# Elkin Gelvez-Almeida

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## SUMMARY

I am an Associate Professor and researcher in the Faculty of Basic and Biomedical Sciences at Universidad Simón Bolívar in Colombia. I am an Associate Researcher at Colombia's Ministry of Science, Technology, and Innovation. I am also a member of the Scientific Modeling and Business Innovation Research Group (GIMCINE). My research interests revolve around applied mathematical modeling and high-performance computing.

## EDUCATION

- **PhD in Applied Mathematical Modeling**                                    **(2020–2024)**
  Universidad Católica del Maule, Talca, Chile.

- **Master in Mathematics Education**                                    **(2013–2016)**
  Universidad Nacional Experimental del Táchira, San Cristobal, Venezuela.

- **Graduate in Mathematics and Computing**                                    **(2006 - 2011)**
  Universidad Francisco de Paula Santander, San José de Cúcuta, Colombia.

## SKILLS

- **Languages**
  C, C++, MATLAB

- **Libraries/Frameworks**
  OpenMP, BLAS, OpenBLAS, LAPACK

- **Other Skills**
  Machine Learning, Neural Network, HPC

## EXPERIENCE

- **Universidad Simón Bolívar**                                    **Jan '13 – Currently**
  Mathematics and Natural Sciences Department Coordinator.
  Mathematics and Statistics Professor.
  Researcher.

- **Corporación Universitaria Minuto de Dios**                                    **Aug '19 – Dec '19 (5 M)**
  Mathematics and Pedagogy Professor.

- **Universidad Franciasco de Paula Santander**                                    **Mar '20 – Jun '20 (4 M)**
  Mathematics and Pedagogy Professor.

## DISTINCTIONS AND SCHOLARSHIPS

- **National Doctorate Scholarship**                                    **Abr '20 – Oct '24**
  National Research and Development Agency (ANID)
  Government of Chile
  Folio 2020–21201000

- **Exaltation for research work**                                    **Dec '21**
  IV Meeting of Graduates of the Bachelor's Degree Programme in Mathematics
  Universidad Francisco de Paula Santander

## RESEARCH STAYS

- **Institut de Recherche en Informatique de Toulouse (IRIT).**                                    **Sep '23 – Dec '23 (3 M)**
  Université de Toulouse, Francia

## RESEARCH

- **Mathematical Modeling on Parallel and Distributed Computing based on Extreme Learning Machine using Large-Scale Databases**                                    **Oct '22 – Dec '25**
  Universidad Simón Bolívar
  C2011790323

# PUBLICATIONS (Last five years)

## 2024

- E Gelvez-Almeida, R J Barrientos, K Vilches-Ponce, M Mora. **Parallel ensemble of a randomization–based online sequential neural network for classification problems using a frequency criterion**. *Scientific Reports*, 14, 16104, 2024.[DOI]

- E Gelvez-Almeida, R J Barrientos, K Vilches-Ponce, M Mora. **A Review on Large-Scale Data Processing with Parallel and Distributed Randomized Extreme Learning Machine Neural Networks**. *Mathematical and Computational Applications*, 29(3), 40, 2024.[DOI]

## 2023

- E Gelvez-Almeida, R J Barrientos, K Vilches-Ponce, M Mora. **A Parallel Computing Method for the Computation of the Moore–Penrose Generalized Inverse for Shared-Memory Architectures**. *IEEE Access*, 11, 134834-134845, 2023.[DOI]

- E Gelvez-Almeida, R J Barrientos, K Vilches-Ponce, M Mora. **Parallel model of online sequential extreme learning machines for classification problems with large-scale databases**. *in 11th Conference on Cloud Computing Conference, Big Data & Emerging Topics (JCC-BD&ET)*, La Plata, Argentina, 2023.[DOI]

- E Gelvez-Almeida, M Mora, Y Huérfano-Maldonado, E Salazar-Jurado, N Martínez-Jeraldo, R Lozada-Yavina, Y Baldera-Moreno and L Tobar. **Estimation of the optimal number of neurons in extreme learning machine using simulated annealing and the golden section**. *Journal of Physics: Conference Series*, 2515(1), 012003, 2020.[DOI]

## 2022

- E Gelvez-Almeida, R J Barrientos, K Vilches-Ponce, M Mora. P**arallel Training of a Set of Online Sequential Extreme Learning Machines**. *in 2022 41st International Conference of the Chilean Computer Science Society (SCCC)*, Santiago, Chile, 2022.[DOI]

- E Gelvez-Almeida, A Vásquez-Coronel, R Guatelli, V Aubin and M Mora. **Classification of Parkinson's disease patients based on spectrogram using local binary pattern descriptors**. *Journal of Physics: Conference Series*, 2153(1), 012014, 2020.[DOI]

## 2020

- E Gelvez-Almeida, Y Baldera-Moreno, Y Huérfano, M Vera, M Mora and R Barrientos. **Parallel methods for linear systems solution in extreme learning machines: an overview**. *Journal of Physics: Conference Series*, 1702(1), 012017, 2020.[DOI]

- E Salazar, M Mora, A Vásquez and E Gelvez-Almeida. **Conditioning of extreme learning machine for noisy data using heuristic optimization**. *Journal of Physics: Conference Series*, 1514(1), 012007, 2020.[DOI]

- A Vásquez, M Mora, E Salazar and E Gelvez-Almeida. **Extreme learning machine adapted to noise based on optimization algorithms**. *Journal of Physics: Conference Series*, 1514(1), 012006, 2020.[DOI]

- M L Vera-Angarita, J Y Ortega-Ortega, C Ramirez-Martinez, E Gelvez-Almeida and A L Hernández-Niño. **La interacción social como proceso de encuentro o desencuentro en el aprendizaje académico de los adolescentes**. *Revista Perspectivas*, 5(1), 122–128, 2020.[DOI]

- J Salazar-Torres, M Vera, Y Contreras, E Gelvez-Almeida, Y Huérfano and O Valbuena. **The rubric as an assessment strategy in the mathematical argumentation process**. *Journal of Physics: Conference Series*, 1514(1), 012026, 2020.[DOI]

- M Vera, E Gonzalez, Y Huérfano, E Gelvez and O Valbuena. **New anisotropic diffusion operator in images filtering**. *Journal of Physics: Conference Series*, 1448(1), 012019, 2020.[DOI]

## 2019

- J O Rodríguez Velásquez, F Barrios Arroyave, E Gelvez-Almeida, J Salazar-Torres, N Guarín, C Mosquera, L Santos and J Espejo. **Fatalidades por tránsito en marylandy massachusetts evaluadas en el contexto de una caminata al azar probabilista**. *Revista de la Facultad de Ciencias Médicas*, 76(3), 142–147, 2019.[DOI]

- Y Huérfano, M Vera, E Gelvez-Almeida, J Salazar, A D Mar, O Valbuena and V Molina. **A computational strategy for the identification of pulmonary squamous cell carcinoma in computerized tomography images**. *Journal of Physics: Conference Series*, 1160(1), 012004, 2019.[DOI]

- E Gelvez-Almeida and M Vivas-García. **La praxis del profesor de matemáticas: el caso de las competencias transversales en un programa de ingeniería de sistemas**. *Revista Perspectivas*, 4(1), 54–59, 2019.[DOI]

- O Valbuena, M Vera, Y Huérfano, E Gelvez-Almeida, J Salazar, V Molina, F Sáenz, M I Vera and W Salazar. **Computational strategy for the segmentation of the aortic annulus in cardiac computed tomography images**. *Journal of Physics: Conference Series*, 1160(1), 012005, 2019.[DOI]

- M Flórez, M Vera, J Salazar-Torres, Y Huérfano, E Gelvez-Almeida, O Valbuena, M I Vera and M Aranguen. **Interest rates calculation in certain ordinary annuities**. *Journal of Physics: Conference Series*, 1414(1), 012009, 2019.[DOI]

- D Barrera, O Valbuena, M Vera, Y Huérfano, E Gelvez-Almeida, J Salazar, V Molina, F Sáenz, M I Vera and W Salazar. **Isotropic versus anisotropic techniques in cardiac computed tomography images processing**. *Journal ofPhysics: Conference Series*, 1160(1), 012006, 2019.[DOI]

- Y Huérfano, M Vera, E Gelvez-Almeida, M I Vera, O Valbuena and J Salazar-Torres. **Large cells cancer volumetry in chest computed tomography pulmonary images**. *Journal of Physics: Conference Series*, 1414(1), 012018, 2019.[DOI]

- Y Huérfano, M Vera, M I Vera, O Valbuena, E Gelvez-Almeida, J Salazar-Tores and V Molina. **Left atrial appendage automatic segmentation, in computed tomography images**. *Journal of Physics: Conference Series*, 1386(1), 012133, 2019.[DOI]

- J Salazar-Torres, M Vera, Y Contreras, E Gelvez-Almeida, O Valbuena, D Barrera and O Rincon. **Mathematical argumentation in the classroom**. *Journal of Physics: Conference Series*, 1408(1), 012023, 2019.[DOI]

- M Vera, M Flórez, J Salazar-Torres, Y Huérfano, E Gelvez-Almeida, O Valbuena, M I Vera and M Aranguen. **Newton-raphson method initialization for non-analytical equations solution linked to anticipated annuities**. *Journal of Physics: Conference Series*, 1414(1), 012012, 2019.[DOI]

- D Barrera, J Salazar-Torres, M Vera and E Gelvez-Almeida. **Problem solving strategy in the teaching andlearning processes of quantitative reasoning**. *Journal of Physics: Conference Series*, 1408(1), 012024, 2019.[DOI]

- Y Huérfano, M Vera, M I Vera, O Valbuena, E Gelvez-Almeida and J Salazar-Torres. **Pulmonary adenocarcinoma characterization using computed tomography images**. *Journal of Physics: Conference Series*, 1408(1), 012004, 2019.[DOI]

- R Rodríguez-Ibáñez, M I Vera, M Vera, E Gelvez-Almeida, Y Huérfano, O Valbuena and J Salazar-Torres. **Renal lithiasis detection in uro-computed tomography using a non-parametric technique**. *Journal of Physics: Conference Series*, 1414(1):012019, 2019.[DOI]

M Vera, Y Huérfano, E Gelvez-Almeida, O Valbuena, J Salazar, V Molina, M I Vera, W Salazar and F Sáenz. **Segmentation of brain tumors using a semi-automatic computational strategy**. *Journal of Physics: Conference Series*, 1160(1), 012002, 2019.[DOI]

- F Sáenz, M Vera, J López, Y Huérfano, O Valbuena, M I Vera, E Gelvez-Almeida and J Salazar-Torres. **Semi-automatic detection of hepatic tumor in computed tomography images**. *Journal of Physics: Conference Series*, 1408(1), 012001, 2019.[DOI]

- J Salazar, M Vera, Y Huérfano, M I Vera, E Gelvez-Almeida and O Valbuena. **Semi-automatic detection of the evolutionary forms of visceral leishmaniasis in microscopic blood smears**. *Journal of Physics: Conference Series*, 1386(1), 012135, 2019.[DOI]

- M Vera, F Sáenz, Y Huérfano, E Gelvez-Almeida, M I Vera, J Salazar-Torres and O Valbuena. **Smart operator for the human liver automatic segmentation, present in medical images**. *Journal of Physics: Conference Series*, 1386(1), 012132, 2019.[DOI]

- S Vargas, M I Vera, M Vera, J Salazar-Torres, Y Huérfano, O Valbuena and E Gelvez-Almeida. **Space-occupying lesions identification in mammary glands using a mixed computational strategy**. *Journal of Physics: Conference Series*, 1414(1), 012016, 2019.[DOI]

- Y Huérfano, M Vera, M I Vera, O Valbuena, E Gelvez-Almeida and J Salazar-Torres. **Use of computational realistic models for the cardiac ejection fraction calculation**. *Journal of Physics: Conference Series*, 1408(1), 012003, 2019.[DOI]

- M Vera, O Valbuena, Y Huérfano, M I Vera, E Gelvez-Almeida and J Salazar-Torres. **Usefulness of cuttingplanes in the hierarchical segmentation of cardiac anatomical structures**. *Journal of Physics: Conference Series*, 1408(1), 012005, 2019.[DOI]

- E Gelvez-Almeida, Y Huérfano, M Vera, M I Vera, O Valbuena and J Salazar-Torres. **Usefulness of digital images segmentation in pulmonary transplantation**. *Journal of Physics: Conference Series*, 1386(1), 012134, 2019.[DOI]

- O Valbuena, M I Vera, M Vera, E Gelvez-Almeida, Y Huérfano, M Borrero, J Salazar-Torres and W Salazar. **Volumetric quantification in ovarian pathology using abdomino-pelvic computed tomography**. *Journal of Physics: Conference Series*, 1403(1), 012014, 2019.[DOI]

## Declaration

- I now declare that the information mentioned above is correct and I bear the responsibility for the correctness of those mentioned above.