

Kourosh Parand

I am a Professor in the Department of Computer & Data Sciences, Faculty of Mathematical Sciences, Shahid Beheshti University. My main research field is Scientific Computing, Spectral Methods, Meshless methods, Partial Differential Equations(PDEs), Data Mining, Machine Learning and Computational Neuroscience Modeling.

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WORK EXPERIENCE

Teaching

- **Foundation of Matrix and Linear Algebra, Introductory Linear Algebra, Linear Algebra 1, Linear Algebra 2, Numerical Linear Algebra, Fundamental Numerical Analysis**, Operation Research, Calculus 1, Calculus 2, Differential Equations, Partial Differential Equations, Data Structure, Basic Programming, Advance Programming, Operation Research 1 and 2 (Undergraduate)
- **Advance Numerical Linear Algebra, Numerical Linear Algebra, Computational Data Mining**, Neural Networks, Optimal Control, Spectral Methods, Orthogonal Polynomials, Topics in Scientific Computing, Advanced Operations Research, Advanced Computational Physics, Advanced Numerical Analysis, Mathematics Software, Approximation Theory, Advanced Linear Programming, Data Mining. (**Graduate**)

Designer of entrance exam questions

- **Numerical Linear Algebra**, Linear Algebra, , Foundation of Matrix and Linear Algebra, Numerical Analysis, Data Structure and Algorithm, Calculus, Foundation Logic and Set Theory (Master program).
- Numerical Linear Algebra, Advance Algorithm Theory (Ph.D. program)

Ph.D. candidates interviewer

- Computer Science
- Data Science
- Applied Mathematics
- Bio Informatics

ACADEMIC

ACCOMPLISHMENTS

Publicatoins

- Moayeri, Mohammad Mahdi, Parand, Kourosh, et al. "NPDS toolbox: Neural population (De) synchronization toolbox for MATLAB." *Neurocomputing* 506 (2022): 206-212.
- Omid, M., Parand, K., et al. "Learning nonlinear dynamics with behavior ordinary/partial/system of the differential equations: looking through the lens of orthogonal neural networks." *Engineering with Computers* 38.2 (2022): 1635-1654.
- Lotfi, Yasaman, and Kourosh Parand. "Efficient image denoising technique using the meshless method: Investigation of operator splitting RBF collocation method for two anisotropic diffusion-based PDEs." *Computers & Mathematics with Applications* 113 (2022): 315-331.
- Lotfi, Yasaman, and Kourosh Parand. "Anti-aliasing of gray-scale/color/outline images: Looking through the lens of numerical approaches for PDE-based models." *Computers & Mathematics with Applications* 113 (2022): 130-147.
- Shivanian, Elyas, Parand Kourosh, et al. "A Novel Learning Approach for Different Profile Shapes of Convecting-Radiating Fins Based on Shifted Gegenbauer LSSVM." *New Mathematics and Natural Computation* (2022): 1-21.
- Asghari, M., Parand, K., et al. "FPGA-orthopoly: a hardware implementation of orthogonal polynomials." *Engineering with Computers* (2022): 1-20.
- Parand, Kourosh, Ghazal Sadat Ghaemi Javid, and Mostafa Jani. "A machine learning approach for solving inverse Stefan problem." *International Journal of Nonlinear Analysis and Applications* (2022).
- Hajimohammadi, Z., S. Shekarpaz, and K. Parand. "The novel learning solutions to nonlinear differential models on a semi-infinite domain." *Engineering with Computers* (2022): 1-18.
- Hajimohammadi, Zeinab, Parand, Kourosh, et al. "Fractional Chebyshev deep neural network (FCDNN) for solving differential models." *Chaos, Solitons & Fractals* 153 (2021): 111530.
- Hemami, Mohammad, Jamal Amani Rad, and Kourosh Parand. "Phase distribution control of neural oscillator populations using local radial basis function meshfree technique with application in epileptic seizures: A numerical simulation approach." *Communications in Nonlinear Science and Numerical Simulation* 103 (2021): 105961.
- Parand, K., et al. "Parallel LS-SVM for the numerical simulation of fractional Volterra's population model." *Alexandria Engineering Journal* 60.6 (2021): 5637-5647.
- Parand, K., et al. "Numerical simulation of Volterra–Fredholm integral equations using least squares support vector regression." *Computational and Applied Mathematics* 40.7 (2021): 1-15.
- Pakniyat, A., K. Parand, and M. Jani. "Least squares support vector regression for differential equations on unbounded domains." *Chaos, Solitons & Fractals* 151 (2021): 111232.
- Delkhosh, Mehdi, and Kourosh Parand. "A new computational method based on fractional Lagrange functions to solve multi-term fractional differential equations." *Numerical Algorithms* 88.2 (2021): 729-766.
- Parand, Kourosh, Soleiman Hashemi-Shahraki, and Mohammad Hemami. "Unsteady flow of gas in a semi-infinite porous medium: a numerical investigation by using RBF-DQM." *Indian Journal of Physics* 95.10 (2021): 2107-2114.
- Hajilolow, A., Parand, K., et al. "Recovering a moving boundary from Cauchy data in an inverse problem which arises in modeling brain tumor treatment: the (quasi) linearization idea combined with radial basis functions (RBFs) approximation." *Engineering with Computers* 37.3 (2021): 1735-1749.
- Moayeri, Mohammad Mahdi, Jamal Amani Rad, and Kourosh Parand. "Desynchronization of stochastically synchronized neural populations through phase distribution control: a numerical simulation approach." *Nonlinear Dynamics* 104.3 (2021): 2363-2388.
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- Lotfi, Yasaman, Parand, Kourosh, et al. "Numerical study of temperature distribution in an inverse moving boundary problem using a meshless method." *Engineering with Computers* 37.1 (2021): 461-475.
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- Parand, Kourosh, Zeinab Hajimohammadi, and Ali Ghodsi. "Legendre Deep Neural Network (LDNN) and its application for approximation of nonlinear Volterra–Fredholm–Hammerstein integral equations." (2020).
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- Baharifard, F., K. Parand, and M. M. Rashidi. "Novel solution for heat and mass transfer of a MHD micropolar fluid flow on a moving plate with suction and injection." *Engineering with Computers* (2020): 1-18.
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- Parand, Kourosh, Hafez Yari, and Mehdi Delkhosh. "Solving two-dimensional integral equations of the second kind on non-rectangular domains with error estimate." *Engineering with Computers* 36.2 (2020): 725-739.
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- Aghaei, Babaei, Parand, Application of Physics-Informed Neural Networks in numerical in the simulation of epidemic models; Case Study: Covid-19, National Conference on Applied Researches in Basic Sciences (Mathematics, Chemistry, and Physics), 2022
- Z Behruzeh, Aghaei, Parand, Hajjarian, Increasing accuracy of machine learning methods using Kernel PCA, the 9th seminar on Numerical Analysis and Its Applications, 2022
- Babaei, Aghaei, Parand, Numerical solution of the Fisher's equation using Legendre Deep Neural Network (LDNN), the 9th seminar on Numerical Analysis and Its Applications, 2022
- M Babaei, Hajimohammadi, Parand, Using single value analysis in the convolutional neural network to improve accuracy in brain tumor diagnosis, The 11th Seminar on Linear Algebra and its Applications, 2022
- Aghaei, Parand, Nystrom low-rank approximation for computing orthogonal Legendre kernel to increase the accuracy of covid-19 early detection, The 11th Seminar on Linear Algebra and its Applications, 2022
- M Shayesteh, AA Aghaei, K Parand, Investigating Effect of Published News for Cryptocurrency Price Prediction, The 2nd Seminar of Artificial Intelligence and Soft Computing in Humanities, 2022
- M Movahedian, AA Aghaei, K Parand, A GPU-based parallel algorithm for computing the kernel matrix in machine learning methods, 7th national and first international conference on Distributed Computing and Big Data Processing, 2022
- P Ahadian, Parand, Covid-19 Vaccination Analysis based on Unsupervised Machine Learning Algorithm, 6th International Conference on Physics, Mathematics, and Development of Basic Science, 2022
- Moayeri, Parand, Amani Rad, Desynchronization of neural oscillator populations using least squares support vector machines, 51st Annual Iranian Mathematics Conference, 2021
- Hasani, Parand, Amani Rad, An efficient weak-free machine learning approach to simulate the generalized Eikshuk

- hemami, parand, amani kaa, an emcient mesnree macnine learning approacn to simulate ue generauzen ritznugn- Nagumo equation inspired by neuroscience, 51st Annual Iranian Mathematics Conference, 2021
- P Ahadian, Parand, Machine learning-based clustering analysis for the effects of cardiac arrest on the brain intracellular pH levels, 8th International Human Brain Mapping Congress, 2021

In the following journal

Editor-in-Chief:

- Computational Mathematics and Computer Modeling with Applications (CMCMA)

Managing Editor:

- Computational Methods for Differential Equations

Editor in the following journals

- Computers and Mathematics with Applications (ISI)
- Journal of Computational and Applied Mathematics (ISI).
- Applied Mathematical Modelling (ISI)
- Celestial Mechanics and Dynamical Astronomy (CELE) (ISI)
- Applied Mathematics and Computation (ISI)
- Journal of Vibration and Control (ISI)
- Mathematical Problems in Engineering (ISI)
- Journal of Applied Mathematics and Computing (JAMC)
- International Journal of Industrial Mathematics
- International Journal of Nonlinear Science (IJNS)
- Communications in Nonlinear Science and Numerical Simulation(CNSNS)

Postdoc Students

- Simin Shekarpaz, Inverse problems, and Spectral Methods
- Babak Azarnavid, Reproducing Kernel, Hilbert Space
- Kobra Rabiei, Optimal Control Problems
- Mostafa Jani, Sub-diffusion Process and Spectral Methods

Honors and Awards

- Iran's Best researcher Award in 2013
- Best Researcher Award at Shahid Beheshti University in 2009, 2014 & 2019
- Best Teacher Award at Shahid Beheshti University in 2018

Skills

- Professional in Matlab & Maple software ,C & C++ programming languages
- Familiar with Python Programming Language and Tensorflow, SPSS, R, Gams, Linda, Tora
- Working knowledge of Microsoft Office, Google spreadsheets, and Gmail

Cooperation with international organizations

- **UNESCO**
- **UNHCR** (Austria, German and Danish Refugee Council)
- **UNDP**
- **UNFPA**
- **IDB:** Islamic Development Bank
- **KOICA:** Korea International Cooperation Agency
- **JICA:** Japan International Cooperation Agency

LANGUAGES	Fluent in Persian; speaking, reading, and writing	
	CLB: English listening, speaking, reading, and writing	
	Occupation-specific Language Training in Accounting & Management (320 hours)	
EDUCATION	University of Waterloo Visiting Scholar	Ontario, Canada • 2019 — 2020
	University of Alberta Visiting Scholar	Alberta, Canada • 2003 — 2004
	PhD. in Applied Mathematics, Amirkabir University of Technology	Tehran, IRI • 2000 — 2004
	Msc. in Tarbiat Modares University	Tehran, IRI • 1997 — 2000