Rezvan Salehi

CONTACT

Address	Faculty of Mathematical Science
	Tarbiat Modares University
	Tehran 134-14115, Iran.
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Links	Rezvan Salehi Official Page (modares.ac.ir), Rezvan Salehi - Google Scholar.

PERSONAL INFORMATION

Nationality	Iranian
Date of Birth	February 11, 1985 in Bandar Emam Khomeini, Iran
Marital Status	Married

RESEARCH INTERESTS

- Numerical Analysis
- Numerical Solution of Differential Equations
- Numerical Simulation
- Meshless Methods
- Finite Element Methods
- Scientific Computing
- Numerical Methods for Data Science
- Machine Learning
- Deep Learning
- Operator Learning
- Topics related to interaction between numerical analysis and other mathematical fields

CURRENT POSITION

September 2015-Now	**Assistant Professor of Mathematics, Numerical Analysis**
	Tarbiat Modares University, Tehran, Iran.

EDUCATION

2009-2013   **Received Ph.D. in Applied Mathematics, Numerical Analysis**

Amirkabir University of Technology (AUT), Iran.

Supervisor: Dr. Mehdi Dehghan

Thesis Title: Development of reproducing kernel Meshless method and boundary techniques for solving partial differential equations

2007-2009   **Received M.Sc. in Applied Mathematics, Numerical Analysis**

Amirkabir University of Technology (AUT), Iran.

Supervisor: Dr. Mehdi Dehghan

Thesis Title: Numerical solution of Eikonal Equation

2003-2007   **Received B.Sc. in Applied Mathematics**

Shahid Chamran University (SCU), Ahvaz.

1999-2003   **Received Diploma in Mathematics**

Palayeshgah High School, Abadan, Iran.

HONOR AND AWARDS

- Distinguished Among the ISC top one percent scientist, 2023.
- Distinguished Researcher of Tarbiat Modares University, 2023.
- The best Ph.D. thesis at AUT, 2013.
- Granted distinguished talent for Ph.D. at AUT, 2013.
- Ranked 17th in the 2006 nationwide university entrance exam for Mathematics graduate studies, Iran.
- Ranked 1st among graduated M.Sc. students in applied mathematics at AUT, 2009.
- Ranked 2nd among B.Sc. students in applied mathematics at SCU, 2007.

COMPLETED REASEARCH PROJECTS

- Application of non-oscillatory schemes for partial differential equations raised in bioscience, Iran National Science Foundation, 2018.

PUBLICATIONS

- M. Dehghan, R. Salehi, The use of variational iteration method and Adomian decomposition method to solve the Eikonal equation and its application in the reconstruction problem, Communications in Numerical Methods in Engineering (2009) (ISI).

- M. Dehghan, R. Salehi, A seminumeric approach for solution of the Eikonal partial differential equation and its applications, Numerical Methods for Partial Differential Equations (2009) (ISI).

- M. Dehghan, R. Salehi, The Chebyshev spectral viscosity method for the time dependent Eikonal equation, Mathematical and Computer Modelling (2010) (ISI).

- M. Dehghan, R. Salehi, Solution of a nonlinear time-delay model in biology via semi-analytical approaches, Computer Physics Communication (2010) (ISI).

- M. Dehghan, R. Salehi, A boundary–only meshless method for numerical solution of the Eikonal equation, Computational Mechanics (2011) (ISI).

- M. Dehghan, R. Salehi, The use of homotopy analysis method to solve the time-dependent nonlinear Eikonal partial differential equation, Zeitschriftfür Naturforschung A (2011) (ISI).

- M. Dehghan, R. Salehi, The solitary wave solution of the two-dimensional regularized long-wave equation in fluids and plasmas, Computer Physics Communication (2011) (ISI).

- M. Dehghan, R. Salehi, The numerical solution of the non-linear integro-differential equations based on the meshless method, Journal of Computational and Applied Mathematics (2011) (ISI).

- M. Dehghan, R. Salehi, A meshless based numerical technique for traveling solitary wave solution of Boussinesq equation, Applied Mathematical Modelling (2012) (ISI).

- R. Salehi, M. Dehghan, The use of a Legendre pseudospectral viscosity technique to solve a class of nonlinear dynamic Hamilton–Jacobi equations, Computers and Mathematics with Applications (2012) (ISI).

- M. Dehghan, R. Salehi, A method based on meshless approach for the numerical solution of the two-space dimensional hyperbolic telegraph equation, Mathematical Methods in the Applied Science Journal (2012) (ISI).

- R. Salehi, M. Dehghan, A generalized moving least square reproducing kernel method, Journal of Computational and Applied Mathematics (2013) (ISI).

- R. Salehi, M. Dehghan, A moving least square reproducing polynomial meshless method, Applied Numerical Mathematics (2013) (ISI).

- M. Dehghan, R. Salehi, A meshfree weak-strong (MWS) form method for the unsteady magnetohydrodynamic (MHD) flow in pipe with arbitrary wall conductivity, Computational Mechanics (2013) (ISI).

- M. Dehghan, R. Salehi, A meshless local Petrov–Galerkin method for the time-dependent Maxwell equations, Journal of Computational and Applied Mathematics (2014) (ISI).

- R. Salehi, A meshless point collocation method for 2-D multi-term time fractional diffusion-wave equation, Numerical Algorithms (2017) (ISI).

- R. Salehi, Two implicit meshless finite point schemes for the two-dimensional distributed-order fractional equation, Computational Methods in Applied Mathematics (2018) (ISI).

- L Jafarian Khaled-Abad, R Salehi, Weak Galerkin finite element method for an inhomogeneous Brusselator model with cross-diffusion, Journal of Mathematical Modeling (2019) (ISI).

- S Bagheri, M Mirzaie, R Salehi, Modeling seasonal changes and death rate of hive bee in honey bee colony, ournal of Advanced Mathematical Modeling (2019) (ISI).

- R Abedian, R Salehi, A RBFWENO finite difference scheme for Hamilton–Jacobi equations, Computers & Mathematics with Applications (2020) (ISI).

- LJ Khaled-Abad, R Salehi, Numerical and theoretical study of weak Galerkin finite element solutions of Turing patterns in reaction–diffusion systems, Numerical Methods for Partial Differential Equations (2021) (ISI).

- MA Mehrpouya, R Salehi, A numerical scheme based on the collocation and optimization methods for accurate solution of sensitive boundary value problems, The European Physical Journal Plus, (2021) (ISI).

- MR Eslahchi, S Esmaili, N Namaki, R Salehi, Application of finite difference method in solving a second-and fourth-order PDE blending denoising model, Mathematical Sciences (2022) (ISI).

- LJ Khaled-Abad, R Salehi, Application of weak Galerkin finite element method for nonlinear chemotaxis and haptotaxis models, Applied Mathematics and Computation (2022) (ISI).

- M Jalili, R Salehi, The approximate solution of one-dimensional stochastic evolution equations by meshless methods, Journal of Mathematical Modeling (2022) (ISI).

- M Jalili, R Salehi, M Dehghan, An efficient meshless method to approximate semi-linear stochastic evolution equations, Engineering with Computers (2023) (ISI).

- E Mirzabeigi, S Mortezazadeh, R Salehi, H Naderi-Manesh, Designing of knowledge-based potentials via B-spline basis functions for native proteins detection (2023) (Arxiv).

- N Namaki, MR Eslahchi, R Salehi, The use of physics-informed neural network approach to image restoration via nonlinear PDE tools, Computers & Mathematics with Applications (2023) (ISI).

CONFERENCES

1   Investigating the impact of brain connectivity of the accuracy of predicting EEG signals while using a time series model, 30th national and 8th international conference of biomedical engineering 2023, with Seyed Mohammad Khamesi.

2   Image semantic segmentation based on transforms neural networks, The 4th International Conference on Electrical Engineering, Computer, Mechanics and Artificial Intelligence 2023, with Mohammad Hossein Astaneh.

3   Self-supervised representation learning using whitening transformation, Second National Conference on Soft Computing and Cognitive Sciences 2023, with Leila Shaghaghi.

4   Solving and extracting data driven partial differential equations from machine learning point of view, 8th seminar on Numerical analysis and its applications 2021, with Mehdi Jalili.

5   A reproducing kernel particle method for 2D time fractional telegraph equation, 51st Annual Iranian Mathematics Conference 2021, with Mohammad Reza Eslahchi.

6   Weak Galerkin finite element method for an inhomogeneous Brusselator model with cross-diffusion, International Conference on Recent Achievements in Mathematical Science 2019, with Leila Jafarian-Kaled Abad.

7   Application of finite element method for stochastic elliptic differential equations with fractional Brownian motion, 49th Annual irainian mathematics conference 2018, with Elham Seyed-Ghasemi.

8   Approximation of knowledge based potential function using B-splines in discrimination of native structure, 7th Iran bioinformatics Congress 2018, with Mehdi Mirzaei and Elmira Mirzabeigi.

9   A Petrov Galerkin Spectral Method Of Linear Multi Term Fractional ODE, The First Local Conference of Mathematical Science and Applications 2017, with Seyed Mohammad Hosseini and Azam Yazani.

10   Application of a boundary-only meshfree method for time-dependent problems, The 6th seminar on Numerical Analysis and Its Applications 2016.

Graduated Students

Ph.D.

- Mohammad Ali Hossein Furaiji, A new Finite Volume Method, In progress.

- Hossein Astaneh, Semantic Segmentation based on Transformers, In progress.

- Elmira Mirzabeigi, Numerical solution of differential equations using machine learning methods emphasizing computational models of neurological diseases, In progress.

- Mehdi Jalili, Some Numerical Learning Approaches based on Meshless Methods for Partial Differential Equations, In progress.

- Neda Namaki, Deep learning in PDE-based image processing, In progress.

- Leila Jafarian-Khaled Abad, Application of weak Galerkin finite element method for partial differential equations, 2020.

M.Sc. (Not Updated)

- Seyed Mohammad Khamesi, Applying a modified autoregression laguerre volterra model along with logistic regression model in epileptic seizures prediction, 2023.

- Mohammad Hossein Astaneh, Image segmentation using transformers neural networks, 2023.

- Leila Shaghaghi, Self-supervised representation learning using whitening transformation and BYOL in images, 2023.

- Hossein Ghorbani, A numerical study of PDE constraint optimal control problems of fractional order, 2022.

- Mehdi Jalili, Application of Machine Learning Algorithms in Modelling and Solving Parabolic Partial Differential Equations, 2021.
- Somaeh Sorkheh, Application of modified bezier curve to improve corner blending curves, 2020.

- N. Latifi, Application of meta-heuristic methods for supply chain, 2019.

- M. Helalati, Numerical methods based on moving least squares for solving elliptic partial differential equations, 2019.

- E. Seyed-Ghasemi, Numerical solution of second order stochastic boundary value problems, 2018.

- E. Mirzabeigi, The study of iterative method for protein structure refinement by application of optimization, 2018.

TEACHING EXPERIENCE

- Machine Learning, Numerical Methods for Data Science, Algorithms for Data Science, Mathematical Foundation of Data Science, Advanced Methods for Image Processing, Teaching, Finite Element Method, Numerical Solution of Integral Equations, Computer Aided Geometrical Design, Numerical Solution of Optimal Control Problems with PDE Constraints, and Advanced Engineering Mathematics in Tarbiat Modares University, Tehran, Iran.
- Teaching, Calculus I and II, Numerical Computation, Approximate methods for Engineers and Basis Finite Element Method in University of Tehran, Tehran, Iran.
- Teaching, Numerical Analysis 1 and Calculus I in AUT, Tehran, Iran.

REFEREE OF JOURNALS

- Applied Mathematics and Computation
- Mathematical Biosciences
- Advances in Mechanical Engineering
- International Journal of Heat and Mass Transfer
- Computational and Applied Mathematics
- Computers and Mathematics with Applications
- Iranian Journal of Numerical Analysis and Optimization

COMPUTER SKILLS

- Programming skills with Python and C++.
- Proficient programming skills in Maple, Matlab, FreeFEM++, Latex and Microsoft Office.

MEMBERSHIP

- National Elites Foundation.
- Organization for Students of Exceptional Talents in AUT, SCU.
- Iranian Mathematics Society.