic and Security (ISDFS 2018), Antalya, Turkey, March, 22-25, 2018

19. Eva Tuba, Romana Capor-Hrosik, Adis Alihodzic, Raka Jovanovic, Milan Tuba, Chaotic elephant herding optimization algorithm, In: Proceedings of 2018 IEEE 16th World Symposium on Applied Machine Intelligence and Informatics (SAMI), Feb. 7-10, 2018, Kosice, Slovakia, ,IEEE, pp. 213-216, ISBN: 978-1-5386-4772-1, DOI: 10.1109/SAMI.2018.8324842

20. Eva Tuba, Romana Capor-Hrosik, Adis Alihodzic and Milan Tuba, Drone Placement for Optimal Coverage by Brain Storm Optimization Algorithm, Hybrid Intelligent Systems, International Conference on Health Information Science HIS 2017, vol. 734, pp. 167-176, isbn: 978-3-319-76350-7, doi: https://doi.org/10.1007/978-3-319-76351-4_17, Springer, Cham

21. Adis Alihodzic, Eva Tuba, Romana Capor-Hrosik, Edin Dolicanin, Milan Tuba, Unmanned aerial vehicle path planning problem by adjusted elephant herding optimization, In: Proceedings of the 25th Conference on Telecommunications Forum Telfor (TELFOR'17), 21-22 November 2017, Belgrade, Serbia, IEEE, pp. 804-807, DOI10.1109/TELFOR.2017.8249468

22. Adis Alihodzic, Training Feed-Forward Neural Networks Employing Improved Bat Algorithm for Digital Image Compression. In: Lirkov I., Margenov S. (eds) Large-Scale Scientific Computing. LSSC 2017. Lecture Notes in Computer Science (LNCS), vol. 10665, pp. 315-323, issn: 978-3-319-73441-5, doi:10.1007/978-3-319-73441-5_33, Springer, Cham

23. Eva Tuba, Adis Alihodžić, Milan Tuba, Multilevel image thresholding using elephant herding optimization algorithm, In: Proceedings of 2017 14th International Conference on Engineering of Modern Electric Systems (EMES), 1-2 June, 2017, Oradea, Romania, IEEE, ISBN: 978-1-5090-6073-3, DOI: 10.1109/EMES.2017.7980424

24. Adis Alihodžić, Eva Tuba, Milan Tuba, An Upgraded Bat Algorithm for Tuning Extreme Learning Machines for Data Classification, In: Proceedings of the Conference: the Genetic and Evolutionary Computation Conference Companion, GECCO '17 Companion, Berlin, Germany, July, 2017, pp. 125-126, DOI: 10.1145/3067695.3076088

25. Viktor Tuba, Adis Alihodžić, Milan Tuba, Multi-Objective RFID Network Planning with Probabilistic Coverage Model by Guided Fireworks Algorithm, In: Proceedings of 10th International Symposium on Advanced Topics in Electrical Engineering (ATEE), 23-25 March, 2017, Bucharest, Romania, IEEE, ISBN: 978-1-5090-5160-1/17/$31.00, DOI: 10.1109/ATEE.2017.7905125

26. Adis Alihodžić, Fireworks Algorithm with New Feasibility-Rules in Solving UAV Path Planning, In: Proceedings of the 2016 International Conference on Soft Computing and Machine Intelligence (ISCMI 2016), November 23-25, 2016, Dubai, UAE, IEEE and INNS-India Regional Chapter, pp. 53-57, ISBN-13: 978-1-5090-3696-7

27. Milan Tuba and Nebojsa Bacanin and Adis Alihodzic, Multilevel Image Thresholding by Fireworks Algorithm, In: Proceedings of the 25th International Conference Radioelektronika, April, 21-23, 2015, Pardubice, Czech Republic, IEEE & Čes, pp. 326-330, isbn: 978-1-4799-8117-5

28. Milan Tuba and Nebojsa Bacanin and Adis Alihodzic, Multilevel Image Thresholding by Fireworks Algorithm, In: Proceedings of the 25th International Conference Radioelektronika, April, 21-23, 2015, Pardubice, Czech Republic, IEEE & Čes, pp. 326-330, isbn: 978-1-4799-8117-5

29. Adis Alihodzic and Milan Tuba, Improved Bat Algorithm Applied to Multilevel Image Thresholding, The Scientific World Journal, special issue Computational Intelligence and Metaheuristic Algorithms with Applications, 2014, vol. 2014 (2014), no. Article ID 176718, p. 16, 10.1155/2014/176718

30. Milan Tuba and Adis Alihodzic and Nebojsa Bacanin, Cuckoo Search and Bat Algorithm Applied to Training Feed-Forward Neural Networks, Studies in Computational Intelligence, 2014, vol. 585/2015, pp. 139-162, issn: 1860-949X, doi: 10.1007/978-3-319-13826-8_8

31. Adis Alihodzic and Milan Tuba, Improved Hybridized Bat Algorithm for Global Numerical Optimization, In: Proceedings of the 16th IEEE International Conference on Computer Modelling and Simulation (UKSim-AMSS '14), March 26-28, 2014, Cambridge, UK, IEEE, pp. 57-62, isbn: 978-1-4799-4923-6, doi: 10.1109/UKSim.2014.97

32. Milan Tuba and Nebojsa Bacanin and Adis Alihodzic, Firefly algorithm for multi-objective RFID network planning problem, In: Proceedings of the 22nd Conference on Telecommunications Forum Telfor (TELFOR'14), November 25-27 2014, Belgrade, Serbia, IEEE, pp. 95-98, isbn: 978-1-4799-6190-0, doi: 10.1109/TELFOR.2014.7034365

33. Adis Alihodzic and Milan Tuba, Bat Algorithm (BA) for Image Thresholding, In: Proceedings of the 12th International Conference on Signal Processing (SIP '13), Septembar 17-19, 2013, Baltimore, MD, USA, WSEAS, pp. 364-369, isbn: 978-960-474-330-8, http://www.wseas.us/e-library/conferences/2013/Baltimore/TESIMI/TESIMI-50.pdf

34. Adis Alihodzic and Milan Tuba, Framework for Bat Algorithm Optimization Metaheuristic, In: Proceedings of the 4th International Conference on Bioscience and Bioinformatics (ICBB '13), August 27-29, 2013, Chania, Crete Island, Greece, WSEAS, pp. 157-162, isbn: 978-960-474-326-1, http://www.wseas.us/e-library/conferences/2013/ Chania /BIOMED/BIOMED-25.pdf

35. Capor-Hrošik, R., Alihdožić, A., Tuba, M., „Firefly Algorithm for Constrained Optimization Problems", 12th International Conference on Signal Processing (SIP '13), Baltimore, MD, USA, September 17-19, 2013.

36. Adis Alihodzic, Nedzad Dukic, Comparisons of algorithms for image reconstruction in the plane: C with MEX vs. MATLAB, Technics Technologies Education Management (TTEM), 2013, vol. 8, no. 4, issn: 1840-1503, e-ISSN: 1986-809X

37. Alihodzić, A., Dukić, N., „Comparisons of Algorithms for Dd Medical Image Reconstruction and Filtering", *Arhivska praksa, 2013*.

38. N. Dukic, A. Alihodzic. Fuzzy formulas in data modeling, Mathematica Balkanica 2013.

39. Almir Alihodžić and Dževad Zečić and Dejan Erić and Adis Alihodžić, Mogućnost primjene savremene portfolio teorije na tržištu kapitala Bosne i Hercegovine, Business Development Conference 2010, 12 November, 2010, Ekonomski fakultet, CIP i BSC, Zenica, pp. 199-213, issn: 1840-4006.

CONFERENCE PRESENTATIONS

1. Adis Alihodzic, Damir Hasic, Elmedin Selmanovic, An Effective Guided Fireworks Algorithm for Solving UCAV Path Planning Problem, 9th International Conference Numerical Methods and Applications (NMA2018), August 20 - 24, 2018, Borovets

2. Eva Tuba, Romana Capor-Hrosik, Adis Aihodzic, Marko Beko, Raka Jovanovic: Moth Search Algorithm for Bound Constrained Optimization Problems, 5th International Conference Modelling and Development of Intelligent Systems (MDIS 2017), Sibiu, Romania, June, 23-25, 2018, pp. 82-91

3. Adis Alihodžić, Application of Metaheuristics to Fractal Image Compression, BMSO, Sarajevo, July, 12-14, Department of mathematics, Faculty of Science, University of Sarajevo, 2018.

4. Alihodzić, A., Tuba, M., "Improved Hybridized Bat Algorithm for Global Numerical Optimization", IEEE, 2014.

5. Alihodzić, A., Tuba, M., „Bat Algorithm for Image Thresholding", 12th International Conference on Signal Processing (SIP '13), Baltimore, MD, USA, September 17-19, 2013.

6. Capor-Hrošik, R., Alihdožić, A., Tuba, M., „Firefly Algorithm for Constrained Optimization Problems", 12th International Conference on Signal Processing (SIP '13), Baltimore, MD, USA, September 17-19, 2013.

7. Alihodzić, A., Tuba, M., „Framework for Bat Algorithm Optimization Metaheuristic", 4th International Conference on Bioscience and Bioinformatics (ICBB '13), Chania, Crete Island, Greece, August 27-29, 2013.

8. N. Dukic, A. Alihodzić, "Mathematical Conference (MICOM)", Sarajevo, 2012.

9. Alihodzic, A., Alihodzić, A., "The possibility of application of modern portfolio theories in the capital market of Bosnia and Herzegovina", Zenica, November 2010.

TEACHING EXPERIENCE

Faculty of Mathematics
Assistant Professor, **Department of Mathematics**, University of Sarajevo

- Computer systems
- Programming II
- Computational Geometry
- Neural networks
- Metaheuristics
- Databases
- Mathematical modelling
- Image Processing
- Web programming
- Advanced databases

Faculty of Mathematics
Teaching Assistant, **Department of Mathematics**, University of Sarajevo

- Computer Graphics
- Computational Geometry
- Artificial intelligence
- Operating Systems
- Databases
- Mathematical modelling
- Computer Networking
- Image Processing
- Fuzzy Systems And Neural Networks
- The Web And Network Programming

Faculty of Mechanical Engineering

Teaching Assistant, **Defense Technologies Department**, University of Sarajevo

- Assisted with Programming, I course
- Assisted with Expert Systems and Knowledge Base course;

RESEARCH EXPERIENCE

Faculty of Mathematics, University of Skopje

- *Participated in the Ph.D. course: Data Structures and High-Performance Computing, which took place in Skopje from 7.11.2011 to 3.12.2012*

Faculty of Mathematics, University of Shkodra

- *Participated in courses: Mathematical Modeling I and Mathematical Modeling II, which took place in Shkodra from 04.07.2010 to 30.07.2010*

Faculty of Mathematics, University of Sarajevo

- *Member of the scientific team on a research project, "Fuzzy relational databases and fuzzy formulas in the field of artificial intelligence" under the guidance doc. Dr. Nedžad Dukic, Sarajevo, 2010*
- *Participated in several seminars that were held on the theme: "Micro-Programming," Sarajevo, 2009*

OTHER EXPERIENCE

Conference Committees

- *He was a program Committee member to the 2016 3rd Intl. Conference on Soft Computing & Machine Intelligence (ISCMI 2016)*

Software Engineer, Integrated Business Solutions

- *He was designed and implemented the "Free SMS and Voice Service" for Android mobile devices, February 2012*

IT Support, Faculty of Mathematics, University of Graz

- *Participated in a seminar in mathematical modeling on the subject: Application of IT technology in mathematical modeling, which was held from 07.09.2009 to 11.09.2009 in Graz*

Balkan Mathematical Olympiad, Faculty of Mathematics, University of Sarajevo

- *Participated in the organization "Balkan Mathematical Olympiad" which took place in Sarajevo on 25-30 June 2009 year*

COMPUTER SKILLS

Programming Languages: Fortran, C, CUDA, C++, Java, C#, Matlab, ABAP, PL/SQL, Pascal, Perl, Clipper, Lotus 1-2-3, Delphi, Visual Basic, PHP, ASP, HTML, Javascript, Mel-Script, Ajax and so on.

APIs and Frameworks: DirectX, OpenCV, Android, Play, Node.js

Databases: DBASE, PARADOX, FOXPRO, ACCESS, SQL, MYSQL, ORACLE.

Algorithm Development Environments: VISUAL STUDIO 2013, MATLAB, MATHEMATICA.

Software Packages: Microsoft Office, Corel Draw, Adobe Photoshop, Maya, 3D Studio Max, MotionBuilder, Photoshop, Illustrator, After Effects, Nuke, Poser Pro, Unity, Auto CAD, QuarkXPress, Latex and so on.

Operating Systems: Dos, Unix, Minix, FreeBSD, Linux (all versions), Windows (all versions).

Algorithm Implementations: FFT, DWT, Fortune's algorithm, Optical Flow, Mean Shift Image Segmentation, Poisson Image Editing, Genetic algorithm (GA), Differential Evolution (DE) Algorithm, Particle Swarm Optimization (PSO) Algorithm, Ant Colony Optimization (ACO), Artificial Bee Colony (ABC) Algorithm, Harmony Search (HS) Algorithm, Firefly Algorithm (FFA), Bat Algorithm (BA), Cuckoo Search (CS) Algorithm, Fireworks Algorithm (FA) and so on.

REVIEWER

The Scientific World Journal 2014

International Journal of Innovative Computing and Applications 2016

Journal of the Operational Research Society of India 2016

Neural Computing & Applications

FOREIGN LANGUAGE SKILLS

Languages:

- English – "native" reading and writing, "near native" listening and conversation
- Russian – "good" reading and writing, "basic" listening and conversation
- German – "basic" reading and writing, listening and conversation

HONORS & AWARDS

Fellowship, 2003/2004