Mohamed Reda Ali Mohamed

Graduated in Electrical
Measurement & Control Engineering
Department

Contact Information

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Personal Information

Name: Mohamed Reda Ali Mohamed
Nationality: Egyptian.
Birth date: 14 dec. 1985
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Marital status: married
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Affiliation

Associate Professor in Mathematics, Basic science, Benha faculty of engineering, Benha University.

Research IDs and web pages
(https://www.scopus.com/authid/detail.uri?authorId=57204945844)
Research gate profile
(https://www.researchgate.net/profile/Mohamed_Ali223)
Google scholar profile
(https://scholar.google.com/citations?user=bjNjsmoAAAAJ&hl=ar)
LinkedIn profile
(https://www.linkedin.com/in/mohamed-reda-b5a2757b/).

OBJECTIVE:

To develop professionally, excel in the field of teaching, research in mathematics and prove to be an integral part of nature of youth. I am committed person, who has strong background in computing and mathematics subjects. Moreover, I have also essential knowledge and managerial skills to run an organization with commitment, confidence, and good communication skills.

TEACHING SKILLS:

Understand the psychology of students of all ages, can interact with students of all ages confidently. Moreover, I have the ability to understand the problems of students of all ages in their course work and as well as in their research work. Also, I have the ability to solve the issues of students while studying Mathematics at University standard.

RESEARCH INTEREST:

✓ Fractional ODEs	Fractional PDEs	Soliton solutions
✓ Flows in Porous media	Ordinary differential equations	Heat and mass transport
✓ Blood flow problems	Mathematical modeling	Numerical simulation
✓ Numerical methods	Partial differential equations	Nanofluid

- ✓ Differential Geometry Mathematical Physics
- ✓ Algebraic methods for differential equations with particular interest in Lie symmetry
- ✓ Engineering applications of mathematical methods

TEACHING INTEREST:

- Calculus sequence courses for Mathematics majors as well as for students fromother disciplines
- Differential Equations courses* (basic and advanced undergraduate)
- Linear Algebra courses* (undergraduate and graduate)
- Advanced Engineering Mathematics courses*
- Discrete Mathematics*
- Wavelets*
- Engineering Statistics*
- Differential Geometry courses* (undergraduate and graduate) Including self-contained tailored course on "Differential Geometry of Curves & Surfaces" for engineering and computer science students
- Complex Variables*
- Lie Symmetry Method for ODEs and PDEs* (undergraduate and graduate)Also as interdisciplinary course for engineering graduate students
- Symmetries and Conservation Laws (graduate)
- Any other undergraduate mathematics service course for Engineering orManagement or Business students

** Indicates taught one or more times (fully or as part of another course)*

Technology Expertise

- Extensive experience of integration of technology in enhancing teaching, viautilization of
  - Learning Management System like Blackboard 9 or WebCT CE 8
  - Online homework systems
  - Other instructional technology software like Centra, Articulate, Camtasia.
  - Symbolic algebra software: Maple, Mathematica, Matlab.
- Fully experienced in utilizing Maple and Mathematica at advanced mathematicalresearch level.

ACADEMIC BACKGROUND

Institution	Degree obtained	Graduated Year
Benha Faculty of Engineering (Benha university)	Bachelor of engineering- electrical power	May 2008
Faculty of Engineering at Shoubra (Benha university)	Master of Science -Department of Engineering Mathematics and physics	Jan 2014
Benha Faculty of Engineering (Benha university)	Doctor of Philosophy -Department of Engineering Mathematics and physics	Jan 2018

PhD and Master Research Title:

PhD	On the Numerical Solutions for Differential and Integral Equations using Different Basis Functions
Master	A Comparison Study between Series Solution Methods and the Method of Lines for Solving Problems of Mathematical Physics

References

1. Professor John C. WoodSchool of Mathematics, University of Leeds, Leeds, LS2 9JT, UK
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2. Professor Hassan Azad
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4. Dr. Ryad Ghanam
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Email: ghanam@pitt.eduand
Associate Professor of Mathematics Virginia Commonwealth University in QatarDoha, Qatar
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Professional Record: (Beginning with the most recent)

Job Rank		
Associate Professor	Benha University	From: 26-1-2023 To: Present
Assistant Professor	Benha University	From: 12-1-2018 To: 24-1-2023
Assistant Researcher	Benha University	From: 5-10-2014 To: 10-1-2018

Teaching Activities

Undergraduate

#	Course/Rotation Title	Extent of Contribution (no. of lectures/Tutorials. Or labs, Clinics)
1	Calculus I	60 Hours as Teaching 15+ Hours as Tutorials per Semester
2	Calculus II	60 Hours as Teaching 15+ Hours as Tutorials per Semester
3	Differential Equations and Numerical Methods	45 Hours as Teaching 15+ Hours as Tutorials per Semester
4	Linear Algebra	45 Hours as Teaching 15+ Hours as Tutorials per Semester
5	Probability and Statistics	15 Hours as Teaching 15+ Hours as Tutorials per Semester
6	Operation Research	45 Hours as Teaching per Semester

Brief Description of Undergraduate Courses Taught: (Course Title – Description)

1	Calculus I- Functions, Differentiations and Integrations and their applications
2	Calculus II- Parametric Equations, Vectors, Partial Derivatives, Double and Triple Integrals, Areas and Volumes.
3	Differential Equations and Numerical Methods - 1^{st} –Order Differential Equations, 2^{nd} Order Differential Equations, Higher Order Differential Equations, Systems of Differential Equations, Laplace Transforms, Power Series Solutions and Numerical Methods for Solving 1^{st} –Order Differential Equations.
4	Linear Algebra - Matrices: operations and Properties, System of Linear Equations, Vector Spaces, Eigen values and Eigen vectors and Some applications.
5	Probability and Statistics- Basic Concepts of Statistics, Organization and Description of Data, Descriptive Study of Bivariate Data, Probability, Probability Distributions, Discrete and Continuous Distributions, Test of Hypothesis, Correlations and Linear regression.
6	Operation Research- Importance of Operation Research, Linear and Non-Linear Programming, Optimal solutions of Linear Programming by Graphs, Simplex Methods, Big M Methods, Transportation Problems, Graph Theory, Network Problems and Some Engineering Problems.

Postgraduate

#	Course/Rotation Title	Extent of Contribution (no. of lectures/Tutorials. Or labs, Clinics)
1	Selected Topics in Differential Equations	45 Hours as Teaching per Semester
2	Research Methodology	30 Hours as Teaching per Semester
3	Selected Topics in Analysis	45 Hours as Teaching per Semester

Brief Description of Postgraduate Courses Taught: (Course Title – Code: Description)

1	Selected Topics in Differential Equations- Solutions of Differential Equations by Laplace Transforms, Fourier Transforms and Power Series, Matrix Differential Equations by using Kronecker Products, Rules of Fractional Calculus, Solutions of Fractional Differential Equations and Matrix Fractional Differential Equations.
2	Research Methodology- Planning for preparing Master Thesis and Ph.D Thesis
3	Selected Topics in Analysis- Measure Theory, Topology and Complex Analysis.

Guest/Invited Lectures for Undergraduate Students

#	Activity/Course Title and Code	Subject	College and University or Program	Date
1	Seminar	Open	Faculty of Science / University of	14-5-2019
		Problems on	Benha	
		Fractional		
		Calculus		
2	Seminar	Mathematical	Faculty of Science / University of	1-2-
		Structures of	Benha.	2020
		DNA		

Supervision of Master and/or PhD Thesis

#	Degree Type	Title	Institution	Date
	Master	Fractional Calculus and Some	Department of Mathematics	4/15/2019
		Applications		
	Master	The Weighted Moore-Penrose	Department of Mathematics/ Faculty	8/05/2020
		Inverses of Matrices and	of Science	
		Some of Their Applications		

Administrative Responsibilities, Committee and Community Service

#	From	To	Position	Organization
1	14-09-2017	11-09-2018	Chairman	Department of Mathematics - Faculty of Science and Information Technology
2	15-09-2018	11-09-2019	Chairman of Organizing Committee	Third Conference on Mathematical Sciences-- Benha University
3	01-1-2019	21-1-2020	Coordinator of Organizing Committee	Second Conference on Mathematical Sciences- Benha University

Committee Membership

#	From	To	Position	Organization
1	**1-10-2020**	**Present**	Committee Membership	Egypt Society for Scientific Research - Ministry of Higher Education
2	15-09-2018	11-09-2019	Organizing and Technical Committee	Conference on Mathematical Sciences
3	01-1-2009	21-1-2020	Organizing and Technical	Conference on Mathematical Sciences

			Committee	

Scientific Consultations

#	From	To	Institute	Full-time or Part-time
1	11-5-2014	**Present**	Future University	Part-Time
2	1-5-2018	**Present**	MTI University	Part-Time
3	11-1-2022	**Present**	BNU University	Part-Time

Prizes

Certificate of merit from Engineers Association in Kalubia Governate (2008)
Certificate of merit from Benha Higher Institute of Technology (2008)
Certificate of merit from Benha Faculty of Engineering (2013)

LIST OF PUBLICATIONS (INTERNATIONAL JOURNAL PAPERS)

[1] **Mohamed R. Ali,** Adel R. Hadhood, "Hybrid Orthonormal Bernstein and Block- Pulse functions wavelet scheme for solving the 2D Bratu problem," Results in Physics, vol.13, pp.12-21 (2019).

[2] **Mohamed R. Ali,** Solution of KdV and boussinesq using Darboux transformation, Communication in Mathematical Modeling and Applications, 13(3) (2018) 16-27.

[3] **Mohamed R. Ali,** Mohamed M. Mousa, Wen-Xiu Ma, Solution of nonlinear Volterra integral equations with weakly singular kernel by using the HOBW method, Advances in Mathematical Physics (2019) 1-10.

[4] **Mohamed R. Ali,** Wen-Xiu Ma, New Exact Solutions of Nonlinear (3 + 1)- Dimensional Boiti-Leon-Manna-Pempinelli Equation, Advances in MathematicalPhysics (2019) 1-8.

[5] **Mohamed R. Ali,** Adel R. Hadhood, Application of Haar wavelet method for solving the nonlinear fuzzy integro-differential equations, Journal of Computational and Theoretical Nanoscience, 16(2) (2019).

[6] **Mohamed R. Ali,** Adel R. Hadhood, H.M. Srivastava, "Solution of fractional Volterra–Fredholm integro-differential equations under mixed boundary conditions by using the HOBW method," Advances in Difference Equations, (2019), pp.1-14 (2019).

[7] **Mohamed R. Ali,** "A Truncation Method for Solving the Time-Fractional Benjamin- Ono Equation," Journal of Applied Mathematics, (2019) (18):1-7.

[8] **Mohamed R. Ali,** Dumitru Baleanu, "Haar wavelets scheme for solving the unsteady gas flow in four-dimensional," Thermal Science, (2019) (23):292-301.

[9] **Mohamed R. Ali,** Wen-Xiu Ma, "Detection of a new multi-wave solutions in an unbounded domain," Modern Physics Letters B, (2019) 33(34).

[10] Mohamed A. Ramadan, Adel R. Hadhoud, **Mohamed R. Ali,**" Numerical solutions of singular initial value problems in the second-order ordinary differential equations using Hybrid Orthonormal Bernstein and Block-Pulse Functions," Journal of the Egyptian Mathematical Society, vol.24, no. 4, pp.45-60 (2018).

[11] Mohamed M. Mousa, **Mohamed R. Ali,** "The Method of Lines and Adomian Decomposition for Obtaining Solitary Wave Solutions of the KdV Equation,", Applied Physics Research, vol.5, no. 3, pp.43-57 (2013).

[12] Mohamed M. Mousa, Wen-Xiu Ma, **Mohamed R. Ali,** Application of a new hybrid method for solving singular fractional Lane–Emden type equations in astrophysics, Modern Physics Letters B, (2019) 34(31).

[13] Baleanu, D., Sadat, R. & **Mohamed R. Ali,** The method of lines for solution of the carbon nanotubes engine oil nanofluid over an unsteady rotating disk. Eur. Phys. J. Plus135, 788 (2020). https://doi.org/10.1140/epjp/s13360-020-00763-4.

[14] **Mohamed R. Ali,** Hadhoud, Adel R., and Ma, Wen-Xiu. 'Evolutionary Numerical Approach for Solving Nonlinear Singular Periodic Boundary Value Problems' *Journal of Intelligent & Fuzzy Systems.* 1 Jan. (2020): 7723 – 7731.

[15] Garg, H., Ali, Z., Mahmood, T., **Mohamed R. Ali,** & Alburaikan, A. (2023). Schweizer-Sklar prioritized aggregation operators for intuitionistic fuzzy information and their application in multi-attribute decision-making. Alexandria Engineering Journal, 67, 229-240.

[16] Wen-Xiu Ma, **Mohamed R. Ali,** R. Sadat, "Analytical Solutions for Nonlinear Dispersive Physical Model", Complexity, vol. (2020), Article D 3714832, 8 pages, (2020). https://doi.org/10.1155/2020/3714832

[17] **Mohamed R. Ali,** Dumitru Baleanu, New wavelet method for solving boundary value problems arising from an adiabatic tubular chemical reactor theory, International Journal of Biomathematics. Vol. 13, No. 07, 2050059 (2020).

[18] **Mohamed R. Ali,** Sadat, Lie symmetry analysis, new group invariant for the(3 + 1)-

dimensional and variable coefficients for liquids with gas bubbles models, Chinese Journal of Physics, Volume 71, (2021), Pages 539-547, ISSN 0577-9073.

[19] **Mohamed R. Ali,** Sadat, R. Construction of Lump and optical solitons solutions for (3 + 1)
model for the propagation of nonlinear dispersive waves in inhomogeneous media. Optical and Quantum Electronics, 53, 279 (2021). https://doi.org/10.1007/s11082-021-02916-w

[20] **Mohamed R. Ali,** Wen-Xiu Ma, New exact solutions of Bratu Gelfand model in two dimensions using Lie symmetry analysis, Chinese Journal of Physics, Volume 65, 2020, Pages 198-206, ISSN 0577-9073, https://doi.org/10.1016/j.cjph.2020.01.008.

[21] Ayub, A., Sabir, Z., Altamirano, **Mohamed R. Ali,** Characteristics of melting heat transport of blood with time-dependent cross-nanofluid model using Keller–Box and BVP4C method. Engineering with Computers (2021). https://doi.org/10.1007/s00366-021-01406-7.

[22] **Mohamed R. Ali,** Al-Khaled, K., Hussain, M., Labidi, T., Khan, S. U., Kolsi, L., & Sadat, R. (2022). Effect of design parameters on passive control of heat transfer enhancement phenomenon in heat exchangers–A brief review. *Case Studies in Thermal Engineering*, 102674.

[23] **Mohamed R. Ali,** The Method of Lines Analysis of Heat Transfer of Ostwald-de Waele Fluid Generated by a Non-uniform Rotating Disk with a Variable Thickness, Journal of Applied and Computational Mechanics 7 (2), pages 432-44, (2021).

[24] Mohamed M. Mousa, **Mohamed R. Ali,** & Wen-Xiu Ma, A combined method for simulating MHD convection in square cavities through localized heating by method of line and penalty-artificial compressibility, Journal of Taibah University for Science, 15:1, 208-217, (2021). DOI: 10.1080/16583655.2021.1951503.

[25] **Mohamed R. Ali,** Sadat, R. & Ma, WX. Investigation of new solutions for an extended (2 + 1)-dimensional Calogero-Bogoyavlenskii-Schif equation. Front. Math. China 16, 925–936 (2021). https://doi.org/10.1007/s11464-021-0952-3.

[26] **Mohamed R. Ali,** Ma, W. X., & Sadat, R. Lie symmetry analysis and invariant solutions for (2+ 1) dimensional Bogoyavlensky-Konopelchenko equation with variable-coefficient in wave propagation. Journal of Ocean Engineering and Science, *7*(3), 248-254(2022).

[27] **Mohamed R. Ali,** and Wen-Xiu Ma , and R. Sadat , Lie Symmetry Analysis and Wave Propagation in Variable-Coefficient Nonlinear Physical Phenomena, East Asian Journal on Applied Mathematics, , 12, 1, 201-212 (2022).

[28] R. Sadat, Praveen Agarwal, R. Salah, **Mohamed R. Ali,** Lie symmetry analysis and invariant solutions of 3D Euler equations for axisymmetric, incompressible and inviscid flow in the cylindrical coordinates. advanced difference equations, 2021, 486 (2021).

[29] Sabir, Z., Raja, M.A.Z., Shoaib, M., **Mohamed R. Ali,** A novel design of a sixth-order nonlinear modeling for solving engineering phenomena based on neuro intelligence algorithm. Engineering with Computers (2022). https://doi.org/10.1007/s00366-021- 01596-0.

[30] Sabir, Z., **Mohamed R. Ali,** & Sadat, R. Gudermannian neural networks using the optimization procedures of genetic algorithm and active set approach for the three- species food chain nonlinear model. Journal of Ambient Intelligence and Humanized Computing (2022). https://doi.org/10.1007/s12652-021-03638-3.

[31] **Mohamed R. Ali**, Khattab, M.A. & Mabrouk, S.M. Travelling wave solution for the Landau-Ginburg-Higgs model via the inverse scattering transformation method. Nonlinear Dyn (2023). https://doi.org/10.1007/s11071-022-08224-6

[32] Sabir, Z., Raja, M.A.Z., Nguyen, T.G., **Mohamed R. Ali,** Applications of neural networks for the novel designed of nonlinear fractional seventh order singular system. Eur. Phys. J. Spec. Top. (2022). https://doi.org/10.1140/epjs/s11734-022-00457-1.

[33] Ayub, A., sabir, Z., Wahab, H.A., **Mohamed R. Ali,** Analysis of the nanoscale heat transport and Lorentz force based on the time-dependent Cross nanofluid. Engineering with Computers, https://doi.org/10.1007/s00366-021-01579-1. (2022).

[34] Botmart, T., Sabir, Z., Raja, M. A. Z., **Mohamed R. Ali,** Sadat, R., Aly, A. A., & Saad, A. A hybrid swarming computing approach to solve the biological nonlinear Leptospirosis system. Biomedical Signal Processing and Control, 77, 103789 (2022).

[35] Singkibud, P., Sabir, Z., Al Nuwairan, M., Sadat, R., & **Mohamed R. Ali,**. Cubic autocatalysis-based activation energy and thermophoretic diffusion effects of steady micro-polar nano-fluid. Microfluidics and Nanofluidics, *26*(7), 1-12 (2022).

[36] Sabir, Z., **Mohamed R. Ali,** Alhazmi, S. E., Raja, M. A. Z., & Sadat, R. Numerical treatment for the nonlinear fifth kind of multi-singular differential model: a neuro-swarming approach. Physica Scripta, *97*(7), 075203 (2022).

[37] Sabir, Z., Wahab, H. A., Nguyen, T. G., Altamirano, G. C., Erdoğan, F., & **Mohamed R. Ali,**. Intelligent computing technique for solving singular multi-pantograph delay differential equation. Soft Computing, 1-13 (2022).

[38] Sabir, Z., Botmart, T., Raja, M. A. Z., Sadat, R., **Mohamed R. Ali,** Alsulami, A. A., & Alghamdi, A.

Artificial neural network scheme to solve the nonlinear influenza disease model. Biomedical Signal Processing and Control, *75*, 103594 (2022).

[39] Wang, F., Sajid, T., Ayub, A., Sabir, Z., Bhatti, S., Shah, N. A., ... & **Mohamed R. Ali,** . Melting and entropy generation of infinite shear rate viscosity Carreau model over Riga plate with erratic thickness: a numerical Keller Box approach. Waves in Random and Complex Media, 1-25 (2022).

[41] Sabir, Z., Wahab, H. A., **Mohamed R. Ali,** & Sadat, R. Neuron analysis of the two-point singular boundary value problems arising in the thermal explosion's theory. Neural Processing Letters, 1-28 (2022).

[42] Sabir, Z., **Mohamed R. Ali,** Raja, M. A. Z., Shoaib, M., Núñez, R. A. S., & Sadat, R. Computational intelligence approach using Levenberg–Marquardt backpropagation neural networks to solve the fourth-order nonlinear system of Emden–Fowler model. Engineering with Computers, 1-17 (2021).

[43] Ayub, A., Wahab, H. A., Balubaid, M., Mahmoud, S. R., **Mohamed R. Ali,** & Sadat, R., Analysis of the nanoscale heat transport and Lorentz force based on the time-dependent Cross nanofluid. Engineering with Computers, 1-20 (2022).

[44] Sabir, Z., Raja, M. A. Z., Sadat, R., Ahmed, K. S., **Mohamed R. Ali,** & Al-Kouz, W., Fractional Meyer neural network procedures optimized by the genetic algorithmto solve the bagley-torvik model. Journal of Applied Analysis & Computation, (2022).

[45] Ayub, A., Shah, S. Z. H., Sabir, Z., Rao, N. S., Sadat, R., & **Mohamed R. Ali,**. Spectral relaxation approach and velocity slip stagnation point flow of inclined magnetized cross-nanofluid with a quadratic multiple regression model. Waves in Random and Complex Media, 1-25 (2022).

[46] Botmart, T., Sabir, Z., Raja, M. A. Z., Weera, W., Sadat, R., & **Mohamed R. Ali,** (2022). A numerical study of the fractional order dynamical nonlinear susceptible infected and quarantine differential model using the stochastic numerical approach. Fractal and Fractional, *6*(3), 139.

[47] Sabir, Z., **Mohamed R. Ali,** Raja, M. A. Z., Sadat, R., & Baleanu, D. (2022). Dynamics of three-point boundary value problems with Gudermannian neural networks. Evolutionary Intelligence, 1-13.

[48] Sabir, Z., Baleanu, D., **Mohamed R. Ali,** & Sadat, R. (2022). A novel computing stochastic algorithm to solve the nonlinear singular periodic boundary value problems. International Journal of Computer Mathematics, 1-14.

[49] Sabir, Z., Raja, M. A. Z., Nguyen, T. G., Fathurrochman, I., Sadat, R., & **Mohamed R. Ali,** (2022). Applications of neural networks for the novel designed of nonlinear fractional seventh order singular system. The European Physical Journal Special Topics, 1-15.

[50] Ayub, A., Sabir, Z., Shah, S. Z. H., Mahmoud, S. R., Algarni, A., Sadat, R., & **Mohamed R. Ali,** (2022). Aspects of infinite shear rate viscosity and heat transport of magnetized Carreau nanofluid. The European Physical Journal Plus, *137*(2), 1-17.

[51] Sabir, Z., **Mohamed R. Ali,** & Sadat, R., Gudermannian neural networks using the optimization procedures of genetic algorithm and active set approach for the three-species food chain nonlinear

model. Journal of Ambient Intelligence and Humanized Computing, 1-10 (2022).

[52] Sabir, Z., **Mohamed R. Ali,** Fathurrochman, I., Raja, M. A. Z., Sadat, R., & Baleanu, D. Dynamics of multi-point singular fifth-order Lane–Emden system with neuro-evolution heuristics. Evolving Systems, 1-12 (2022).

[53] Ayub, A., Sabir, Z., Shah, S. Z. H., Wahab, H. A., Sadat, R., & **Mohamed R. Ali,.** Effects of homogeneous-heterogeneous and Lorentz forces on 3-D radiative magnetized cross nanofluid using two rotating disks. International Communications in Heat and Mass Transfer, *130*, 105778 (2022).

[54] Sabir, Z., Raja, M. A. Z., Baleanu, D., Sadat, R., & **Mohamed R. Ali,** Investigations of nonlinear induction motor model using the Gudermannian neural networks. Thermal Science, (2022), 261-261.

[55] Muhammad Umar, Fazli Amin, Qasem Al-Mdallal, **Mohamed R. Ali,** A stochastic computing procedure to solve the dynamics of prevention in HIV system, Biomedical Signal Processing and Control, Volume 78, 2022, 103888, ISSN 1746-8094, https://doi.org/10.1016/j.bspc.2022.103888.

[56] Kanit Mukdasai, Zulqurnain Sabir, Muhammad Asif Zahoor Raja , R. Sadat , **Mohamed R. Ali,** Peerapongpat Singkibud,. A numerical simulation of the fractional order Leptospirosis model using the supervise neural network, Alexandria Engineering Journal, Volume 61, Issue 12 (2022).

[57] Shahzad, A., Liaqat, F., Ellahi, Z., **Mohamed R. Ali,** Thin film flow and heat transfer of Cu-nanofluids with slip and convective boundary condition over a stretching sheet. scientific reports, **12**, 14254 (2022). https://doi.org/10.1038/s41598-022-18049-3.

[58] Abid A. Memon, Saqib Murtaza, M. Asif Memon, Kaleemullah Bhatti, Mojammel Haque, **Mohamed R. Ali,** "Simulation of Thermal Decomposition of Calcium Oxide in Water with Different Activation Energy and the High Reynolds Number", Complexity, vol. 2022, Article ID 3877475, 21 pages, 2022. https://doi.org/10.1155/2022/3877475.

[59] S. Khaled Ahmed, **Mohamed R. Ali,** M. Maha Lashin, F. Fayroz Sherif, designing a new fast solution to control isolation rooms in hospitals depending on artificial intelligence decision, Biomedical Signal Processing and Control, Volume 79, Part 1, 2023, 104100, ISSN 1746-8094.

[60] Thongchai Botmart, Syed Zahir Hussain Shah, Zulqurnain Sabir, Wajaree weera, R. Sadat, **Mohamed R. Ali,** & Wael Al-Kouz, The inclination of magnetic dipole effect and nanoscale exchange of heat of the Cross nanofluid, Waves in Random and Complex Media, (2022), DOI: 10.1080/17455030.2022.2128225.

[61] Sabir, Z., Raja, M.A.Z., **Mohamed R. Ali,** An advance computational intelligent approach to solve the third kind of nonlinear pantograph Lane–Emden differential system. Evolving Systems (2022). https://doi.org/10.1007/s12530-022-09469-7.

[62] Singkibud, Peerapongpat, **Mohamed R. Ali,** "Swarming morlet wavelet neural network procedures for the mathematical robot system." Informatics in Medicine Unlocked 33, (2022): 101081.

[63] Cholamjiak, Watcharaporn, **Mohamed R. Ali,** "Artificial intelligent investigations for the dynamics of the bone transformation mathematical model." Informatics in Medicine Unlocked (2022): 101105.

[64] Garg, H., Ali, Z., Mahmood, T., & **Mohamed R. Ali,**. TOPSIS-method based on generalized dice similarity measures with hamy mean operators and its application to decision-making process. Alexandria Engineering Journal (2022).

[65] Sabir, Z., Asmara, A., Dehraj, S., Raja, M. A. Z., Altamirano, G. C., Salahshour, S., ... & **Mohamed R. Ali** (2022). A mathematical model of coronavirus transmission by using the heuristic computing neural networks. Engineering Analysis with Boundary Elements.

[66] Sohail, M., Nazir, U., Naz, S., Singh, A., Mukdasai, K., **Mohamed R. Ali**, ... & Galal, A. M. (2022). Utilization of Galerkin finite element strategy to investigate comparison performance among two hybrid nanofluid models. ***Scientific Reports***, *12*(1), 1-15.

[67] Botmart, T., Sabir, Z., Raja, M. A. Z., Sadat, R., & **Mohamed R. Ali**. (2023). Stochastic procedures to solve the nonlinear mass and heat transfer model of Williamson nanofluid past over a stretching sheet. Annals of Nuclear Energy, 181, 109564.

[68] Nur Akkilic, A., Sabir, Z., Raja, M. A. Z., Bulut, H., Sadat, R., & **Mohamed R. Ali**. (2022). Numerical performances through artificial neural networks for solving the vector-borne disease with lifelong immunity. *Computer Methods in Biomechanics and Biomedical Engineering*, 1-11.

[69] Mukdasai, K., Sabir, Z., Raja, M. A. Z., Singkibud, P., Sadat, R., & **Mohamed R. Ali**. (2023). A computational supervised neural network procedure for the fractional SIQ mathematical model. The European Physical Journal Special Topics, 1-12.

[70] Waqas, H., Farooq, U., Hassan, A., Liu, D., Noreen, S., Makki, R., ... & **Mohamed R. Ali**. (2023). Numerical and Computational simulation of blood flow on hybrid nanofluid with heat transfer through a stenotic artery: Silver and gold nanoparticles. **Results in Physics**, 44, 106152.

[71] Akkurt, N., Shedd, T., Memon, A. A., **Mohamed R. Ali**., & Bouye, M. (2022). Analysis of the forced convection via the turbulence transport of the hybrid mixture in three-dimensional L-shaped channel. Case Studies in Thermal Engineering, 102558.

[72] Latif, S., Sabir, Z., Raja, M. A. Z., Altamirano, G. C., Núñez, R. A. S., Gago, D. O., ... & **Mohamed R. Ali**. (2022). IoT technology enabled stochastic computing paradigm for numerical simulation of heterogeneous mosquito model. Multimedia Tools and Applications, 1-16.

[73] Ma, W. X., Seoud, E. Y., **Mohamed R. Ali**., & Sadat, R. (2023). Dynamical Behavior and Wave Speed Perturbations in the (2+ 1) pKP Equation. Qualitative Theory of Dynamical Systems, 22(1), 1-16.

[74] Haider, Q., Sabir, Z., Salahshour, S., **Mohamed R. Ali**., Tag Eldin, E. S., & Sadat, R. (2022). Magneto-hydraulic Casson fluid flow under the suction/blowing effects past over the porous stretching surface. Waves in Random and Complex Media, 1-20.

[75] **Mohamed R. Ali**, Khattab, M. A., & Mabrouk, S. M. (2022). Optical soliton solutions for the integrable Lakshmanan-Porsezian-Daniel Equation Via the inverse scattering transformation method with applications. Optik, 170256.

[76] **Mohamed R. Ali**, Khattab, M. A., & Mabrouk, S. M. (2022). Mathematical examination for the energy flow in an inhomogeneous Heisenberg ferromagnetic chain. Optik, 271, 170138.

[77] Sabir, Z., Said, S.B., Al-Mdallal, Q., **Mohamed R. Ali**. A neuro swarm procedure to solve the novel second order perturbed delay Lane-Emden model arising in astrophysics. Sci Rep 12, 22607 (2022). https://doi.org/10.1038/s41598-022-26566-4.

[78] Botmart, T., Ayub, A., Sabir, Z., weera, W., Sadat, R., & **Mohamed R. Ali** (2022). Infinite shear rate aspect of the cross-nanofluid over a cylindrical channel with activation energy and inclined magnetic dipole effects. Waves in Random and Complex Media, 1-21.

[79] Rasool, G., Ahammad, N. A., **Mohamed R. Ali**, Shah, N. A., Wang, X., Shafiq, A., & Wakif, A. (2022). Hydrothermal and mass aspects of MHD non-Darcian convective flows of radiating thixotropic nanofluids nearby a horizontal stretchable surface: Passive control strategy. *Case Studies in Thermal Engineering*, 102654.

[80] Wang, D., Ali, M. A., Alizadeh, A. A., Chaturvedi, R., **Mohamed R. Ali** & Sohail, M. (2023). A numerical investigation of a two-phase nanofluid flow with phase change materials in the thermal management of lithium batteries and use of machine learning in the optimization of the horizontal and vertical distances between batteries. Case Studies in Thermal Engineering, 41, 102582.

[81] Sabir, Z., Sadat, R., **Mohamed R. Ali**, Said, S. B., & Azhar, M. (2022). A numerical performance of the novel fractional water pollution model through the Levenberg-Marquardt backpropagation method. Arabian Journal of Chemistry, 104493.

[82] Habib, A., Akram, S., Ali, M. R., Muhammad, T., Zainab, S., & Jehangir, S. (2023). Radio Frequency Identification Temperature/CO2 Sensor Using Carbon Nanotubes. Nanomaterials, 13(2), 273.

[83] Boonsatit, N., Sohail, M., Mukdasai, K., Nazir, U., Singh, M., Singh, A., ... & **Mohamed R. Ali** (2023). Galerkin computational work on thermally enhancement process in complex rheological generalized theory due to 3D-partially ionized rotational flow. *Case Studies in Thermal Engineering*, 102709.

[84] Emad Ghandourah , Muzamal Hussain , MohamedA. Khadimallah, Mashhour Alazwari, **Mohamed R. Ali** and Mohammed A. Hefni, Validity assessment of aspect ratios based on Timoshenko-beam model: Structural design, Computers and Concrete, Vol. 31, No. 1 (2023) 1-7.

[85] Farooq, U., Waqas, H., Alhazmi, S. E., Alhushaybari, A., Imran, M., Sadat, R., ... & **Mohamed R. Ali** (2023). Numerical Treatment of Casson Nanofluid Bioconvectional Flow with Heat Transfer Due To Stretching Cylinder/Plate: Variable Physical Properties. Arabian Journal of Chemistry, 104589.

[86] Farooq, U., Waqas, H., Makki, R., **Mohamed R. Ali**, Alhushaybari, A., Muhammad, T., & Imran, M. (2023). Computation of Cattaneo-Christov heat and mass flux model in Williamson nanofluid flow with bioconvection and thermal radiation through a vertical slender cylinder. Case Studies in Thermal Engineering, 102736.

[87] Mehmood, R., Tabassum, R., **Mohamed R. Ali**, & Muhammad, T. (2023). Crosswise Stream of Cu-H2O Nanofluid with Micro Rotation Effects: Heat Transfer Analysis. Nanomaterials, 13(3), 471.

[88] Ali, A., Shah, W. H., Safeen, M. A., Ali, L., Tufail, M., Ullah, Z., **Mohamed R. Ali** & Imran, N. Effect of Ca Doping on Arbitrary Canting of Magnetic Exchange Interactions in La1-xCaxMnO3 Nano-particles. Frontiers in Materials, 10, 29.

[89] Farooq, U., Waqas, H., Aldhabani, M. S., Fatima, N., Alhushaybari, A., **Mohamed R. Ali**, ... & Muhammad, T. (2023). Modeling and Computational Framework of Radiative Hybrid Nanofluid Configured By a Stretching Surface Subject To Entropy Generation: Using Keller Box Scheme. Arabian Journal of Chemistry, 104628.

[90] Ayub, A., Sabir, Z., Said, S. B., Baskonus, H. M., Sadat, R., & **Mohamed R. Ali**, (2023). Nature analysis of Cross fluid flow with inclined magnetic dipole. Microsystem Technologies, 1-18.

[91] Elboughdiri, N., Ghernaout, D., Muhammad, T., Alshehri, A., Sadat, R., **Mohamed R. Ali** & Wakif, A. (2023). Towards a novel EMHD dissipative stagnation point flow model for radiating copper-based ethylene glycol nanofluids: An unsteady two-dimensional homogeneous second-grade flow case study. Case Studies in Thermal Engineering, 102914.

[92] Ismael, H. F., Nabi, H. R., Sulaiman, T. A., Shah, N. A., & **Mohamed R. Ali** (2023). Multiple soliton and M-lump waves to a generalized B-type Kadomtsev–Petviashvili equation. Results in Physics, 106402.

[93] Ali, K. K., Tarla, S., **Mohamed R. Ali,** Yusuf, A., & Yilmazer, R. (2023). Consistent solitons in the plasma and optical fiber for complex Hirota-dynamical model. Results in Physics, 106393.

[94] Sabir, Z., Raja, M. A. Z., **Mohamed R. Ali**., Sadat, R., Fathurrochman, I., Núñez, R. A. S., & Bhat, S. A. (2023). A neuro Meyer wavelet neural network procedure for solving the nonlinear Leptospirosis model. Intelligent Systems with Applications, 200243.

[95] Sabir, Z., & **Mohamed R. Ali** (2023). Analysis of perturbation factors and fractional order derivatives for the novel singular model using the fractional Meyer wavelet neural networks. Chaos, Solitons & Fractals: X, 11, 100100.

[96] Khan, S., Ayub, A., Shah, S. Z. H., Sabir, Z., Rashid, A., Shoaib, M., ... & **Mohamed R. Ali** (2023). Analysis of inclined magnetized unsteady cross nanofluid with buoyancy effects and energy loss past over a coated disk. Arabian Journal of Chemistry, 16(10), 105161.

[97] He, Z., Arain, M. B., Khan, W. A., Alzahrani, A. R. R., Muhammad, T., Hendy, A. S., & **Mohamed R. Ali** (2023). Theoretical exploration of heat transport in a stagnant power-law fluid flow over a stretching spinning porous disk filled with homogeneous-heterogeneous chemical reactions. Case Studies in Thermal Engineering, 50, 103406.

[98] Ahmad, S., Ali, K., Ayub, A., Bashir, U., Rashid, F. L., Aryanfar, Y., **Mohamed R. Ali** & Ali, L. (2023). Localized magnetic fields and their effects on heat transfer enhancement and vortices generation in tri-hybrid nanofluids: A novel investigation. Case Studies in Thermal Engineering, 50, 103408.

[99] Umar, M., Amin, F., & **Mohamed R. Ali** (2023). Neuro-swarm intelligence to study mosquito dispersal system in a heterogeneous atmosphere. Evolving Systems, 1-13.

[100] Ali, K. K., Yusuf, A., Yokus, A., & **Mohamed R. Ali** (2023). Optical waves solutions for the perturbed Fokas–Lenells equation through two different methods. Results in Physics, 53, 106869.

[101] **Mohamed R. Ali**, Khattab, M. A., & Mabrouk, S. M. (2023). Investigation of travelling wave solutions for the (3+ 1)-dimensional hyperbolic nonlinear Schrödinger equation using Riccati equation and F-expansion techniques. Optical and Quantum Electronics, 55(11), 991.

[102] Ahmad, S., Ali, K., Sajid, T., Bashir, U., Rashid, F. L., **Mohamed R. Ali**, ... & Darvesh, A. (2023). A novel vortex dynamics for micropolar fluid flow in a lid-driven cavity with magnetic field localization–A computational approach. Ain Shams Engineering Journal, 102448.

[103] Zhang, K., Alshehry, A. S., Aljahdaly, N. H., Shah, R., Shah, N. A., & **Mohamed R. Ali** (2023). Efficient computational approaches for fractional-order Degasperis-Procesi and Camassa–Holm equations. Results in Physics, 50, 106549.

[104] Obalalu, A. M., Memon, M. A., Saleem, S., Abbas, A., Olayemi, O. A., **Mohamed R. Ali**., ... & Hendy, A. S. (2023). Thermal performance of Oldroyd-B hybrid nanofluid in solar energy-based water pumping systems and entropy generation minimization. Case Studies in Thermal Engineering, 103476.

[105] Nimmy, P., Nagaraja, K. V., Srilatha, P., Karthik, K., Sowmya, G., Kumar, R. V., ... & **Mohamed R. Ali** (2023). Implication of radiation on the thermal behavior of a partially wetted dovetail fin using an artificial neural network. Case Studies in Thermal Engineering, 103552.

[106] Zafar, A., Raheel, M., **Mohamed R. Ali**, Myrzakulova, Z., Bekir, A., & Myrzakulov, R. (2023). Exact Solutions of M-Fractional Kuralay Equation via Three Analytical Schemes. Symmetry, 15(10), 1862.

[107] Obalalu, A. M., Alqarni, M. M., Odetunde, C., Memon, M. A., Olayemi, O. A., Shobo, **Mohamed R. Ali**., ... & Hendy, A. S. (2023). Improving agricultural efficiency with solar-powered tractors and magnetohydrodynamic entropy generation in copper–silver nanofluid flow. Case Studies in Thermal Engineering, 103603.

[108] Asim Zafar, M. Raheel, Ali M. Mahnashi, Ahmet Bekir, **Mohamed R. Ali**. (2023). Exploring the new soliton solutions to the nonlinear M-fractional evolution equations in shallow water by three analytical techniques. Results in Physics, https://doi.org/10.1016/j.rinp.2023.107092 .

[109] Muhammad Jawad, Hassan Ali Ghazwani, **Mohamed R. Ali**, A.S. Hendy, Afraz Hussain Majeed, Xinhua Wang, Numerical simulation for thermal radiative flow of tangent hyperbolic nanofluid due to Riga plate in the presence of joule heating, Case Studies in Thermal Engineering, Volume 52, 2023, 103686, ISSN 2214-157X, https://doi.org/10.1016/j.csite.2023.103686 .

[110] Aqsa Yousaf, Muhammad Imran, Sumeira Yasmin, **Mohamed R. Ali,** Numerical assessment of bioconvection in MHD Prandtl nanofluid with gyrotactic motile microorganisms with bio-fuel applications, Case Studies in Thermal Engineering, Volume 52, 2023, 103639, ISSN 2214-157X, https://doi.org/10.1016/j.csite.2023.103639 .

[111] Mohamed Boujelbene, Aaqib Majeed, Narjes Baazaoui, Kamal Barghout, Nouman Ijaz, Nidal Abu-Libdeh, Sidra Naeem, Ilyas Khan, **Mohamed R. Ali,** Effect of electrostatic force and thermal radiation of viscoelastic nanofluid flow with motile microorganisms surrounded by PST and PHF: Bacillus anthracis in biological applications, Case Studies in Thermal Engineering, Volume 52, 2023, 103691, ISSN 2214-157X, https://doi.org/10.1016/j.csite.2023.103691 .

[112] Qusain Haider, Zulqurnain Sabir, Ahmed S. Hendy, R. Sadat, **Mohamed R. Ali,** Viscosity and thermal conductivity on magneto-hydrodynamic chemically reacting nanofluid over a vertical cone embedded in porous medium, Case Studies in Thermal Engineering, Volume 52, 2023, 103766, ISSN 2214-157X, https://doi.org/10.1016/j.csite.2023.103766 .

[113] Hadi Ali Madkhali, M. Nawaz, Shafia Rana, Sayer Obaid Alharbi, A.S. El-Shafay, **Mohamed R. Ali**, A.S. Hendy, Effect of Cattaneo-Christov heat and mass flux in Carreau-Yasuda tri-nanofluid, Case Studies in Thermal Engineering, Volume 53, 2024, 103787, ISSN 2214-157X, https://doi.org/10.1016/j.csite.2023.103787 .

[114] Naila Nasreen, Muhammad Naveed Rafiq, Usman Younas, Muhammad Arshad, Muhammad Abbas, **Mohamed R. Ali**, Stability analysis and dynamics of solitary wave solutions of the (3+1)-dimensional generalized shallow water wave equation using the Ricatti equation mapping method, Results in Physics, Volume 56, 2024, 107226, ISSN 2211-3797, https://doi.org/10.1016/j.rinp.2023.107226 .

[115] Afraz Hussain Majeed, Rashid Mahmood, Dong Liu, **Mohamed R. Ali**, Ahmed S. Hendy, Binjuan Zhao, Haseeba Sajjad, Flow and heat transfer analysis over a pair of heated bluff bodies in a channel: Characteristics of non-linear rheological models, Case Studies in Thermal Engineering, Volume 53, 2024, 103827, ISSN 2214-157X, https://doi.org/10.1016/j.csite.2023.103827 .

[116] Syed Zahir Hussain Shah, Zulqurnain Sabir, Assad Ayub, Amjid Rashid, R. Sadat, Mohamed R. Ali, An efficient numerical scheme for solving the melting transportation of energy with time dependent Carreau nanofluid, South African Journal of Chemical Engineering, Volume 47, 2024, Pages 345-356, ISSN 1026-9185, https://doi.org/10.1016/j.sajce.2023.11.008 .

[117] Sohail Nadeem, Usman Nasrullah, Jehad Alzabut, Hassan Ali Ghazwani, **Mohamed R. Ali,** Finite element method for the heated Newtonian fluid inside a connected optical cavities, Case Studies in Thermal Engineering, Volume 53, 2024, 103844, ISSN 2214-157X, https://doi.org/10.1016/j.csite.2023.103844 .

[118] Jawad, Muhammad, Naeem Sadiq, and **Mohamed R. Ali**. "Analysis of Chemical Reactive Tangent Hyperbolic Nanofluid Flow with Joule Heating and Motile Microorganisms Through Stretchable Surface." BioNanoScience (2023): 1-14.

[119] Jianfeng Wang, Umar Farooq, Hassan Waqas, Taseer Muhammad, Shan Ali Khan, Ahmed S. Hendy, **Mohamed R. Ali,** Numerical solution of entropy generation in nanofluid flow through a

surface with thermal radiation applications, Case Studies in Thermal Engineering, Volume 54, 2024, 103967, ISSN 2214-157X, https://doi.org/10.1016/j.csite.2023.103967 .

[120] Karmina K. Ali, Waqas Ali Faridi, Abdullahi Yusuf, Magda Abd El-Rahman, **Mohamed R. Ali**, Bifurcation analysis, chaotic structures and wave propagation for nonlinear system arising in oceanography, Results in Physics, Volume 57, 2024, 107336, ISSN 2211-3797, https://doi.org/10.1016/j.rinp.2024.107336 .

[121] B. Shankar Goud, G. Dharmaiah, Ahmed S. Hendy, **Mohamed R. Ali,** Flow over a stretchable cylinder with nonlinear heat sources/sinks: Magnetic dipoles application, Case Studies in Thermal Engineering, Volume 54, 2024, 104038, ISSN 2214-157X, https://doi.org/10.1016/j.csite.2024.104038 .

[122] Payam Jalili, Bahram Jalili, Irshad Ahmad, Ahmed S. Hendy, **Mohamed R. Ali**, Davood Domiri Ganji, Python approach for using homotopy perturbation method to investigate heat transfer problems, Case Studies in Thermal Engineering, Volume 54, 2024, 104049, ISSN 2214-157X, https://doi.org/10.1016/j.csite.2024.104049 .

[123] Hamood Ur Rehman, Muhammad Tehseen, Hameed Ashraf, Aziz Ullah Awan, **Mohamed R. Ali**, Unveiling dynamic solitons in the (2+1)-dimensional Kadomtsev–Petviashvili equation: Insights from fluids and plasma, Partial Differential Equations in Applied Mathematics, Volume 9, 2024, 100633, ISSN 2666-8181, https://doi.org/10.1016/j.padiff.2024.100633 .

[124] Gunisetty Ramasekhar, Muhammad Jawad, A. Divya, Shaik Jakeer, Hassan Ali Ghazwani, Mariam Redn Almutiri, A.S. Hendy, **Mohamed R. Ali**, Heat transfer exploration for bioconvected tangent hyperbolic nanofluid flow with activation energy and joule heating induced by Riga plate, Case Studies in Thermal Engineering, 2024, 104100, ISSN 2214-157X, https://doi.org/10.1016/j.csite.2024.104100 .

[125] .M. Obalalu, Wafa F. Alfwzan, M. Asif Memon, Adil Darvesh, Peter Adegbite, A.S. Hendy, **Mohamed R. Ali**, Energy optimization of quadratic thermal convection on two-phase boundary layer flow across a moving vertical flat plate, Case Studies in Thermal Engineering, 2024, 104073, ISSN 2214-157X, https://doi.org/10.1016/j.csite.2024.104073 .

[126] Maasoomah Sadaf, Saima Arshed, Ghazala Akram, Mohamed R. Ali, Iffat Bano, Analytical investigation and graphical simulations for the solitary wave behavior of Chaffee–Infante equation, Results in Physics, Volume 54, 2023, 107097, ISSN 2211-3797, https://doi.org/10.1016/j.rinp.2023.107097.