



TRAINING AND MAIN DIPLOMAS OBTAINED

- **2018-2023:** PH.D Degree in Mathematics. "Fractional order Neural Networks: Dynamics and Application, The university of Jordan, Jordan.
- **2016-2018:** Master in Applied mathematics (Biomathematics and modeling), University of Abou-Bakr Belkaid, Tlemcen Algeria.
- **2013-2016:** Bachelor in mathematics, University of of Abou-Bakr Belkaid, Tlemcen Algeria.
- **2012-2013:** Baccalaureate " Mathematics"

PUBLISHED ARTICLES

- Karoun, R. C., Ouannas, A., Al-Horani, M. A. and Grassi, G. (2022). The Effect of Caputo Fractional Variable Difference Operator on a Discrete-Time Hopfield Neural Network with Non-Commensurate Order. *Fractal and Fractional*.
- Karoun, R. C., Ouannas, A., Al-Horani, M. A., Ziar, T., Batiha, I. M., and Dibi. Z. (2023). Chaos in The Fractional Variable Order Discrete-Time Neural Networks, (International Conference on Fractional Differentiation and Its Applications), IEEE.
- Al-Husban, A., Karoun, R. C., Al-Horani, M. A., Khennaouie, A. A., Grassi, G. and Radogna, A. V. (2023) Chaos on the Fractional Discrete Hopfield Neural Network and its Control. *Alexandria Engineering Journal*.

- Heilat, A. S, Karoun, R. C., Al-Husban, A., Abbes, A., Al-Horani, M. A. (2023) The New Fractional Discrete Neural Network Model under Electromagnetic Radiation: Chaos, Control and Synchronization. Alexandria Engineering Journal.