

Iqbal M. Batiha

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Personal Information

- ◇ **Full Name:** Iqbal Mohammad Radwan Batiha.
- ◇ **Gender:** Male.
- ◇ **Citizenship and Place of Birth:** Jordanian, Irbid–Jordan.
- ◇ **Marital Status:** Married.
- ◇ **Place of Residence:** Irbid–Jordan.
- ◇ [🌐 https://scholar.google.com/citations?user=91p7nUsAAAAJ&hl=en](https://scholar.google.com/citations?user=91p7nUsAAAAJ&hl=en)
- ◇ [🌐 https://www.researchgate.net/profile/Iqbal-Batiha](https://www.researchgate.net/profile/Iqbal-Batiha)

Education

- ▶ **Ph.D. Mathematics, Applied Mathematics, January 2019**
University: The University of Jordan, Amman, Jordan
Title of Thesis: Tuning of Fractional-order $PI^\lambda D^\delta$ Controllers using Particle Swarm Optimization Technique
Advisor: Professor Shaher Momani
Co-Advisor: Dr. Reyad El-Khazali
Accumulative Average: 3.56/4
- ▶ **M.S. Mathematics, Applied Mathematics, June 2014**
University: AL-albays University, Mafraq, Jordan
Title of Thesis: Numerical Solution for Fractional Differential Equation using Finite Difference Method
Advisor: Dr. Mohammad Zreiqat
Co-Advisor: Dr. Ramzi Al-Badarneh
Accumulative Average: (86.75)%; First Rank
- ▶ **High Diploma in Information Technology and Communication (ICT), 2009**
University: Al-Yarmouk University, Irbid, Jordan
Accumulative Average: (87.5)%
- ▶ **B.A. Mathematics, Applied Mathematics, 2002**
University: Jordan University of Science and Technology (JUST), Irbid, Jordan

Research Interests

- ▶ **Fractional Calculus**
Fractional differential equations, Fractional difference equations.

- ▶ **Control Theory**
Fractional-order PID-controller, PID-controller.
- ▶ **Mathematical Modelling**
Hopfield neural network models, COVID-19 models, Stability analysis.
- ▶ **Optimization Techniques**
Particle swarm optimization algorithm, Bacterial foraging optimization algorithm.
- ▶ **Chaos**
Hidden chaotic attractors, Coexisting attractors, Synchronization, Chaotic behavior analysis.
- ▶ **Numerical Methods**
Finite difference method, Adomian decomposition method, Fractional Euler method, Optimal homotopy analysis method, Optimal homotopy asymptotic method.

Experience

- ▶ **Assistant Professor:**
Irbid National University, Irbid, Jordan (2/2021 till Now).
- ▶ **Adjunct Research Associate Professor:**
Nonlinear Dynamics Research Center, Ajman University, Ajman, UAE (2/2021 till Now).
- ▶ **Researcher:**
International Center for Scientific Researches and Studies, Irbid, Jordan (6/2014 till Now).
- ▶ **Research Associate:**
Deanship of Scientific Research, Al-Balqa Applied University, Irbid, Jordan (3/2022 till 2/2023).
- ▶ **Research Assistant:**
Deanship of Graduate Studies and Research, Ajman University, Ajman, UAE (5/2020 till 12/2020).
- ▶ **Part time instructor:**
Department of Mathematics, The University of Jordan, Amman, Jordan (6/2019 till 8/2019).
- ▶ **Part time instructor:**
Department of Mathematics, Irbid National University, Irbid, Jordan (6/2014 till 8/2014).

Awards & Honors

- ▶ **Awards**
 - ◇ **Oliviu Gherman Award:** In Testimony of the High Regard of my Achievements in the Area of Fractional Calculus and its Applications. The First Online Conference on Modern Fractional Calculus and Its Applications. Biruni University, Istanbul, Turkey, December 4-6, 2020.
 - ◇ **Riemann-Liouville Award, Best FDA Papers:** International Conference on Fractional Differentiation and its Applications (ICFDA'18), Amman, Jordan, 16-18 July, 2018.

- ◇ **The 5th position in Competition for Poetry:** Literature Sawaleef Competition, Amman, Jordan, 2018.
- ◇ **The 4th position in Competition for Poetry:** Cultural Bsaira Ceremony, Tafilah, Jordan, 2006.

► **Honors**

- ◇ **First class honors in Master Degree:** AL-Albays University, Mafrqa, Jordan, 2014.
- ◇ **The University of Hail Friends' List:** Hail, Saudi Arabia, 2022.
- ◇ **Outstanding Reviewer:** International Journal of Emerging Multidisciplinary-Mathematics (IJEMD-M), Volume 1, Issue 1 (inaugural issue), 2022.

Teaching Courses

Calculus I	Calculus II	Statistics and Probability I
Statistics and Probability II	Discrete Mathematics	Number Theory
Numerical Analysis I	Differential Equations I	Biostatistics
Numerical Analysis II		

Involvement in Funded Research Projects

- **Scientific Research Project**, Project Name: **(Chaos, Control and Synchronization in Fractional Dynamical systems and Reaction-Diffusion Systems)**, funded by Al-Balqa Applied University, 15 March, 2022.
- **Microsoft Research Program Grant**, Project Name: **(Mathematical Modeling of the Pandemic Coronavirus (COVID-19) Outbreak through Fractional Derivatives)**, funded by Ajman University and Microsoft Corporation, 1 May, 2020.

Academic Positions

- **Member of University Council Committee**, Irbid National University, 2021-2022.
- **Member of Student Disciplinary Committee**, Irbid National University, 2021-2022.

Academic Supervision Activity

- **A Mathematical Study on a Fractional-order COVID-19 Model**, Ahamad Obeidat, Irbid National University, Irbid, Jordan, 2021.
- **Tuning Fractional-order PID Controller for Single-Joint Arm Dynamics**, Suhaib Njadat, Irbid National University, Irbid, Jordan, 2021.

- ▶ **Solving 2×2 -System of Linear Homogeneous Incommensurate Fractional-order Differential Equations**, Nashat Alamarat, Irbid National University, Irbid, Jordan, 2022.
- ▶ **Solving Fractional Higher-order Linear Time Invariant Systems Using Adomian Decomposition Method**, Omar Talafha, Irbid National University, Irbid, Jordan, 2022.

Thesis Examination Committee

▶ Master's Thesis Examination Committee:

- ◊ **Internal Examiner:** Study of Young and Heinz Inequalities for Matrices, Wafa Gharaibeh, Irbid National University, Irbid, Jordan, 18/1/2022.

Publications

▶ Published/Accepted Papers

1. Shaher Momani, **Iqbal M. Batiha**, A Mathematical study on a fractional-order COVID-19 model, The 48th International Conference Applications of Mathematics in Engineering and Economics (AMEE), Technical University of Sofia, Bulgaria, 7-13 June 2022. [Scopus: Q4], (Accepted).
2. **Iqbal M. Batiha**, Adel Ouannas, Ramzi Albadarneh, Abeer A. Al-Nana, Shaher Momani, Existence and Uniqueness of Solutions for Generalized Sturm-Liouville and Langevin equations via Caputo-Hadamard fractional-order Operator, Engineering Computations, (IF: 1.593), [Scopus: Q2], (Accepted).
3. Nidal Anakira, Zinouba Chebana, Taki-Eddine Oussaeif, **Iqbal M. Batiha**, Adel Ouannas, A study of a weak solution of a diffusion problem for a temporal fractional differential equation, Nonlinear Functional Analysis and Applications (2022).[Scopus: Q1], (Accepted).
4. **Iqbal M. Batiha**, Noureddine Djenina, Adel Ouannas, Taki-Eddine Oussaeif, Fractional-order SEIR Covid-19 model: Discretization and stability analysis, The 7th International Arab Conference on Mathematics and Computations (IACMC 2022), Zarqa University, Jordan, 10-12 May 2022. [Scopus: Q4], (Accepted).
5. Jamal Oudetallah, Zainouba Chebana, Taki-Eddine Oussaeif, Adel Ouannas, **Iqbal M. Batiha**, Theoretical study of explosion phenomena for a semi parabolic problem, The 7th International Arab Conference on Mathematics and Computations (IACMC 2022), Zarqa University, Jordan, 10-12 May 2022. [Scopus: Q4], (Accepted).
6. Nidal Anakira, Amel Hioual, Adel Ouannas, Taki-Eddine Oussaeif, **Iqbal M. Batiha**, Global asymptotic stability for discrete-time SEI reaction-diffusion model, The 7th International Arab Conference on Mathematics and Computations (IACMC 2022), Zarqa University, Jordan, 10-12 May 2022. [Scopus: Q4], (Accepted).
7. Ramzi B. Albadarneh, Ahmad M. Adawi, Sa'ud Al-Sa'di, **Iqbal M. Batiha**, Shaher Momani, A pro rata definition of the fractional-order derivative, The 7th International Arab Conference on Mathematics and Computations (IACMC 2022), Zarqa University, Jordan, 10-12 May 2022. [Scopus: Q4], (Accepted).

8. **Iqbal M. Batiha**, Nouredine Djenina, Adel Ouannas, A stabilization of linear incommensurate fractional-order difference systems, 19th International Conference of Numerical Analysis and Applied Mathematics (ICNAAM 2021), Rhodes, Greece, 20-26 Sep. 2021. [Scopus: Q4], (Accepted).
9. Ramzi B. Albadarneh, Amel Hioual, Adel Ouannas, **Iqbal M. Batiha**, On chaos in the fractional-order discrete-time macroeconomic systems, 19th International Conference of Numerical Analysis and Applied Mathematics (ICNAAM 2021), Rhodes, Greece, 20-26 Sep. 2021. [Scopus: Q4], (Accepted).
10. Amina Aicha Khennaoui, Adel Ouannas, **Iqbal M. Batiha**, Viet-Thanh Pham. Hidden Chaotic Attractors in Fractional Order Discrete Time Systems. In: Agarwal P., Balas V.E., Baleanu D. (eds) Fractional Order Systems and Applications in Engineering, Springer, (2021). [Scopus: Q4]. (Chapter in the Book), (Accepted).
11. Iqbal H. Jebiril, **Iqbal M. Batiha**. On the Stability of commensurate Fractional-order Lorenz System. Progress in Fractional Differentiation and Applications. [Scopus: Q1], (Accepted).
12. Shaher Momani, **Iqbal M. Batiha**. Tuning of the Fractional-order PID Controller for some Real-life Industrial Processes using Particle Swarm Optimization, Progress in Fractional Differentiation and Applications. [Scopus: Q1], (Accepted).
13. **Iqbal M. Batiha**, Abeer A. Al-Nana, Ramzi B. Albadarneh, Adel Ouannas, Ahmad Al-Khasawneh, Shaher Momani, Fractional-order coronavirus models with vaccination strategies impacted on Saudi Arabia's infections, AIMS Mathematics, Vol. 7(7), 12842–12858, (2022). (IF: 1.427), [Scopus: Q2].
14. Amel Hioual, Taki-Eddine Oussaeif, Adel Ouannas, Giuseppe Grassi, **Iqbal M. Batiha**, Shaher Momani, New results for the stability of fractional-order discrete-time neural networks, Alexandria Engineering Journal, Vol. 61(12), 10359-10369, (2022). (IF: 3.732), [Scopus: Q1].
15. Ma'mon Abu Hammad, Iqbal H. Jebiril, **Iqbal M. Batiha**, Salemah Almutlak. Fractional Frobenius Series Solutions of Confluent α -Hypergeometric Differential Equation. Progress in Fractional Differentiation and Applications, Vol. 8(2), 297-304, (2022). [Scopus: Q1].
16. Taki-Eddine Oussaeif, Adel Ouannas, Ben Aoua Leila, **Iqbal M. Batiha**, Hadi Jahanshahi, Existence and uniqueness of the solution for an inverse problem of a fractional diffusion equation with integral condition, Journal of Function Spaces, Vol. (2022), Article ID 7667370, (2022). (IF: 1.807), [Scopus: Q2].
17. Nouredine Djenina, Adel Ouannas, Taki-Eddine Oussaeif, Giuseppe Grassi, **Iqbal M. Batiha**, Shaher Momani, Ramzi B. Albadarneh, On the stability of incommensurate h-nabla fractional-order difference systems, Vol. 6(3), 158, (2022). (IF: 3.313), [Scopus: Q1].
18. Amel Hioual, Adel Ouannas, Taki-Eddine Oussaeif, Giuseppe Grassi, **Iqbal M. Batiha**, Shaher Momani, On Variable-Order Fractional Discrete Neural Networks: Solvability and Stability, Fractal and Fractional, Vol. 6(2), 119, (2022). (IF: 3.313), [Scopus: Q1].
19. **Iqbal M. Batiha**, Shaher Momani, Adel Ouannas, Zaid Momani, Samir B. Hadid, Fractional-order COVID-19 Pandemic Outbreak: modeling and stability analysis, International Journal of Biomathematics, Vol. 15(01), 2150090, (2022). (IF: 2.053), [Scopus: Q2].

20. Zainouba Chebana, Taki-Eddine Oussaeif, Adel Ouannas, **Iqbal M. Batiha**, Solvability of Dirichlet Problem For a Fractional Partial Differential equation by using energy inequality and Faedo-Galerkin method, Innovative Journal of Mathematics, Vol. 1(1), 34-44, (2022).
21. 'Mohd Taib' Shatnawi, Nouredine Djenina, Adel Ouannas, **Iqbal M. Batiha**, Giuseppe Grassi, Novel convenient conditions for the stability of nonlinear incommensurate fractional-order difference systems, Alexandria Engineering Journal, Vol. 61(2), 1655-1663, (2021). (IF: 2.460), [Scopus: Q1].
22. Reyad El. Khazali, **Iqbal M. Batiha**, Shaher Momani. The Drug Administration via Fractional-order $PI^\lambda D^\delta$ -Controller. Progress in Fractional Differentiation and Applications, Vol. 8(1), 53-62, (2022). [Scopus: Q1].
23. Nadjette Debbouche, Adel Ouannas, **Iqbal M. Batiha**, Giuseppe Grassi, Mohammed K. A. Kaabar, Hadi Jahanshahi, Ayman A. Aly, Awad M. Aljuaid, Chaotic Behaviour Analysis of a New Incommensurate Fractional-order Hopfield Neural Network System, Complexity, Vol. 2021, (2021). ISI (IF: 2.833), [Scopus: Q1].
24. A. Othman Almatroud, Adel Ouannas, Giuseppe Grassi, **Iqbal M. Batiha**, Ahlem Gasri, M. Mossa Al-sawalha, Different Linear Control Laws for Fractional Chaotic Maps Using Lyapunov Functional, Archives of Control Sciences, Vol. 31(4), (2021). ISI (IF: 1.697), [Scopus: Q2].
25. Adel Ouannas, **Iqbal M. Batiha**, Stelios Bekiros, Jinping Liu, Hadi Jahanshahi, Ayman A. Aly, Abdulaziz H Alghtani, Synchronization of the Glycolysis Reaction-Diffusion Model via Linear Control Law, Entropy, Vol. 23(11), (2021). ISI (IF: 2.524), [Scopus: Q1].
26. Adel Ouannas, Amina-Aicha Khennaoui, **Iqbal M. Batiha**, Viet-Thanh Pham. Synchronization between fractional chaotic maps with different dimensions. In: Ahmed G. Radwan, Farooq Ahmed Khanday, Lobna A. Said (eds) Fractional-Order Design: Devices, Circuits, and Systems. Academic Press, London, United Kingdom, (2022) 89-121. [Scopus: Q4]. (Chapter in the Book).
27. Adel Ouannas, Amina-Aicha Khennaoui, **Iqbal M. Batiha**, Viet-Thanh Pham. Stabilization of different dimensional fractional chaotic maps. In: Ahmed G. Radwan, Farooq Ahmed Khanday, Lobna A. Said (eds) Fractional-Order Design: Devices, Circuits, and Systems. Academic Press, London, United Kingdom, (2022) 123-155. [Scopus: Q4]. (Chapter in the Book).
28. Amina-Aicha Khennaoui, Adel Ouannas, **Iqbal M. Batiha**, Viet-Thanh Pham. Chaos in fractional-order difference systems. In: Ahmed Radwan, Farooq Khanday, Lobna Said (eds) Fractional Order Systems: An Overview of Mathematics, Design, and Applications for Engineers. Academic Press, London, United Kingdom, (2021) 257-286. [Scopus: Q4]. (Chapter in the Book).
29. Nadjette Debbouche, Adel Ouannas, **Iqbal M. Batiha**, Giuseppe Grassi, Chaotic dynamics in a novel COVID-19 pandemic model described by commensurate and incommensurate fractional-order derivatives, Nonlinear Dynamics, Vol. 2021, (2021). (IF: 5.022), [Scopus: Q1].
30. Ramzi B. Albadarneh, **Iqbal M. Batiha**, A.K. Alomari, Nedat Tahat, Numerical approach for approximating the Caputo fractional-order derivative operator, AIMS Mathematics, Vol. 6, no. 11, (2021), 12743-12756. ISI (IF: 1.427), [Scopus: Q2].

31. Jamal Oudetallah, **Iqbal M. Batiha**, On Almost Expandability in Bitopological Spaces, International Journal of Open Problems in Computer Science and Mathematics, Vol. 14, no. 3, (2021), 43-48.
32. Ramzi B. Albadarneh, A.K. Alomari, Nedal Tahat, **Iqbal M. Batiha**. Analytic Solution of Non-linear Singular BVP with Multi-order Fractional Derivatives in Electrohydrodynamic Flows. TWMS J. App. Eng. Math.. Vol. 11 (4), 2021, 1125-1137. [Scopus: Q4].
33. **Iqbal M. Batiha**, Jamal Oudetallah, Adel Ouannas, Abeer A. Al-Nana, Iqbal H. Jebril, Tuning the Fractional-order PID-Controller for Blood Glucose Level of Diabetic Patients, International Journal of Advances in Soft Computing and its Applications, Vol. 13 (2), 2021, 1-10. [Scopus: Q3].
34. Jamal Ouderallah, Mohammad M. Rousan, **Iqbal M. Batiha**, On D-metacompactness in Topological Spaces, Journal of Applied Mathematics and Informatics, Vol. 39 (5-6), 2021, 919-926. [Scopus: Q4].
35. Mohd Taib Shatnawi, Adel Ouannas, Ghenaiet Bahia, **Iqbal M. Batiha**, Giuseppe Grassi, The Optimal Homotopy Asymptotic Method for Solving Two Strongly Fractional-Order Nonlinear Benchmark Oscillatory Problems, Mathematics, Vol. 9 (18), 2021, 1754. (IF: 2.258), [Scopus: Q2].
36. Ramzi B. Albadarneh, **Iqbal M. Batiha**, Ahmad Adwai, Nedal Tahat, Abdel-Kareem N. Alomari. Numerical approach of Riemann-Liouville fractional derivative operator, International Journal of Electrical and Computer Engineering, Vol. 11 (6), 2021, 5367-5378. [Scopus: Q2].
37. Adel Ouannas, **Iqbal M. Batiha**, Amina–Aicha Khennaoui, Iqbal H. Jebril, On the 0-1 Test for Chaos Applied to the Generalized Fractional-order Arnold Map, 2021 International Conference on Information Technology (ICIT 2021-Proceeding), Amman, Jordan, 2021, 242–245, 9491633, [Scopus: Q4].
38. Adel Ouannas, **Iqbal M. Batiha**, Amina–Aicha Khennaoui, Amjed Zraiqat, Abeer A. Al-Nana, Novel Control Law for the Fractional-order Chaotic Duffing Map, 2021 International Conference on Information Technology (ICIT 2021-Proceeding), Amman, Jordan, 2021, 238–241, 9491768, [Scopus: Q4].
39. Ramzi B. Albadarneh, Adel Ouanna, **Iqbal M. Batiha**, Identical Chua’s circuits application using hybrid dislocated synchronization scheme, 2021 International Conference on Information Technology (ICIT 2021-Proceeding), Amman, Jordan, 2021, 139–142, 9491746, [Scopus: Q4].
40. Jamal Oudetallah, Ghenaiet Bahia, Adel Ouannas, **Iqbal M. Batiha**, The Quotient Homotopy Analysis Method for Solving Nonlinear Initial Value Problems, 2021 International Conference on Information Technology (ICIT 2021-Proceeding), Amman, Jordan, 2021, 195-199, 9491751, [Scopus: Q4].
41. Adel Ouannas, Fatiha Mesdoui, Shaher Momani, **Iqbal M. Batiha**, Giuseppe Grassi, Synchronization of FitzHugh-Nagumo reaction-diffusion systems via one-dimensional linear control law, Archives of Control Sciences, Vol. 31, no. 2, (2021), 333–345. ISI (IF: 1.697), [Scopus: Q2].

42. Ramzi B. Albadarneh, **Iqbal M. Batiha**, Adel Ouanna, Shaher Momani, Modeling COVID-19 Pandemic Outbreak using Fractional-Order Systems, *International Journal of Mathematics and Computer Science*, Vol. 16 (4), 2021, 1405–1421. [Scopus: Q3].
43. **Iqbal M. Batiha**, Adel Ouannas, Janat Emwas. A stabilization approach for a novel chaotic fractional-order discrete neural network. *Journal of Mathematical and Computational Science*, Vol. 11 (5), 5514-5524, (2021). [Scopus: Q4].
44. Reyad El-Khazali¹, Shaher Momani, **Iqbal M. Batiha**. A New Discrete-Time Model of Fractional-Order PLL, 3rd International Conference on Signal Processing and Information Security (ICSPIS 2020), Dubai, United Arab Emirates, 2020, pp. 1-4, doi: 10.1109/ICSPIS51252.2020.9340137, [Scopus: Q4].
45. Nadjette Debbouche, Shaher Momani, Adel Ouannas, 'Mohd Taib' Shatnawi, Giuseppe Grassi, Zohir Dibi, **Iqbal M. Batiha**. Generating multidirectional variable hidden attractors via newly commensurate and incommensurate non-equilibrium fractional-order chaotic systems, *Entropy*, Vol. 23, no. 3, 2021, ISI (IF: 2.494), [Scopus: Q1].
46. Nadjette Debbouche, A. Othman Almatroud, Adel Ouannas, **Iqbal M. Batiha**. Chaos and co-existing attractors in glucose-insulin regulatory system with incommensurate fractional-order derivatives, *Chaos, Solitons & Fractals*, Vol. 143, 2021, 110575. ISI (IF: 3.764), [Scopus: Q1].
47. Amina Aicha Khennaoui, A. Othman Almatroud, Adel Ouannas, M. Mossa Alsawalha, Giuseppe Grassi, Viet-Thanh Pham, **Iqbal M. Batiha**. An unprecedented 2-Dimensional Discrete Time Fractional-order System and its Hidden Chaotic Attractors, *Mathematical Problems in Engineering*, Vol. 2021, Article ID 6768215, 2021. ISI (IF: 1.009), [Scopus: Q1].
48. Amina Aicha Khennaoui, Adel Ouannas, Shaher Momani, **Iqbal M. Batiha**, Zohir Dibi, Giuseppe Grassi. On Dynamics of a Fractional-order Discrete System with only One Nonlinear Term and Without Fixed Points, *Electronics*, Vol. 9, no. 12, 2020. ISI (IF: 2.412), [Scopus: Q1].
49. Ibtissem Talbi, Adel Ouannas, Amina Aicha Khennaoui, Abdelhak Berkane, **Iqbal M. Batiha**, Giuseppe Grassi, Viet-Thanh Pham. Different Dimensional Fractional-order Discrete Chaotic Systems Based on the Caputo h-Difference Discrete Operator: dynamics, control and synchronization, *advances in difference equations*, Vol. 2020, no. 264, 2020. ISI (IF: 1.720), [Scopus: Q1].
50. Ghenaiet Bahia, Adel Ouannas, **Iqbal M. Batiha**, Zaid Odibat. The optimal homotopy analysis method applied on nonlinear time-fractional hyperbolic partial differential equations. *Numerical Methods for Partial Differential Equations*, Vol. 37, no. 3, pp. 2008-202, 2021. ISI (IF: 1.540), [Scopus: Q1].
51. Ramzi B. Albadarneh, **Iqbal M. Batiha**, Nedal Tahat, Abdel-Kareem N. Alomari. Analytical solutions of linear and non-linear incommensurate fractional-order coupled systems. *Indonesian Journal of Electrical Engineering and Computer Science*, Vol. 21, No. 2, 2021. [Scopus: Q3].
52. Nouredine Djenina, Adel Ouannas, **Iqbal M. Batiha**, Giuseppe Grassi, Viet-Thanh Pham. On the Stability of Linear Incommensurate Fractional-Order Difference Systems. *Mathematics*, Vol. 8 (10), 2020, 1754. (IF: 1.747), [Scopus: Q2].

53. **Iqbal M. Batiha**, Ramzi B. Albadarneh, Iqbal H. Jebiril, Shaher Momani. Dynamics Analysis of Fractional-order Hopfield Neural Networks. *International Journal of Biomathematics*, Vol. 13, No. 08, 2050083 (2020). ISI (IF: 1.085), [Scopus: Q2].
54. **Iqbal M. Batiha**, Reyad El-Khazali, Shaher Momani. Dynamic Responses of PI^λ , PD^δ , and $PI^\lambda D^\delta$ Controllers for Prosthetic Hand Model Using PSO Algorithm. The IEEE International Symposium on Signal Processing and Information Technology (ISSPIT19), December 10-12, 2019, Ajman, United Arab Emirates. [Scimago: Q4].
55. Shaher Momani, **Iqbal M. Batiha**, Reyad El-Khazali. Design of $PI^\lambda D^\delta$ -Heart Rate Controllers for Cardiac Pacemaker. The IEEE International Symposium on Signal Processing and Information Technology (ISSPIT19), December 10-12, 2019, Ajman, United Arab Emirates. [Scimago: Q4].
56. Shaher Momani, Reyad El-Khazali, **Iqbal M. Batiha**. Tuning PID and $PI^\lambda D^\delta$ Controllers Using Particle Swarm Optimization Algorithm via El-Khazali's Approach. *AIP Conference Proceedings*, Vol. 2172, 2019, [Scopus: Q4].
57. Reyad El-Khazali, **Iqbal M. Batiha**, Shaher Momani. Approximation of Fractional-order Operators. In: Agarwal P., Baleanu D., Chen Y., Momani S., Machado J. (eds) *Fractional Calculus. ICFDA 2018. Springer Proceedings in Mathematics and Statistics*, Vol. 303, Springer, Singapore (2019) 121-151. [Scopus: Q4]. (Chapter in the Book).
58. **Iqbal M. Batiha**, Reyad El-Khazali, Ahmed AlSaedi, Shaher Momani. The General Solution of Singular Fractional-Order Linear Time-Invariant Continuous Systems with Regular Pencils. *Entropy*, Vol. 20, Issue 6 (2018). ISI (IF: 2.305), [Scopus: Q1].
59. **Iqbal M. Batiha**, Reyad El-Khazali, Shaher Momani. A Powerful Scheme for Handling the Fractional-Order Lorenz System. *Proceedings of International Conference on Fractional Differentiation and its Applications (ICFDA'2018)*, Amman, Jordan, 2018.
60. Ramzi B. Albadarneh, **Iqbal M. Batiha**, Mohammad Zurigat. Numerical Solutions for Linear Fractional Differential Equations of Order $1 < \alpha < 2$ Using Finite Difference Method (FFDM). *Journal of Mathematics and Computer science*, Vol. 16, No. 1, 103-111, 2016. [Scopus: Q4].
61. Ramzi B. Albadarneh, Mohammad Zerqat, **Iqbal M. Batiha**. Numerical Solutions for Linear and Non-Linear Fractional Differential Equations. *International Journal of Pure and Applied Mathematics*, Vol. 106, No.3, 859-871, 2016. [Scopus: Q4].
62. **Iqbal M. Batiha**. Restriction Method for Approximating Square Roots. *International Journal of Open Problems in Computer Science and Mathematics*, Vol. 4, No. 1, 146-151, 2011.

► Published Books

1. Square and Cube Roots (In Arabic). Al-Yazori House for Publishing and Distribution, 2013.

Conferences and Workshops' Conferences

1. Second International Workshop Numerical Solution of Fractional Differential Equations and Applications (NSFDE&A'22), 5-10 June (2022), Sozopol, Bulgaria.

2. The 48th International Conference Applications of Mathematics in Engineering and Economics (AMEE), 7-13 June (2022), Technical University of Sofia, Bulgaria.
3. The 7th International Arab Conference on Mathematics and Computations (IACMC 2022), 10-12 May (2022), Zarqa University, Jordan.
4. Modern Mathematical Methods and High-Performance Computing in Science & Engineering (MMHPC 2021), 23-24 November (2021), Charotar University of Science and Technology (CHARUSAT), India.
5. International Symposium on Recent Advances in Fractional Calculus, 30th September-1th October (2021), Charotar University of Science and Technology (CHARUSAT), India.
6. The 19th International Conference of Numerical Analysis and Applied Mathematics (ICNAAM 2021), September 20-26 (2021), Rhodes, Greece.
7. The 10th International Conference on Information Technology (ICIT 2021), July 14-15, (2021), AlZaytoonah University, Amman, Jordan.
8. The Arab Universities and their Role in Facing the Challenges of the Corona Pandemic – Researches and Awareness Efforts, held virtually by AArU, June 7, (2021).
9. The First Online Conference on Modern Fractional Calculus and Its Applications. December 4-6 (2020), Biruni University, Istanbul, Turkey.
10. The 3rd International Conference on Signal Processing and Information Security (ICSPIS 2020). Virtual Conference, November 25-26 (2020), University of Dubai, UAE.
11. IEEE International Symposium on Signal Processing and Information Technology (IEEE IS-SPIT). December 10-12 (2019), Ajman, United Arab Emirates.
12. The 45th International Conference Applications of Mathematics in Engineering and Economics (AMEE 2019). June 7-13 (2019), Sozopol, Bulgaria.
13. International Conference on Fractional Differentiation and its Applications (ICFDA'18). July 16-18 (2018), Amman, Jordan.

Conferences' Activities

1. A Peer Reviewer, The Fifth International Conference on Physics, Mathematics and Statistics (ICPMS2022), 21-23 May 2022, Sanya, China.
2. National Scientific Committee, The 7th International Arab Conference on Mathematics and Computations (IACMC 2022), 11-13 May 2022, Zarqa University, Zarqa, Jordan.
3. Technical Program Committee (TPC) member, The 2021 Global Congress on Electrical Engineering (GC-ElecEng 2021), 10-11 December 2021 (Remotely), Valencia, Spain.
4. A Peer Reviewer, The 2021 Global Congress on Electrical Engineering (GC-ElecEng 2021), 10-11 December 2021 (Remotely), Valencia, Spain

5. Technical Program Committee (TPC) member, International Conference on Electrical, Computer and Energy Technologies (ICECET'21), 09-10 December 2021, Cape Town, South Africa.
6. Member of Scientific Committee, IEEE International Conference on Recent Advances in Mathematics and Informatics (ICRAMI'2021), 21-22 Sep. 2021, University of Tebessa, Algeria.
7. Session Chair, Track Mathematical Modeling and Analysis (MM&A), The 10th International Conference on Information Technology (ICIT 2021), 14-15 July 2021, AlZaytoonah University, Amman, Jordan.
8. Technical Program Committee (TPC), The 10th International Conference on Information Technology (ICIT 2021), 14-15 July 2021, AlZaytoonah University, Amman, Jordan.

Editorial and Review Activities

► Editorial Activities

- ◇ **Member in Mathematical Reviews Database:** American Mathematical Society (AMS).
- ◇ **Assistant CEO of SigmaWings Publishing Company:** Village Bhera Post Office Julian, Tehsil Khanpur, District Haripur, KPK, Pakistan, info@sigmawings.com (Tel: +92 995 353165).
- ◇ **Lead Guest Editor:** A Special Issue of International Journal of Science, Technology and Society (Recent Advances in Fractional-order Discrete/Continuous Systems), 2022, ISSN: 2330-7420.
- ◇ **Editorial Board:** International Journal of Emerging Multidisciplinaries Mathematics (IJEMDM), ISSN: 2790-3257, 2022.
- ◇ **Editorial Board:** International Journal of Open Problems in Computer Science and Mathematics (IJOPCM), ISSN: 1998-6262.

► Review Activities

- ◇ Nonlinear Dynamics, ISSN: 0924-090X (Print), ISSN 1573-269X (Online), [Impact Factor: 5.022], [Scopus: Q1].
- ◇ Mathematical Methods in the Applied Sciences, ISSN: 1099-1476, [Impact Factor: 2.321], [Scopus: Q1].
- ◇ Mathematical Problems in Engineering, ISSN: 1024-123X (Print); ISSN: 1563-5147 (Online), [Impact Factor: 1.009], [Scopus: Q1].
- ◇ Mathematics and Computers in Simulation, ISSN: 0378-4754, [Impact Factor: 1.620], [Scopus: Q2].
- ◇ Mathematical Biosciences and Engineering, ISSN: 1551-0018, [Impact Factor: 2.080], [Scopus: Q2].
- ◇ AIMS Mathematics, ISSN: 2473-6988, [Impact Factor: 1.427], [Scopus: Q2].

- ◇ Journal of Mathematics, ISSN: 2314-4629 (Print), ISSN 2314-4785 (Online), [Impact Factor: 0.971], [Scopus: Q4].
- ◇ Fluid Dynamics & Materials Processing, ISSN 1555-256X (Print), ISSN 1555-2578 (Online), [Scopus: Q3].
- ◇ Jordan Journal of Mathematics and Statistics, ISSN 2075-7905 (Print), ISSN 2227-5487 (Online), [Scopus: Q3].
- ◇ Nonlinear functional analysis and applications, ISSN 1229-1595 (Print), ISSN 2466-0973 (Online), [Scopus: Q3].
- ◇ Journal of Applied Mathematics and Informatics, ISSN: 2234-8417, [Scopus: Q4].
- ◇ International Journal of Advances in Soft Computing and its Applications (IJASCA), ISSN: 2710-1274 (Print); ISSN: 2074-8523 (Online), [Scopus: Q4].
- ◇ International Journal of Industrial Electronics, Control and Optimization (IECO), ISSN: 2645-3517 (Print); ISSN: 2645-3568 (Online).
- ◇ International Journal of Emerging Multidisciplinaries Mathematics (IJEMDM), ISSN: 2790-1998 (Print); ISSN: 2790-3257 (Online).
- ◇ Innovative Journal of Mathematics (IJM), ISSN: 2790-3370 (Print); ISSN: 2790-3389 (Online).
- ◇ International Journal of Systems Science and Applied Mathematics (IJSSAM), ISSN: 2575-5838 (Print); ISSN: 2575-5803 (Online).
- ◇ Journal of Applied Mathematics & Information Sciences (AMIS), ISSN: 1935-0090 (Print); ISSN: 2325-0399 (Online); (ISI & Scopus Index).
- ◇ The Journal of Mathematics Education at Teachers College (JMETC), ISSN: 2156-1400.
- ◇ International Journal of Open Problems in Computer Science and Mathematics (IJOPCM), ISSN: 1998-6262 (Print); ISSN: 2079-0376 (Online).

Educational and Literature Activities

- Poetical Work (kalemon Alaa Shafati (In Arabic)). Omayya Book Store, 2011.
- Poem entitled “Tabassam”, Teacher Message, Vol. 50, 2012.
- Poem entitled “Kon’aleman”, Busra Journal, Vol. 4, 2006.
- The 2nd-Irbid Poetry Festival, Irbid Reads Initiative, Irbid Culture Directorate, 2020.
- Participation in Broadcasting Program “Irbid’s Poets”, Radio Greater Irbid, 2010.
- The Author of Islamic Song words “Elayke Kalbi”, Alsabeel Choir, 2008.

Computer Skills

- ▶ **Programming:** MATLAB & LATEX.
- ▶ **Software:** Microsoft Office (Excel, Power Point, Word) & Moodle (E-Learning).

Training Courses

- The Foundations of Integrating E-Learning, Irbid National University, Irbid, Jordan, 2022.
- Using Moodle in E-Learning, Irbid National University, Irbid, Jordan, 2021.
- Microsoft Office 365, Irbid National University, Irbid, Jordan, 2021.
- Edraak Certificate (Reflection Teaching), Ministry of Education, Amman, Jordan, 2020.
- Certified Publons Academy Peer Reviewer, Publons Academy, 2020.
- TOEFL ITB (Total Score 503), AMIDEAST, Amman, Jordan, 2011.
- Intel Teach–Advanced Online, Ministry of Education, Amman, Jordan, 2010.
- English Language, Baynonah for Technology and Information, Irbid, Jordan, 2006.
- ICDL (International Computer Driving License), Ministry of Education, Amman, Jordan, 2005.
- Oracle, Rana Future Center, Irbid, Jordan, 2003.

References

- ◇ Prof. Shaher Momani, Department of Mathematics and Sciences, College of Humanities and Sciences, Ajman University, Ajman, UAE, (S.Momani@ju.edu.jo).
- ◇ Prof. Adel Ouannas, Laboratory of Dynamical Systems and Control, University of Larbi Ben M'hidi, Oum El Bouaghi 04000, Algeria, (ouannas.adel@univ-oeb.dz).
- ◇ Dr. Reyad El-Khazali, ECCE Department, Khalifa University, Abu-Dhabi 127788, UAE, (reyad.elkhazali@ku.ac.ae).
- ◇ Dr. Ramzi B. Albadarneh, Department of Mathematics, Faculty of Science, The Hashemite University, Zarqa 13133, Jordan, (rbadarneh@hu.edu.jo).