# Nasser Aghazadeh

*Professor of Mathematics*

*Department of Mathematics*
*Izmir Institute of Technology*
*Izmir 35430, Türkiye*
*(+90) 232 750 77 82*
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nsraghazadeh@gmail.com


Links to my researcher profiles:

| | |
|---|---|
| Web of Science™ | `https://www.webofscience.com/wos/author/record/Q-6551-2019` |
| Scopus | `https://www.scopus.com/authid/detail.uri?authorId=8937839000` |
| ORCİD | `https://orcid.org/0000-0003-2705-8942` |
| Google Scholar | `https://scholar.google.com/citations?user=Tk6RzyAAAAAJ` |

## Education

**PhD** September 23, 2003 – July 31, 2007

Doctor of Philosophy in Applied Mathematics
Iran University of Science and Technology, Tehran, Iran
**Dissertation**: Numerical Solution of Integral Equations of the First and Second Kind by Using Wavelets
**Committee**: Khosrow Maleknejad (Supervisor), Mehdi Dehghan, Abdullah Shidfar, Jalil Rashidinia, Abolghasem Emamzadeh, Rahman Farnoosh

**MSc** September 23, 1998 – November 29, 2000

Master of Science in Applied Mathematics
Iran University of Science and Technology, Tehran, Iran
**Thesis**: Numerical solution for a class of second kind integral equations using Taylor-series expansion method
**Committee**: Khosrow Maleknejad (Supervisor), Mehdi Dehghan, Abolghasem Emamzadeh

**BSc** September 24, 1994 – September 13, 1998

Bachelor of Science in Applied Mathematics
University of Tabriz, Tabriz, Iran

## Current Research Interests

My research focuses on the following topics:

- Wavelet analysis and its applications
- Numerical solution of differential equations
- Mathematics for real-world applications
- Mathematical image processing, in particular, image segmentation, medical image processing

## Journal Papers

[47] **Treatment of fractional Burgers-Fisher equation Using Taylor wavelets**, *Z.H.M. Alkhafaji, A. Khani, and N. Aghazadeh*, Computational Methods for Differential Equations
To be published

[46] **FW-S3KIFCM: Feature Weighted Safe-Semi-Supervised Kernel-Based Intuitionistic Fuzzy C-Means Clustering Method**, *Shirin Khezri, Nasser Aghazadeh, Mahdi Hashemzadeh, Amin Golzari Oskouei*, Fuzzy Information and Engineering 17(2) (2025) 1-35,
10.26599/FIE.2025.9270061

[45] **On the existence of solution to a class of nonlinear functional integral equations with two variables**, *Amar Deep, Mohsen Rabbani, Shubham Kumar, Nasser Aghazadeh*, International Journal of Nonlinear Analysis and Applications,
10.22075/IJNAA.2024.34255.5112

[44] **An efficient Chebyshev wavelet collocation technique for the time-fractional Camassa-Holm equation**, *Nasser Aghazadeh*, International Journal of Wavelets, Multiresolution and Information Processing,
10.1142/S0219691325500031

[43] **An effective Legendre wavelet technique for the time-fractional Fisher equation**, *F. İdiz, G. Tanoğlu, N. Aghazadeh, A. Mohammadi*, Computational Methods for Differential Equations,
10.22034/cmde.2025.63725.2849

[42] **A Finite Difference Approach to Solve the Nonlinear Model of Electro-Osmotic Flow in Nano-Channels**, *N. Aghazadeh, K. Rabbani, S.H. Taheri Otaghsara, M. Rabbani*, Computational Methods for Differential Equations, 13(3) (2025) 1-8,
10.22034/cmde.2024.62349.2742

[41] **A Chebyshev Wavelet Approach to the Generalized Time-Fractional Burgers-Fisher Equation**, *Nasser Aghazadeh*, Computational Methods for Differential Equations,
10.22034/cmde.2024.61020.2617

[40] **Topology degree results on a G—ABC implicit fractional differential equation under three-point boundary conditions**, *Miguel Vivas-Cortez, Shahram Rezapour, Sabri T.M. Thabet, Ava Sh. Rafeeq, Imed Kedim, Nasser Aghazadeh*, PLoS ONE 19(7): e0300590 (2024),
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[39] **An iris segmentation scheme based on bendlets**, *Nasser Aghazadeh, Mandana Abbasi, Parisa Noras*, Signal, Image and Video Processing 18 (2024) 2683–2693,
10.1007/s11760-023-02940-1

[38] **A numerical method based on Legendre wavelet and quasilinearization technique for fractional Lane-Emden type equations**, *Fatih İdiz, Gamze Tanoğlu, Nasser Aghazadeh*, Numerical Algorithms 95 (2024) 181–206,
10.1007/s11075-023-01568-z

[37] **Taylor wavelets collocation technique for solving fractional nonlinear singular PDEs**, *Nasser Aghazadeh, Amir Mohammadi, Gamze Tanoglu*, Mathematical Sciences 18(1) (2024) 41–54,
10.1007/s40096-022-00483-z

[36] **Lung Parenchyma Segmentation from CT Images with a Fully Automatic Method**, *Reza Mousavi Moghaddam, Nasser Aghazadeh*, Multimedia Tools and Applications 83 (2024) 14235–14257,
10.1007/s11042-023-16040-2

[35] **Constructing multiwavelet-based shearlets and using them for automatic segmentation of noisy brain images affected by COVID-19**, *Nasser Aghazadeh, Paria Moradi, Parisa Noras*, Journal of Medical Signals & Sensors 13(3) (2023) 183-190,
10.4103/jmss.jmss_29_22

[34] **Existence of the solution via an iterative algorithm for 2D fractional integral equations including an industrial application**, *Rahul, Nihar Kumar Mahato, Mohsen Rabbani, Nasser Aghazadeh*, Journal of Integral Equations and Applications 35(4) (2023) 459-472,
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[33] **An automatic MRI brain image segmentation technique using edge-region-based level set**, *Nasser Aghazadeh, Paria Moradi, Giovanna Castellano, Parisa Noras*, Journal of Supercomputing 79 (2023) 7337–7359,
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[32] **On time fractional modified Camassa-Holm and Degasperis-Procesi equations by using the Haar wavelet iteration method**, *Nasser Aghazadeh, Ghader Ahmadnezhad, Shahram Rezapour*, Iranian Journal of Mathematical Sciences and Informatics 18(1) (2023) 55-71,
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[30] **Existence of Solution of Functional Integral Equations by Measure of Noncompactness and Sinc Interpolation to Find Solution**, *Mohsen Rabbani, Reza Arab, Bipan Hazarika and Nasser Aghazadeh*, Fixed Point Theory 23(1) (2022) 331-350,
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[29] **Solving partial fractional differential equations by using the Laguerre wavelet-Adomian method**, *Nasser Aghazadeh, Amir Mohammadi, Ghader Ahmadnezhad, Shahram Rezapour*, Advances in Difference Equations 2021 2021:231,
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[28] **A three-stage shearlet-based algorithm for vessel segmentation in medical imaging**, *Mahdi Mirzafam, Nasser Aghazadeh*, Pattern Analysis and Applications 24(2) (2021) 591-610,
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[27] **Comparison of lumbar segmental stabilization and general exercises on clinical and radiologic criteria in grade-I spondylolisthesis patients: A double-blind randomized controlled trial**, *Mohammadimajd, Elaheh; Lotfinia, Iraj; Salahzadeh, Zahra; Aghazadeh, Nasser; et al*, Physiotherapy Research International 25(3) 2020; e1843,
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[26] **Wavelet-Picard iterative method for solving singular fractional nonlinear partial differential equations with initial and boundary conditions**, *Amir Mohammadi, Nasser Aghazadeh, Shahram Rezapour*, Computational Methods for Differential Equations 8(4) (2020) 610-638,
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[25] **Haar wavelet iteration method for solving time fractional Fisher's equation**, *Ghader Ahmadnezhad, Nasser Aghazadeh, Shahram Rezapour*, Computational Methods for Differential Equations 8(3) (2020) 505-522,
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[24] **Newfangled Procedures Using X-ray to Determine the Cobb Angle in Patients with Scoliosis: An Updated Systematic Review**, *Moftian, Nazila; Hachesu, Peyman Rezaei; Pourfeizi, Hojjat Hossein; Samad-Soltani, Taha; Aghazadeh, Nasser; et al*, Current Medical Imaging 15(10) (2019) 922-932,
10.2174/1573405614666180531073300

[23] **Haar wavelet collocation method for solving singular and nonlinear fractional time-dependent Emden-Fowler equations with initial and boundary conditions**, *Amir Mohammadi, Nasser Aghazadeh, Shahram Rezapour*, Mathematical Sciences 13(3) (2019) 255-265,
10.1007/S40096-019-00295-8

[22] **Joint Image Deconvolution and Separation Using Mixed Dictionaries**, *Siadat, Medya; Aghazadeh, Nasser; Akbarifard, Farideh; Brismar, Hjalmar; Öktem Ozan*, IEEE Transactions on Image Processing 28(8) (2019) 3936-3945,
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[21] **Existence Results and Numerical Solutions for a Multi-term Fractional Integro-differential Equation**, *Aghazadeh, N.; Ravash, E.; Rezapour, Sh.*, Kragujevac Journal of Mathematics 43(3) (2019) 413–426,
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[20] **Directional Schemes for Edge Detection Based on B-spline Wavelets**, *Noras, Parisa; Aghazadeh, Nasser*, Circuits Systems and Signal Processing (2018) 37(9) 3973-3994,
10.1007/S00034-018-0753-4

[19] **Reordering for improving global Arnoldi-Tikhonov method in image restoration problems**, *Siadat, Medya; Aghazadeh, Nasser; Öktem, Ozan*, Signal Image and Video Processing (2018) 12(3) 497-504,
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[18] **A multiphase segmentation method based on binary segmentation method for Gaussian noisy image**, *Ladan Sharafyan Cigaroudy; Nasser Aghazadeh*, Signal Image and Video Processing (2017) 11(5) 825-831,
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[17] **A New Multiphase Segmentation Method Using Eigenvectors Based on K Real Numbers**, *Ladan Sharafyan Cigaroudy; Nasser Aghazadeh*, Circuits Systems and Signal Processing 36(4) (2017) 1445-1454,
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[16] **A restoration-segmentation algorithm based on flexible Arnoldi-Tikhonov method and Curvelet denoising**, *Aghazadeh, Nasser; Akbarifard, Farideh; Cigaroudy, Ladan Sharafyan*, Signal Image and Video Processing (2016) 10(5) 935–942,
10.1007/S11760-015-0843-8

[15] **Combining Compact Finite Difference Schemes with Filters for Image Restoration**, *N. Aghazadeh, F. Akbarifard*, Computational Mathematics and Modeling (2016) 27(2) 206-216,
10.1007/s10598-016-9315-4

[14] **Convergence of an Approach for Solving Fredholm Functional Integral Equations**, *Nasser Aghazadeh; Somayeh Fathi*, Iranian Journal of Mathematical Sciences and Informatics (2016) 11(1) 35-46,
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[13] **Two-parameter generalized Hermitian and skew-Hermitian splitting iteration method**, *Nasser Aghazadeh; Davod Khojasteh Salkuyeh; Mehdi Bastani*, International Journal of Computer Mathematics 93(7) (2016) 1119–1139,
10.1080/00207160.2015.1019873

[12] **Generalized Hermitian and skew-Hermitian splitting iterative method for image restoration**, *Nasser Aghazadeh; Mehdi Bastani; Davod Khojasteh Salkuyeh*, Applied Mathematical Modelling 39(20) (2015) 6126-6138,
10.1016/J.APM.2015.01.042

[11] **Projection Methods for Solving Urysohn Integral Equations with Multiwavelet Bases**, *Nasser Aghazadeh, Medya Siadat*, Malaysian Journal of Mathematical Sciences 9(1) (2015) 111-125,
https://mjms.upm.edu.my/lihatmakalah.php?kod=2015/January/9/1/111-125

[10] **The Legendre Wavelet Method for Solving Singular Integro-differential Equations**, *Nasser Aghazadeh, Yaser Gholizade atani, Parisa Noras*, Computational Methods for Differential Equations (2014) 2(2) 62-68,
https://cmde.tabrizu.ac.ir/article_1684.html

[09] **Solving nonlinear two-dimensional Volterra integro-differential equations by block-pulse functions**, *Nasser Aghazadeh; Amir Ahmad Khajehnasiri*, Mathematical Sciences, 7(1) 1-6 (2013),
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[08] **Aitken extrapolation and epsilon algorithm for an accelerated solution of weakly singular nonlinear Volterra integral equations**, *H Mesgarani; N Aghazadeh; P Parmour*, Physica Scripta 81(2) (2010) 025006 (7pp),
10.1088/0031-8949/81/02/025006

[07] **A wavelet Petrov-Galerkin method for solving integro-differential equations**, *K. Maleknejad; M. Rabbani; N. Aghazadeh; M. Karami*, International Journal of Computer Mathematics 86(9), 1572-1590, 2009,
doi 10.1080/00207160801923056

[06] **Computational projection methods for solving Fredholm integral equation**, *Applied Mathematics and Computation 191(1) (2007), 140-143*, M. Rabbani; K. Maleknejad; N. Aghazadeh; R. Mollapourasl,
doi 10.1016/J.AMC.2007.02.071

[05] **Numerical computational solution of the Volterra integral equations system of the second kind by using an expansion method**, *M. Rabbani; K. Maleknejad; N. Aghazadeh*, Applied Mathematics and Computation 187(2) (2007) 1143–1146,
doi 10.1016/J.AMC.2006.09.012

[04] **Numerical solution of Fredholm integral equation of the first kind with collocation method and estimation of error bound**, *K. Maleknejad; N. Aghazadeh; R. Mollapourasl*, Applied Mathematics and Computation 179(1) (2006) 352–359,
doi 10.1016/J.AMC.2005.11.159

[03] **Numerical solution of second kind Fredholm integral equations system by using a Taylor-series expansion method**, *K. Maleknejad; N. Aghazadeh; M. Rabbani*, Applied Mathematics and Computation 175(2) (2006) 1229–1234,
doi 10.1016/J.AMC.2005.08.039

[02] **Numerical solution of Hammerstein equations via an interpolation method**, *K. Maleknejad; M. Karami; N. Aghazadeh*, Applied Mathematics and Computation 168(1) (2005) 141–145,
doi 10.1016/J.AMC.2004.08.031

[01] **Numerical solution of Volterra integral equations of the second kind with convolution kernel by using Taylor-series expansion method**, *K. Maleknejad; N. Aghazadeh*, Applied Mathematics and Computation 161(3) (2005) 915–922,
doi 10.1016/J.AMC.2003.12.075

## Conference Papers

[2015] **A Binary Segmentation Algorithm Based on Shearlet Transform and Eigenvectors**, *Ladan Sharafyan Cigaroudy; Nasser Aghazadeh*, 2nd International Conference on Pattern Recognition and Image Analysis (IPRIA), Rasht, Iran, 11 – 12 March 2015
10.1109/PRIA.2015.7161618

[2015] **An Edge Detection Scheme with Legendre Multiwavelets**, *Nasser Aghazadeh, Yaser Gholizade Atani and Parisa Noras*, Proceeding of the 46th Annual Iranian Mathematics Conference (AIMC46), 1299-1302, 25-28 August 2015, Yazd University, Yazd, Iran

[2014] **On the generalized Hermitian and Skew-Hermitian Splitting Iterative Method for Image Restoration**, *Mehdi Bastani and Nasser Aghazadeh*, Caucasian Mathematics Conference, CMC I, Tbilisi, Georgia, September 5 and 6, 2014

[2014] **Edge Detection Based on Wavelet and Direction of Gradient**, *Yaser Gholizade atani and Nasser Aghazadeh*, Caucasian Mathematics Conference, CMC I, Tbilisi, Georgia, September 5 and 6, 2014

[2014] **GHSS iterative method for image restoration**, *Mehdi Bastani and Nasser Aghazadeh*, Proceeding of the 43rd Workshop on Electrical and Computer Engineering Subfields, 22-23 August 2014, Koc University, Istanbul, Turkey, 190-193

[2012] **An application of a compact finite difference method in image denoising**, *Mehdi Bastani, Farideh Akbarifard and Nasser Aghazadeh*, Proceeding of the 43rd Annual Iranian Mathematics Conference, University of Tabriz, Tabriz, Iran, 27-30 August 2012, 534-537

[2012] **Solving high-order nonlinear Volterra integro-differential equations by using block-pulse functions**, *Nasser Aghazadeh and Amir Ahmad Khajehnasiri*, Proceeding of the 43rd Annual Iranian Mathematics Conference, University of Tabriz, Tabriz, Iran, 27-30 August 2012, 1284-1287

[2012] **Galerkin Method for Solving Functional Integral Equations of Mixed Type**, *Nasser Aghazadeh and Medya Siadat*, Proceeding of the 2nd International Conference on Mathematical Applications in Engineering (ICMAE2012), 3-5 July 2012, Kuala Lumpur, Malaysia, 342-345

[2011] **Solving Nonlinear Fredholm-Hammerstein Integral Equations by Using Cardinal Legendre Functions**, *Nasser Aghazadeh and Mehrdad Lakestani*, 4th Congress of the Turkic World Mathematical Society (TWMS) Baku, Azerbaijan, 1-3 July, 2011

[2009] **Solving Nonlinear Hammerstein Integral Equations by Using B-spline Scaling Functions**, *Khosrow Maleknejad, Nasser Aghazadeh*, Proceedings of the World Congress on Engineering 2009 Vol I, WCE 2009, July 1 - 3, 2009, London, UK,
https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=e5811e45d3fdafdb6b39cd7b8a4f4f3a25c6861e

[2008] **Using B-Spline Scaling Functions for Solving Integro-Differential Equations**, *Nasser Aghazadeh*, Proceedings of the 14th Conference on Difference Equations and Applications (ICDEA2008), July 21-25, 2008, Istanbul, Turkey

[2007] **Using Quadratic B-Spline Scaling Functions for Solving Integral Equations**, *Nasser Aghazadeh and Khosrow Maleknejad*, International Conference, Dynamical Systems and Applications, July 1-6, 2007, Selcuk, Kusadasi, Izmir, Turkey

[2006] **Treatment of the First Kind Integral Equation by Projection Method with Wavelet Basis**, *Nasser Aghazadeh and Khosrow Maleknejad*, International Congress of Mathematicians, 22-30 August 2006, Madrid, Spain

## Other peer-reviewed articles

[10] **Blood Vessels Extraction from MRA Images by a Region Growing Algorithm Based on a New Nonlinear Contrast Stretching Function and Shearlets Frame** , *Mehdi Mirzafam; Nasser Aghazadeh*, Journal of Machine Vision and Image Processing 8(2) (2021) 85-99 [in Persian],
https://jmvip.sinaweb.net/article_122739_en.html

[9] **New denoising and edge detection scheme based on rationalized Haar functions**, *Nasser Aghazadeh; Parisa Noras*, Journal of Machine Vision and Image Processing 5(1) (2018) 99-111 [in Persian],
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[8] **Numerical solutions for a k-dimensional system of fractional differential equations by using Alpert's multiwavelets**, *N. Aghazadeh, E. Ravash and Sh. Rezapour*, J. Adv. Math. Stud. 10(3) (2017) 295-313,
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[7] **Edge detection with Hessian matrix property based on wavelet transform**, *N. Aghazadeh, Y. Gholizade Atani*, Journal of Sciences, Islamic Republic of Iran 26(2) (2015) 163-170,
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[6] **Convergence of Wavelet Galerkin Method for Fredholm Integral Equation of the First Kind**, *K. Maleknejad; N. Aghazadeh*, Acta Universitatis Apulensis 41 (2015) 131-140,
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[5] **A multistep segmentation algorithm for vessel extraction in medical imaging**, *Ladan Sharafyan Cigaroudy; Nasser Aghazadeh*, ArXiv Dec 2014,
10.48550/arXiv.1412.8656

[4] **An Approach for Solving Functional Integral Equations**, *N. Aghazadeh and E. Ravash*, Acta Universitatis Apulensis 29 (2012) 347-352,
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[3] **A Modified Homotopy Perturbation Method for Solving Linear and Nonlinear Integral Equations**, *N. Aghazadeh and S. Mohammadi*, International Journal of Nonlinear Science 13(3) (2012) 308-316,
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[2] **Semiorthogonal Quadratic B-Spline Wavelet Approximation for Integral Equations**, *Mohsen Rabbani, Nasser Aghazadeh*, Mathematical Sciences Vol. 3, No. 1 (2009) 99-110,
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[1] **Solving Non-linear Fredholm Integro-differential Equations**, *N. Aghazadeh and H. Mesgarani*, World Applied Sciences Journal 7 (Special Issue for Applied Math) (2009) 50-56,
https://www.idosi.org/wasj/wasj7(am)/8.pdf

## Teaching Experiences

My years of teaching and lecturing can be divided into three periods. The current period at Izmir Institute of Technology, Izmir, Türkiye, the period at Azarbaijan Shahid Madani University, Tabriz, Iran (ASMU) and the period before ASMU.

I joined the Izmir Institute of Technology in February, 2023. Since February 2023 I have been teaching some courses at Izmir Institute of Technology. (The official teaching language is English)

| | | | |
|---|---|---|---|
| Spring 2025 | MATH255 | Differential Equations | |
| | MATH334 | Introduction to Wavalet and Applications. | |
| | MATH416 | Mathematical Research Project II | |
| | CSE502 | Numerical Methods and Scientific Programming II | Graduate |
| Fall 2024 | MATH255 | Differential Equations | |
| | MATH415 | Mathematical Research Project I | |
| | CSE501 | Numerical Methods and Scientific Programming I | Graduate |
| Spring 2024 | MATH146 | Calculus for Engineering and Science II | |
| | MSE222 | Applied Mathematics for MSE | |
| | MATH416 | Mathematical Research Project II | |
| | CSE502 | Numerical Methods and Scientific Programming II | Graduate |
| Fall 2023 | MATH255 | Differential Equations | |
| | MATH539 | Numerical Analysis | Graduate |
| | MATH415 | Mathematical Research Project I | |
| | CSE501 | Numerical Methods and Scientific Programming I | Graduate |
| Spring 2022 | MATH382 | Numerical Analysis II | |
| | MATH590 | Selected Topics in Applied Mathematics | Graduate |
| | CSE502 | Numerical Methods and Scientific Programming II | Graduate |

Fall 2022 **Visiting Professor**
Izmir Institute of Technology, Izmir, Türkiye

Before that, I was a professor at ASMU, and I taught some courses for several years.

| | | | |
|---|---|---|---|
| Spring 2022 | Math-16512414 | English for Math Students | |
| | Math-16512103 | Basics of Numerical Analysis | |
| | Math-19223108 | Wavelets and their Applications | Graduate |
| Fall 2021 | Math-19223107 | Approximation Theory | Graduate |
| | Math-19213102 | Advanced Numerical Analysis | Graduate |
| Spring 2021 | Math-19424102 | Numerical Linear Algebra and Data Mining | Graduate |
| | Math-19223108 | Wavelets and their Applications | Graduate |
| Fall 2020 | Math-19424007 | Spectral Methods | Graduate |
| | Math-19223001 | Advanced Numerical Analysis | Graduate |
| | Math-16512406 | Numerical Analysis | |
| Spring 2020 | Math-16512415 | Mathematical Research Project | |
| | Math-19223115 | Seminar | Graduate |
| | Math-19424102 | Numerical Linear Algebra and Data Mining | Graduate |
| | Math-19223108 | Wavelets and their Applications | Graduate |
| | Math-16512103 | Basics of Numerical Analysis | |
| Fall 2019 | Math-19424007 | Spectral Methods | Graduate |
| | Math-19223107 | Approximation Theory | Graduate |
| | Math-19213102 | Advanced Numerical Analysis | Graduate |
| | Math-16512406 | Numerical Analysis | |
| Spring 2019 | Math-19424102 | Numerical Linear Algebra | Graduate |
| | Math-19223108 | Wavelets and their Applications | Graduate |
| | Math-16512415 | Mathematical Research Project | |
| | Math-16512103 | Basics of Numerical Analysis | |
| Fall 2018 | Math-19424007 | Spectral Methods | Graduate |
| | Math-19223107 | Approximation Theory | Graduate |
| | Math-19223115 | Seminar | Graduate |
| | Math-19223001 | Advanced Numerical Analysis | Graduate |
| Spring 2018 | Math-19014104 | Operator Theory I | Graduate |
| | Math-19014537 | Topics in Operator Theory | Graduate |
| | Math-19223108 | Wavelets and their Applications | Graduate |

Fall 2017 **Visiting Professor**
Technische Universität Berlin, Berlin, Germany

Spring 2017 **Visiting Professor**
Technische Universität Berlin, Berlin, Germany

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|---|---|---|---|
| Fall 2016 | Math-19014015 | Advanced Linear Algebra | Graduate |
| | Math-19014104 | Operator Theory I | Graduate |
| Spring 2016 | Math-19014104 | Operator Theory I | Graduate |
| | Math-19213004 | Seminar | Graduate |
| Fall 2015 | Math-19014516 | Hyperbolic Partial Differential Equations | Graduate |
| | Math-19014524 | Ordinary and singular integral equations | Graduate |
| Spring 2015 | Math-19014106 | Special Topics in Operator Theory | Graduate |
| | Math-19213206 | Approximation Theory | Graduate |
| Fall 2014 | Math-19014524 | Ordinary and singular integral equations | Graduate |
| | Math-19113002 | Seminar | Graduate |
| | Math-19213004 | Seminar | Graduate |
| | Math-19113412 | Advanced Numerical Analysis | Graduate |
| Spring 2014 | Math-19014516 | Hyperbolic Partial Differential Equations | Graduate |
| | Math-19213004 | Seminar | Graduate |
| | Math-19213206 | Approximation Theory | Graduate |
| Fall 2013 | Math-19014524 | Ordinary and singular integral equations | Graduate |
| | Math-19213004 | Seminar | Graduate |
| | Math-19213102 | Advanced Numerical Analysis | Graduate |
| Spring 2013 | Math-19014516 | Hyperbolic Partial Differential Equations | Graduate |
| | Math-31328200 | Mathematical Research Project | |
| | Math-19113004 | Seminar | Graduate |
| | Math-19213206 | Approximation Theory | Graduate |
| Fall 2012 | Math-19213204 | Numerical Solution of Integral Equations | Graduate |
| | Math-31328200 | Mathematical Research Project | |
| | Math-19213004 | Seminar | Graduate |
| | Math-19014524 | Ordinary and singular integral equations | Graduate |
| Spring 2012 | Math-19014516 | Hyperbolic Partial Differential Equations | Graduate |
| | Math-31328200 | Mathematical Research Project | |
| | Math-19213206 | Approximation Theory | Graduate |

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| Fall 2011 | Math-31921711 | Numerical Analysis I | |
| | Math-19213204 | Numerical Solution of Integral Equations | Graduate |
| | Math-19213004 | Seminar | Graduate |
| | Math-19014524 | Ordinary and singular integral equations | Graduate |
| Spring 2011 | Math-19213102 | Advanced Numerical Analysis I | Graduate |
| | Math-31328200 | Bachelor Research Project | |
| | IT-13812003 | Differential Equations | |
| | Math-31920510 | Differential Equations | |
| Fall 2010 | Math-31328901 | Mathematics Laboratory I | |
| | Math-31921711 | Numerical Analysis I | |
| | Math-19213102 | Advanced Numerical Analysis | Graduate |
| | Math-31328200 | Mathematical Research Project | |
| | Math-19213004 | Seminar | Graduate |
| | Math-19213206 | Approximation Theory | Graduate |
| Spring 2010 | Math-31921711 | Numerical Analysis I | |
| | Math-31328200 | Mathematical Research Project | |
| | Math-19213203 | Numerical Solution of ODEs | Graduate |
| | IT-13812001 | Calculus I | |
| | Chem-33020101 | Calculus I | |
| | Math-31921210 | Basics of Computer and Programming | |
| | Math-19014524 | Ordinary and singular integral equations | Graduate |
| | Math-31920510 | Differential Equations | |
| Fall 2009 | Math-31328901 | Mathematics Laboratory I | |
| | Math-31224012 | Numerical Analysis II (Two Sections) | |
| | Phys -32220050 | Differential Equations | |
| | Chem-33020300 | Differential Equations | |
| | Math-19213206 | Approximation Theory | Graduate |
| Spring 2009 | Math-31328901 | Mathematics Laboratory I (Three Sections) | |
| | Math-31921711 | Numerical Analysis I | |
| | Math-19213204 | Numerical Solution of Integral Equations | Graduate |
| | Math-19213206 | Approximation Theory | Graduate |
| Fall 2008 | Math-31328901 | Mathematics Laboratory I (Two Sections) | |
| | Math-31921711 | Numerical Analysis I | |
| | Math-19213102 | Advanced Numerical Analysis | Graduate |
| | Math-19213204 | Numerical Solution of Integral Equations | Graduate |
| | Civil -14522600 | Numerical Computation | |

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|---|---|---|
| Spring 2008 | Math-31920510 | Differential Equations (Two Sections) |
| | Math-31921210 | Basics of Computer and Programming (Two Sections) |
| | Math-31328901 | Mathematics Laboratory I |
| Fall 2007 | Civil -14522600 | Numerical Computation (Two Sections) |
| | Chem-33020300 | Differential Equations |
| | Mech-18822001 | Calculus I |

From 2004 till 2007, exactly before securing a position at ASMU, I had been teaching at the following universities as a part-time lecturer:

2008-2009 **Part-time lecturer**, *Payame Noor University, Tabriz, Iran*
Advanced Numerical Analysis graduate

2005-2007 **Part-time Lecturer**, *Islamic Azad University, South Tehran Branch, Tehran, Iran*
Numerical Computation
Calculus I
Differential Equations

2005-2007 **Part-time Lecturer**, *Shahid Rajaee University, Tehran, Iran*
Numerical Computation
Numerical Analysis
Calculus I
Mathematics Laboratory

2004-2006 **Part-time Lecturer**, *University of Applied Science and Technology, Tehran, Iran*
Numerical Computation
Calculus I
Computer Laboratory
Basics of Computer

2004-2005 **Part-time Lecturer**, *Iran University of Science and Technology, Tehran, Iran*
Numerical Computation

## Supervised PhD Students

PhD candidate **Shirin Khezri**, *Segmentation of Medical Images Using a Fuzzy Clustering Method based on Weighting and Mean Membership Linking Using Wavelet-Contourlet Transform*
2nd-superviser: Dr. Mehdi Hashemzadeh, Co-adviser: Dr. Parisa Noras, Dr. Amin Golzari Oskouei

PhD candidate **Arezu Najafi Moghaddam**, *Medical image segmentation using a fuzzy clustering method based on feature weighting and cluster weighting using curvelet transformation*
2nd-superviser: Dr. Mehdi Hashemzadeh, Co-adviser: Dr. Parisa Noras, Dr. Amin Golzari Oskouei

PhD candidate **Leila Pourreza Bavil**, *Accurate diagnosis of breast tissue masses in mammographic images using fuzzy logic in image quality enhancement, image segmentation and lesions border detection processes*
2nd-superviser: Dr. Mehdi Hashemzadeh

PhD candidate **Roya Roshan**, *An image compression method based on combining of deep learning and classic methods*
2nd-superviser: Dr. Nasser Farajzadeh, Co-adviser: Dr. Parisa Noras

PhD candidate **Ruhollah Moatemedi**, *Segmentation of Mammographic Images Using Fractional Hessian Matrix and Fractional Order Derivative Based Active Contour Model*
2nd-superviser: Dr. Mehdi Hashemzadeh, Co-adviser: Dr. Parisa Noras

PhD candidate **Abdollah Sarafraz**, *A Geometric Method for Degraded Medical Image Inpainting by Using Digital Shearlet Transform*
2nd-superviser: Dr. Mehdi Hashemzadeh, Co-adviser: Dr. Parisa Noras

PhD candidate **Sevda Moghadasi Ghamchi**, *The Investigation of Multiresolution Approaches for Chest X-ray Images Based COVID-19 Detection*
Co-adviser: Dr. Parisa Noras

February 04, 2024 **Mandana Abbassi**, *Iris Detection Based on Contour Features Extraction by Bendlets*
Co-adviser: Dr. Parisa Noras

July 18, 2023 **Reza Mousavi Moghadam**, *Extracting the Target Regions of Pulmonary CT-Scan Images Using Regional-Based Active Contours*
Co-adviser: Professor Hadi Seyedarabi (University of Tabriz, Tabriz, Iran)

March 14, 2023 **Paria Moradi**, *Brain MRI Image Segmentation with Energy Function based on region*
Co-adviser: Professor Giovanna Castellano (University of Bari, Italy), Dr. Parisa Noras

October 13, 2020 **Mehdi Mirzafam**, *Segmentation of Magnetic Resonance Angiography Images for Extraction of Blood Vessels Based on Shearlets*
Co-adviser: Professor M. Poureisa (Tabriz University of Medical Sciences, Tabriz, Iran)

September 17, 2019 **Parisa Noras**, *Edge Detection of Medical Images Based on Shearlets*

September 17, 2019 **Ghader Ahmadnezhad**, *Numerical solutions of fractional Camassa-Holm and Fisher equations by using wavelet*
2nd-superviser: Professor Shahram Rezapour

September 17, 2019 **Amir Mohammadi**, *Numerical solution of some singular fractional partial differential equations by using wavelet*
2nd-superviser: Professor Shahram Rezapour

June 19, 2018 **Elahe Ravash**, *Analysis and treatment of fractional differential and integro-differential equations with multiwavelets method*
Co-adviser: Professor Shahram Rezapour

October 4, 2017 **Medya Siadat**, *Applications of mixed representation systems in image separation*
Co-adviser: Professor Ozan Öktem (KTH Royal Institute of Technology, SE-100 44, Stockholm, Sweden)

January 24, 2017 **Yaser Gholizade atani**, *Edge detection using B-spline wavelets*

July 5, 2016 **Ladan Sharafyan Cigaroudy**, *Image segmentation with some mathematical methods for extraction of target objects*

September 22, 2015 **Farideh Akbarifard**, *Application of some numerical methods in image restoration with different boundary conditions*

April 15, 2015 **Mehdi Bastani**, *Image restoration by solving linear system of equations based on HSS iterative method*
Co-adviser: Prof. D. Khojasteh Salkuyeh (University of Guilan, Rasht, Iran)

## Supervised Master Students

September 01, 2024 **Amin Hassanzadeh**, *Automated Mitosis Detection in Histopathology Based on Non-Gaussian Modeling of Complex Wavelet Coefficients*

February 04, 2024 **Faranak Forough Bagheri**, *Automatic Segmentation of Brain Tumors in Magnetic Resonance Imaging by Integrating Anisotropic Filtering, Level Set Methods and Convolutional Neural Networks*

January 15, 2023 **Elham Mahinjafarzadeh**, *Automatic and fast segmentation of medical images based on level set method using fuzzy clustering and split Bergman method*

September 9, 2020 **Nader Belalzadeh**, *Multiscale Edge Detection Using First-Order Derivative of Anisotropic Gaussian Kernels*

October 22, 2019 **Arezu Najafi Moghadam**, *Binary Spherical Image Segmentation Using Directional Wavelets*

October 22, 2019 **Zahra Salim rushti**, *A New Class of Wavelet-Based Metrics for Image Similarity Assessment*

October 22, 2019 **Ziba Kolahduzi pour**, *Image Segmentation by a Novel Binary Level Set Variational Model*

October 9, 2018 **Mohamad Habibi**, *An optimization approach to detecting continuous, thin and smooth edges in noisy images*

May 12, 2018 **Zeinab Abdollahi**, *Some Mathematical Methods for Medical Image Segmentation*

September 6, 2016 **Abdollah Sarafraz**, *A Shearlet approach to image edge analysis and detection*

August 22, 2016 **Ahmad Meihami**, *Comparison of various Edge Detection Techniques used in Image Processing*

August 22, 2016 **Saleh Sharifi**, *Accurate Subpixel Edge Location based on Partial Area Effect*

September 6, 2016 **Zahra Rezaei Shamasbi**, *An edge-preserving multilevel method for deblurring, Denoising and segmentation*

February 28, 2016 **Zahra Safari bolboli**, *New model for image restoration with different boundary conditions*

February 28, 2016 **Roqaye Alipour tazekandi**, *Embedded techniques for choosing the parameter in Tikhonov regularization*

October 6, 2015 **Paria Moradi**, *Image processing with Shearlet systems*

September 22, 2015 **Reza Mousavi Moghadam**, *Image processing with curvelet transforms*

February 17, 2015 **Afsaneh Ghasemkhani ghadim**, *Kronecker Product and SVD approximations in image restoration*

December 15, 2014 **Sajad Ektesabi bonab**, *Sylvester Tikhonov- regularization methods in image restoration*

September 21, 2014 **Elaheh Ebrahimi yazdabadi**, *Kronecker Product Approximations for Image Restoration with Anti Reflective Boundary Condition*

September 21, 2014 **Reyhaneh Naghipour nasirabadi**, *Box Spline Wavelet Frames for Image Edge Analysis*

February 13, 2014 **Fatemeh Azarnia**, *Taylor polynomial solutions of nonlinear Volterra–Fredholm integral equations*
(Islamic Azad University)

December 18, 2013 **Roya Roshan**, *A New Direct Method for Solving Nonlinear Volterra-Fredholm-Hammerstein Integral Equations via Optimal Control Problem*
(Payam-e-Noor University)

October 6, 2013 **Mohammad Reza Gholypour**, *A random integral quadrature method for numerical analysis of the second kind of Volterra integral equation*

September ?, 2013 **Leili Safakish**, *Cubic Spline Wavelets with Complementary Boundary Conditions*
(Islamic Azad University)

July 9, 2013 **Sakineh Nasrollahi**, *Legendre approximation solution for a class of higher order integro-differential equation*

June 30, 2013 **Parisa Noras**, *The Legendre wavelet method for solving initial value problems of Bratu-type*

June 30, 2013 **Maryam Norouzi**, *New algorithms for the numerical solution of nonlinear Fredholm and Volterra integral equations using Haar wavelets*

February 26, 2013 **Elham Nikjoo**, *Fast wavelet Galerkin methods for solving integral equations of the second kind*

February 26, 2013 **Reyhaneh Ghiasi**, *Fast Multiresolution Algorithms and Their Related Variational Problems for Image Denoising*

October 1, 2012 **Mehdi Mirzafam**, *Trigonometric Hermite wavelet approximation for the integral equation of second kind with weakly singular kernel*

October 1, 2012 **Amir Mohammadi**, *Multi-projection methods for Fredholm integral equations of the second kind*

September 15, 2012 **Safoura Hashemi**, *Numerical Solutions of Some Linear and Nonlinear Fredholm Integral Equations Using Bernstein Polynomials*
(Islamic Azad University)

September 15, 2012 **Fatemeh Mahmoudi**, *Solving Some Volterra Integral Equations with Smooth and Weakly Singular kernel*
(Islamic Azad University)

September 15, 2012 **Mitra Zand Mashayekhi**, *Derivatives of Bernstein Polynomials and their Application for solving High Even-Order Differential Equations*
(Islamic Azad University)

July 14, 2012 **Nayyer Gholestani**, *Hybrid function method for solving Fredholm and Volterra integral and integro-differential equations*
(Payam-e-Noor University)

July 14, 2012 **Mansoureh Esmaili hajiatalu**, *Sinc-Galerkin solution for nonlinear two-point boundary value problems with applications to chemical reactor theory*
(Payam-e-Noor University)

April 26, 2012 **Amir Ahmad Khajehnassiri**, *A fast numerical solution method for two dimensional Fredholm integral equations of the second kind*
(Payam-e-Noor University)

September 18, 2011 **Sedigheh Mohammadi**, *Homotopy perturbation method with some modifications for solving some integral and differential equations and comparison with homotopy analysis method*

September 17, 2011 **Azadeh Omidi**, *Some numerical methods for second kind Fredholm integral equations on the real semiaxis*

September 17, 2011 **Farhad Ghorbani**, *Numerical solution of integral equations by means of the Sinc collocation method based on the double exponential transformation*

September 17, 2011 **Ghader Ahmadnezhad**, *Using variational iteration method for solving some kind of integral and differential equation*

September 28, 2010 **Shirin Khezri**, *Wavelet Numerical Solutions for Weakly Singular Fredholm Integral Equations of the Second Kind*

July 21, 2010 **Medya Siadat**, *Wavelet applications to the Petrov-Galerkin method for Hammerstein equation*

July 21, 2010 **Mina Shokraie**, *Approximation of Parabolic Integro-Differential Equations Using Wavelet-Galerkin Technique*

July 11, 2009 **Elahe Ravash**, *Using Petrov-Galerkin Method for Solving Integral Equation of the Second Kind*

## Memberships

American Mathematical Society

Iranian Mathematical Society

## Administrative Experiences

Feb 3, 20 – June 21, 21 **Head of Education Department**
Azarbaijan Shahid Madani University, Tabriz, Iran

Jan 23, 19 – April 07, 20 **Head of Department**, *Department of Mathematics*
Azarbaijan Shahid Madani University, Tabriz, Iran

Aug 11, 18 – Jan 23, 19 **Head of Department**, *Department of Applied Mathematics*
Azarbaijan Shahid Madani University, Tabriz, Iran

Oct 2014 – May 2016 **Vice-Chancellor of Administrative Staff and Financial Affairs**
Azarbaijan Shahid Madani University, Tabriz, Iran

Jan 2014 – present **Founder and Head of the Image Processing Laboratory**
Department of Mathematics, Azarbaijan Shahid Madani University, Tabriz, Iran

Jan 2014 – Oct 2014 **Dean of Faculty of Basic Sciences**
Azarbaijan Shahid Madani University, Tabriz, Iran

Nov 2011 – Jan 2014 **Head of Research Department**
Azarbaijan Shahid Madani University, Tabriz, Iran

Nov 2010 - Nov 2011 **Head of Industrial Relations Department**
Azarbaijan Shahid Madani University, Tabriz, Iran

Nov 2010 - Jan 2011 **Co-Head of Department of Mathematics**
Azarbaijan Shahid Madani University, Tabriz, Iran

2007 **Member of National Arbitration Committee**
Kharazmi Festival, Tehran, Iran

2006 **Member**
Department of Mathematics and Informatics Organization for Educational Research and Planning, Ministry of Education, Iran

2007 - 2013 **Local Representative**, *Iranian Mathematical Society*
Azarbaijan Shahid Madani University, Tabriz, Iran

## Professional Experiences

Aug. 27, 2024 - present **Professor**
Department of Mathematics, Izmir Institute of Technology, Izmir, Türkiye

Nov. 06, 2023 - present **Member**
Department of Computational Science and Engineering, Izmir Institute of Technology, Izmir, Türkiye

Feb. 16, 2023 - Aug. 27, 2024 **Associate Professor**
Department of Mathematics, Izmir Institute of Technology, Izmir, Türkiye

Sep. 18, 2022 - Feb. 15, 2023 **Visiting Professor**
Department of Mathematics, Izmir Institute of Technology, Izmir, Türkiye

Feb 5, 2018 – Feb. 15, 2023 **Professor**
Azarbaijan Shahid Madani University, Tabriz, Iran

Dec 09, 2018 – Mar 20, 2021 **Member of Board of Auditors**
Azarbaijan Shahid Madani University, Tabriz, Iran

Dec 10, 2016 – Dec 10, 2017 **Visiting Professor**
Technische Universität Berlin, Berlin 10623, Germany

Feb 5, 2013 – Feb 4, 2018 **Member of Specialized Commission of the Board of Auditors**, *Mathematics and Physics sections*
Azarbaijan Shahid Madani University, Tabriz, Iran

Feb 5, 2013 – Feb 4, 2018 **Associate Professor**
Azarbaijan Shahid Madani University, Tabriz, Iran

2012 – 2014 **Member**, *Research Group of Processing and Communication*
Azarbaijan Shahid Madani University, Tabriz, Iran

2008-2009 **Part-time lecturer**
Payame Noor University, Tabriz, Iran

Aug 2007 - Feb 2013 **Assistant Professor**
Azarbaijan Shahid Madani University, Tabriz, Iran

2005-2007 **Part-time Lecturer**
Islamic Azad University, South Tehran Branch, Tehran, Iran

2005-2007 **Part-time Lecturer**
Shahid Rajaee University, Tehran, Iran

2004-2006 **Part-time Lecturer**
University of Applied Science and Technology, Tehran, Iran

2004-2005 **Part-time Lecturer**
Iran University of Science and Technology, Tehran, Iran

## Organization Activities

July 20-21, 2016 **Member of scientific committee**, *The 6th Seminar on Numerical Analysis and Its Applications*
University of Maragheh, Maragheh, Iran

May 27-29, 2015 **Member of scientific committee**, *12th seminar on differential equations and dynamical systems*
University of Tabriz, Tabriz, Iran

Aug 26 - 29, 2014 **Member of scientific committee**, *33rd annual conference of Iranian Mathematics Society*
University of Semnan, Semnan, Iran

Aug 27-30, 2012 **Member of scientific committee**, *34th annual conference of Iranian Mathematics Society*
University of Tabriz, Tabriz, Iran

July 11-13, 2012 **Member of scientific committee**, *9th seminar on differential equations and dynamical systems*
Azarbaijan Shahid Madani University, Tabriz, Iran

July 11-13, 2012 **Chair of organizing committee**, *9th seminar on differential equations and dynamical systems*
Azarbaijan Shahid Madani University, Tabriz, Iran

July 18-19, 2011 **Chair of organizing committee**, *1st Regional seminar of mathematics students*
Azarbaijan Shahid Madani University, Tabriz, Iran

## Verified Reviews

According to the Web of Science™, I have 180 verified peer reviews at the following journals (The number in the bracket is the number of the reviews in the journal):

Machine Vision and Applications [28], Signal, Image and Video Processing [23], Journal of Computational and Applied Mathematics [16], Computational Methods for Differential Equations [16], Mathematical Sciences [15], Biomedical Signal Processing and Control [12], IEEE Access [10], Mathematical Reviews® [7], Eurasip Journal on Image and Video Processing [4], International Journal of Computer Mathematics [5], Journal of Applied Mathematics and Computing [3], Progress in Artificial Intelligence [3], Applied Research [2], Engineering Applications of Artificial Intelligence [2], IEEE Intelligent Transportation System Magazine [2], Journal of Applied and Computational Mechanics [2], Journal of Mathematics [2] Mathematical Modeling and Analysis [2], The Journal of Supercomputing [2], Abstract and Applied Analysis [1], Applied Mathematics and Computation [1], Applied Numerical Mathematics [1], Circuits, Systems, and Signal Processing [1], Complexity [1], Computational and Mathematical Methods [1], Current Medical Imaging [1], Engineering Computations [1], Filomat [1], International Journal of Mathematical Modelling & Computations [1], International Journal of Systems Science [1], Iranian Journal of Numerical Analysis and Optimization [1], Journal of Advanced Research in Scientific Computing [1], Journal of Applied Analysis and Computation [1], Journal of Mathematical Modeling [1], Journal of Taibah University of Science [1], Mathematical Problems in Engineering [1], Mathematics and Computational Sciences [1], Numerical Algorithms [1], Numerical Heat Transfer, Part B: Fundamentals [1], Sahand Communication in Mathematical Analysis [1], Thai Journal of Mathematics [1], Walailak Journal of Science and Technology [1],

For an updated version, click here.

## Languages

| | |
|---|---|
| Azerbaijani | Native |
| Persian | Native |
| English | Reading, Listening and Writing (Advanced), Speaking (High-Intermediate) (according to the TOEFL score report 2022) |
| Turkish | B1 taken in General Directorate of Lifelong Learning, Ministry of Education, Türkiye |

İzmir, Türkiye: June 16, 2025