

## Curriculum Vitae



*Dr. Majid Amirfakhrian*  
*Full professor*

### Personal Data

Office Address: Department of Mathematics,  
Islamic Azad University, Central Tehran Branch,  
(IAUCTB) Payambar Campus, Sanat Square, Tehran, Iran

Web Page: <http://amirfakhria.com>

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### Education

**Doctorate of Philosophy (Applied Mathematics), Azad University of Science and Research, Tehran, Iran (2005)**

Dissertation topic: The Universal Approximation of Fuzzy Functions.  
Supervisor: Prof. Saeid Abbasbandy

**Master of Science (Applied Mathematics), Sharif University of Technology, Tehran, Iran (2000)**

Theses topic: Approximation of Multivariate Functions by Optimization.  
Supervisor: Prof. Bahman Mehri.

**Bachelor of Science (Applied Mathematics), Guilan University, Rasht, Iran (1998)**

## Employment

Department of Mathematics, Islamic Azad University, Central Tehran Branch, From February 2001.

## Academic Positions

- Oct. 2015: Professor of Applied Mathematics.
- Feb. 2011: Associate Professor of Applied Mathematics.
- May.2006: Assistant Professor of Applied Mathematics.

## Work Positions

### Executive Positions

- 1) Dean of the Department of Mathematics, 2007-2010.
- 2) Dean of the Young Researcher and Elite Club, Central Tehran Branch, 2011-2015.  
<http://yrec.iauctb.ac.ir/>  
<http://www.bpj.ir/>

### Scientific Positions

- 1) Editor-in-Chief of  
International Journal of Mathematical Modelling & Computations (IJM2C).  
<http://ijm2c.iauctb.ac.ir/>
- 2) Executive Manager of  
International Journal of Mathematical Modelling & Computations (IJM2C).  
<http://ijm2c.iauctb.ac.ir/>
- 3) Associate Editor of  
International Journal of Fuzzy Computation and Modelling  
<http://www.inderscience.com/jhome.php?jcode=ijfcm>
- 4) Member of Editor of the following journals:
  - i) Journal of Linear and Topological Algebra (JLTA).  
<http://jlta.iauctb.ac.ir/>
  - ii) Journal of Interpolation and Approximation in Scientific Computing (JIASC).  
<http://www.ispacs.com/jiasc/>
- 5) Executive Manager of, (2012-2013)  
Journal of Linear and Topological Algebra (JLTA).  
<http://jlta.iauctb.ac.ir/>

## Publications

### Books:

- 1) M. Amirfakhrian, Numerical Analysis for Applied Mathematics and Engineering, 9<sup>th</sup> Edition, PouranPajhouhesh Publishing Co. (Farsi)
- 2) M. Amirfakhrian, Computations and Numerical Analysis (1) for Applied Mathematics and Engineering, 2<sup>nd</sup> Edition, Sharh Publishing Co. (Farsi)
- 3) M. Amirfakhrian, Numerical Analysis (2) and its Applications, Pouran Pajhouhesh Publishing Co. (Farsi)
- 4) F. Golgooei, M. Amirfakhrian, H. Abdzadeh, M.M. Ostadrahimi, Calculus Vol.1, Behnam Publishing Co.: Translation of "Robert A. Adams, Calculus, Sixth edition, 2006, Addison Wesley."
- 5) F. Golgooei, M. Amirfakhrian, H. Abdzadeh, M.M. Ostadrahimi, Calculus Vol.2, Behnam Publishing Co. : Translation of " Robert A. Adams, Calculus, Sixth edition, 2006, Addison Wesley."
- 6) M. Amirfakhrian, R. Firouzdar, A View to Numerical Analysis with Exercises, IAUCTB Press. (Farsi)
- 7) M. Amirfakhrian, N. Moghadamfar, Numerical Algorithms with Maple, IAUCTB Press. (Farsi)
- 8) M. Amirfakhrian, 2010, Numerical Solution of a System of Polynomial Parametric form Fuzzy Linear Equations, Book Chapter in "Ferroelectrics", INTECH Publisher, Austria. (Chapter 24).
- 9) B. Mehri, M. Amirfakhrian, H. Nooriani, Engineering Mathematics, Ghiasodin Jamshid Kashani Academic Institute. (Farsi)
- 10) M. Amirfakhrian, 2012, Approximation Theory, IAUCTB Press. (Farsi)
- 11) M. Amirfakhrian, 2012, Some Approximation Methods in Fuzzy Logic, Lambert Academic Publishing, Germany.
- 12) M. Amirfakhrian, 2014, Source and m-Source Distances of Fuzzy Numbers and their Properties, Book Chapter of "Mathematics of Uncertainty Modeling in the Analysis of Engineering and Science Problems", IGI-Global Publishing Co., USA. (Chapter 5), 95-108.
- 13) M. Amirfakhrian, An Introduction to Numerical Analysis for Applied Mathematics and Engineering MSc Entrance Exams, Pouran Pajhouhesh Publishing Co. (Farsi)

### Journal Articles:

1. S. Abbasbandy, M. Amirfakhrian, A New Approach to Universal Approximation of Fuzzy Functions on a Discrete Set of points, Journal of Applied Mathematical Modelling, 30 (2006) 1525-1534. (TOP 25 Hottest Articles JUL - SEP 2006 )
2. S. Abbasbandy, M. Amirfakhrian, The nearest approximation of a fuzzy quantity in parametric form, Journal of Applied Mathematics and Computations, 172 (2006) 624-632.
3. S. Abbasbandy, M. Amirfakhrian, Numerical approximation of fuzzy functions by fuzzy polynomials, Journal of Applied Mathematics and Computations, 174 (2006) 1001-1006.
4. S. Abbasbandy, M. Amirfakhrian, Best Approximation of Fuzzy Functions, Journal of Nonlinear Studies, 14 (2007) 88-103.

5. S. Abbasbandy, M. Amirfakhrian, The nearest trapezoidal form of a generalized left right fuzzy number, *Journal of Approximate Reasoning*, 43 (2006) 166-178. (TOP 25 Hottest Articles OCT - DEC 2006)
6. M. Amirfakhrian, Numerical Solution of Fuzzy Linear Equations With Polynomial Parametric Form, *International Journal of Computer Mathematics*, 84 (2007) 1089–1097.
7. S. Abbasbandy, M. Amirfakhrian, Approximation of Fuzzy Functions by Distance Method, *Mathematics Scientific Journal*, 2 (2007) 15-28.
8. M. Amirfakhrian, Numerical Solution of Algebraic Fuzzy Equations with Crisp Variable by Gauss-Newton Method, *Journal of Applied Mathematical Modelling* 32 (2008) 1859–1868.
9. M. Amirfakhrian, S. M. Mirzaei, Modified Neumann series for solving Fredholm integral equation, *Applied Mathematical Sciences*, 3 (2009).
10. M. Amirfakhrian, Numerical Integration by Bernstein Polynomials, *Mathematics Scientific Journal*, Vol 13.
11. M. Amirfakhrian, Properties of parametric form approximation operator of fuzzy numbers, *Analele Stiintifice ale Universitatii Ovidius Constanta*, 18 (2010) 23-34.
12. M. Amirfakhrian, Best Approximation of Multivariate Functions in  $\mathcal{L}_1$  and  $\mathcal{L}_2$  by Optimization, *Mathematical Sciences*, 4 (2010) 205-220.
13. M. Amirfakhrian, Some Numerical Integration Methods Based on Bernstein Polynomials, *International Journal of Computer Mathematics*, 88 (2011) 1294–1304.
14. M. Amirfakhrian, S. Keighobadi, Solution for Partial Differential Equations Involving Logarithmic Nonlinearities, *Australian Journal of Basic and Applied Sciences*, 5 (2011) 60-66.
15. M. Amirfakhrian, An Iterative Gauss-Newton Method to Solve an Algebraic Fuzzy Equation With Crisp Coefficients, *Journal of Intelligent and Fuzzy Systems*, 22 (2011) 207–216.
16. M. Amirfakhriana, H. Nouriani, Interpolation by Hyperbolic B-spline Functions, *International Journal of Mathematical Modelling & Computations*, 1 (3) (2011) 175 - 181.
17. M. Amirfakhriana, Analyzing the solution of a system of fuzzy linear equations by a fuzzy distance, *Soft Computing*, 16 (6) (2012) 1035-1041.
18. M. Amirfakhriana, Z. Saffarizadeh, A numerical integration method by using generalized series of functions, *International Journal of Industrial Mathematics*, 4 (3)(2012) 257-267.
19. F. Mohammad, M. Amirfakhrian, A New Inexact Inverse Subspace Iteration for Generalized Eigenvalue Problems, *Journal of Linear and Topological Algebra*, 01 (02) (2012) 91- 104.
20. M. Amirfakhrian, Approximation of 3D-Parametric Functions by Bicubic B-spline Functions, 2 (3) (2012) 211- 220.
21. M. Amirfakhrian, S. Keighobadi, A modification of He's variational iteration method by Taylor's series for solving second order nonlinear partial differential equations, *JIASC*, 2013 (2013) 1-7, doi:10.5899/2013/jiasc-00049.
22. M. Amirfakhrian, Approximation of the  $n$ -th Root of a Fuzzy Number by Polynomial Form Fuzzy Numbers, *Theory of Approximation and Applications*, 9 (01) (2013) 1-16.

23. M. Amirfakhriana, S. Sajadi, Fuzzy K-Nearest Neighbor Method to Classify Data in a Closed Area, *International Journal of Mathematical Modelling & Computations*, 3 (2) (2013) 109 – 114.
24. M. Amirfakhrian, P. Mohammadi Khanghah, Computation of the q-th roots of circulant matrices, *Journal of Linear and Topological Algebra*, 01 (02) (2013) 56-65.
25. M. Amirfakhriana, S. Shakibi, Solving Integro-Differential Equation by Using B-Spline Interpolation, *International Journal of Mathematical Modelling & Computations*, 3 (3) (2013) 237– 244.
26. R. Firouzdar, H. Nouriani, M. Amirfakhrian, *SCIENCE ROAD JOURNAL*, 2 (3) (2014) 145-151.
27. M. Nahvi farsi, M. Amirfakhrian, A. Vasiq, An improved controlled chaotic neural network for pattern recognition, *International Journal of Mathematical Modelling & Computations*,
28. M. Amirfakhrian, H. Mafikandi, Interpolation by Xuli type Operators Based on Linear B-Splines, *Journal of Interpolation and Approximation in Scientific Computing*, 2015 No.1 (2015) 1-11.
29. M. Amirfakhrian, A Parametric Distance and its Application to Find The Nearest Approximation of a Fuzzy Number, *International Journal of Fuzzy Computation and Modelling*, in press.
30. M. Arghand and M. Amirfakhrian, A Meshless Method Based on the Fundamental Solution and Radial Basis Function for Solving an Inverse Heat Conduction Problem, *Advances in Mathematical Physics*, Volume 2015, Article ID 256726, 8 pages, <http://dx.doi.org/10.1155/2015/256726>.
31. M. Amirfakhrian, H. Mafikandi, Solving Linear Partial Differential Equations by Moving Least Squares Method, *Bulletin of the Georgian National Academy of Sciences*, 9 (3) (2015) 26-36.
32. R. Firouzdar, M. Amirfakhrian, R. Salehi, S. S.. Asari, Numerical Solution of a Fuzzy Linear System by Using PSO Method, *Journal of Fuzzy Set Valued Analysis*, 2016 (2016) 1-7.
33. Sh. Asari, M. Amirfakhrian, Numerical solution of Sylvester matrix equations: Application to dynamical systems, *Journal of Interpolation and Approximation in Scientific Computing*, 2016 (2016) 1-13.
34. S. Davaeifar, J. Rashidinia, M. Amirfakhrian, Bernstein Polynomial Approach for Solution of Higher-Order Mixed Linear Fredholm Integro-Differential-Difference Equations with Variable Coefficients, *TWMS J. Pure Appl. Math.*, 7 (1) (2016) 46-62.
35. Majid Amirfakhrian, Muhammad Arghand, Edvard Kansa, A new approximate method for an inverse time-dependent heat source problem using fundamental solutions and rbfs, *Engineering Analysis with Boundary Elements*, 64 (2016) 278-289.
36. M. Amirfakhrian, H. Mafikandi, Approximation of Parametric Curves by Moving Least Squares Method, *Applied Mathematics and Computation*, 283(2016) 290-298.
37. M. Amirfakhrian, K. Shakibi, R. Rodríguez López, Fuzzy quasi-interpolation solution for Fredholm fuzzy integral equations of second kind, *Soft Comput* (2016). doi:10.1007/s00500-016-2065-6.
38. Shukooh S. Asari , Majid Amirfakhrian, A new method to solve one and two-dimensional wave equations with uncertainty, *J. Comput. Theor. Nanosci.* 13 (2016) 5021-5030.

39. Shukooch S. Asari , Majid Amirfakhrian, The Application of Fuzzy Systems to Approximate the Solutions of a Nonlinear System of Equations, Bulletin of the Georgian National Academy of Sciences, 10 (3) (2016) 33-44.
40. M. Amirfakhrian, M. Fallah, R. Rodríguez López, A method for solving fuzzy matrix equations, Soft Comput (2017). DOI 10.1007/s00500-017-2680-x.

## **Multimedia CD**

Computations and Numerical Analysis (1) for Applied Mathematics and Engineering. (Farsi)

### Conference Articles:

1. S.Abbasbandy, M.Amirfakhrian, Best Approximation of Fuzzy Functions, presented in 33rd Iranian mathematics conference (2001), Ferdowsi University Mashhad, Iran.
2. S.Abbasbandy, M.Amirfakhrian, Best approximation of fuzzy functions by optimization, Proceeding of the 4th conference on fuzzy sets and its applications, Mazandaran University, Iran, (2003) 8-15.
3. S.Abbasbandy, M.Amirfakhrian, A New Method to Find Best Approximation of Fuzzy Functions by Optimization, presented in 34th Iranian mathematics conference, Shahroud University, Iran.
4. M.Amirfakhrian, S.Abbasbandy, Computing The Nearest Trapezoidal Form of a Fuzzy Number by a New Operator, Proceeding of the 6th conference on fuzzy systems, Shiraz, Iran, (2006) 51-61.
5. M.Amirfakhrian, Some Properties of The Nearest Parametric Form Approximation Operator, Proceeding of the 6th conference on fuzzy systems and Inteligent systems, Malek Ashtar Univ, Tehran. Iran, (2008).
6. M.Amirfakhrian, Numerical Integration by Bernstein Polynomials and its Properties, Mathematics Conference (2008) Rasht, Iran.
7. M.Amirfakhrian, S.M.Mirzaei, A Modification of Neumann series for solving Fredholm integral equation, Mathematics Conference (2008) Rasht, Iran.
8. M.Amirfakhrian, Numerical Integration by Bernstein Polynomials and its Properties, Worldcomp09, USA Conference, (2009).
9. M.Amirfakhrian, Numerical Solution of Algebraic Fuzzy Equations with Crisp Variable by Quasi-Newton Method, 3rd conference of Fuzzy Systems and Intelligent Systems, (2009) Yazd University, Iran.
10. M.Amirfakhrian, M. Lotfi, Numerical solution of linear Fredholm fuzzy integral equations of the second kind by Taylor method, 3rd conference of Fuzzy Systems and Intelligent Systems, (2009) Yazd University, Iran.
11. M.Amirfakhrian, Best Approximation of Multivariate Functions by Optimization, 40rd Iranian mathematics conference (2009), Sharif University of Technology, Tehran, Iran.
12. M.Amirfakhrian, S. Bagherian, The Nearest Approximation of A Fuzzy Number by A New Parametric Distance, 40rd Iranian mathematics conference (2009), Sharif University of Technology, Tehran, Iran.

13. M. Amirfakhrian, R. Firouzdar, Approximation in chaotic ordinary differential equations and controlling by array method, The 1st Regional Conference on Mathematics and its Applications in Engineering Science, (2010), Jouybar Branch, Islamic Azad University.
14. M. Amirfakhrian, S. Keighobadi, Solution for partial differential equations involving logarithmic nonlinearities, International Conference on Mathematical Applications in Engineering (ICMAE'10), 2010, Kuala Lumpur, Malaysia.
15. M. Amirfakhrian, S. Keighobadi, New approach of variational iteration method for Nonlinear Partial Differential Equations With Exponential Nonlinearity, 41st Iranian mathematics conference (2010), Urmia, Iran.
16. M. Amirfakhrian, A New Parametric Distance and Using it to Find The Nearest Approximation of A Fuzzy Number, 11th Iranian Conference of Fuzzy Systems, (2011) Zahedan, Iran.
17. M. Amirfakhrian, Image Reconstruction by Moving least Squares, 1st Seminar on Harmonic Analysis and Applications, January 23–24, 2013, Isfahan University of Technology, Iran.
18. M. Amirfakhrian and H. Mafi, Solving Fredholm Integral Equations by Discrete Least Squares Method, 44th Annual Iranian Mathematics Conference, 27-30 August 2013, Ferdowsi University of Mashhad, Iran.
19. M. Amirfakhrian, S. S. Asary, A. Khademi, Application of homotopy perturbation method to fuzzy nonlinear Klein-Gordon equation with variable coefficients, (2013) DOI: 10.1109/IFSC.2013.6675688 Conference 13th Iranian Conference on Fuzzy Systems (IFSC).
20. M. Amirfakhrian, R. Firouzdar, H. Nouriani, Solving Heat Partial Differential Equation by using Bivariate B-splines and Tensor Product, 44th Annual Iranian Mathematics Conference, 27-30 August 2013, Ferdowsi University of Mashhad, Iran.
21. R. Firouzdar, M. Amirfakhrian, Fuzzy Function Approximation by Using Radial Basis Function Interpolation, Iranian Congress of Fuzzy and Intelligent Systems (CFIS), 9-11 September, 2015, Zahedan, Iran.
22. M. Amirfakhrian, A New Distance on a Specific Subset of Fuzzy Sets, Proceedings of the 8th International Joint Conference on Computational Intelligence (IJCCI 2016) - Volume 2: FCTA, pages 83-87, Porto, Portugal.
23. M. Hajiesmaeili, M. Amirfakhrian, A New Approach to Locate the Hippocampus Nest in Brain MR Images, Proceedings of 3rd International Conference on Pattern Recognition and Image Analysis (IPRIA 2017) April 19-20, 2017, Shahrekord, Iran. DOI: 10.1109/PRIA.2017.7983034. (TOP Paper of the Conference)

### **Research Project(s):**

1. Numerical Integration by using Bernstein Polynomials and its properties, 2008-2009.
2. Numerical Solution of Time dependent PDE's by Radial Basis Functions of special types, 2010-2011.
3. Bicubic B-spline Approximation of Curves by Least Squares Method, 2012-2013.
4. Producing a Typesetting and Layout Software for English-Language Journals, 2012-2013.
5. Producing the automation system for Central Tehran Branch English journals, 2014-2014.

### **Research Project(s) as Co-Author:**

1. M. Ali Fariborzi Araghi, M. Amirfakhrian, Numerical Fuzzy Integration and their applications, 2006-2007.
2. M. Mirafzal, M. Amirfakhrian, An Introduction to The theory of ordinary differential equations and stability, 2012-2013.

### **Teaching Experiences (Courses):**

#### **BSc.**

1. Numerical Analysis I,
2. Numerical Analysis II,
3. Calculus I,
4. Calculus II,
5. Calculus III,
6. Numerical Computations,
7. Linear Algebra,
8. Operation Researches I,
9. Operation Researches II,
10. Pre Calculus,
11. Computer Programming,
12. Advanced Computer Programming
13. Discrete Mathematics,
14. Differential Equations;
15. Engineering Mathematics,
16. Fuzzy Mathematics,



## **MSc.**

1. Approximation Theory (**MSc**).
2. Advanced Numerical Analysis (**MSc**).
3. Numerical Methods for Integral Equations (**MSc**).
4. Numerical Linear Algebra(**MSc**).
5. Numerical Software (**MSc**).
6. Research Methods (**MSc**).
7. Image Processing (**MSc**).
8. Artificial Neural Networks (**MSc**).

## **PhD.**

1. Approximation Theory (**PhD**).
2. Generalized Analytical Functions (**PhD**).
3. Calculus of Variations (**PhD**).
4. Optimal Control Theory (**PhD**).
5. Optimal Fuzzy Control Theory (**PhD**).
6. Special Functions (**PhD**).
7. Image Processing (**PhD**).

## **Teaching Experiences (Universities):**

1. Islamic Azad University, Central Tehran Branch,
2. Payam Noor Advanced Educations, Tehran,
3. Islamic Azad University, Science and Research Branch,
4. Islamic Azad University, South Tehran Branch,
5. Islamic Azad University, Karaj Branch,

## **Research Interests:**

1. Approximation Theory
2. Fuzzy Logic
3. Numerical Linear Algebra
4. Fuzzy Function Approximation
5. Solving Fuzzy Equations Numerically
6. Numerical Methods for PDEs
7. Numerical Methods for Integral Equations
8. Multivariate Functions Approximation
9. Partial Differential Equations
10. Control Theory

## **Invited Talk**

1. Approximation of Multivariate Functions, Azad University of Karaj, Iran, April 2000
2. Best Approximation of Multivariate Functions by Optimization, Zanjan University, Zanjan, Iran, October 2000

## **Interior Seminar (IAUCTB)**

1. Fuzzy Logic, 2001
2. Fuzzy Numbers, 2002.
3. Fuzzy Controllers and Applications, 2005.
4. Fuzzy Functions, 2008
5. Artificial Neural Networks, 2009
6. Mathematical Softwares, 2012
7. Fuzzy Intelligent Systems, 2013.
8. Moving Least Squares Methods and its Applications, 2014.
9. Optimal Control Theory, 2015.
10. Image Processing, 2016.

## **Reviewer of Journals**

1. Applied Mathematical Modelling
2. Applied Mathematics and Computation
3. International Journal of Computer Mathematics
4. Information Sciences
5. International Journal of Approximate Reasoning
6. Soft Computing
7. Iranian Journal of Fuzzy Systems
8. Journal of Computational and Applied Mathematics
9. International Journal of Fuzzy Computation and Modelling
10. International Journal of Industrial Mathematics
11. Journal of Applied Mathematics
12. Journal of Mathematical Extension
13. Journal of the Egyptian Mathematical Society
14. Mathematical and Computer Modelling
15. Mathematical Sciences
16. Neural Computing and Applications
17. Alexandria Engineering Journal

## **Reviewer of Conferences**

1. World Academy of Science, Engineering and Technology
2. International Conference of Numerical Analysis and Applied Mathematics
3. Iranian Fuzzy Conference
4. International Joint Conference on Computational Intelligence

## Reviewer of International Books For

1. CRC Press
2. IGI Global
3. Cambridge University Press
4. INTECH

### **Skills:**

Programming Languages: Basic, Pascal, Fortran, C++.

Packages: Mathematica, LaTeX, Maple, Matlab, QSB, Lindo, Lingo, Gino.

### **Awards**

1. The second person in MS Entrance Exam in IRAN in 1998.
2. The first person in PhD Entrance Exam in IRAN in 2001.
3. One of the awarded persons in the final level of Scientific Olympiad of Iranian University Students in 1998.
4. Best Researcher award of Islamic Azad University, Central Tehran Branch, 2007.
5. Best Researcher award of Islamic Azad University, Central Tehran Branch, 2011.
6. Head of student inventors' team of Islamic Azad University, Central Tehran Branch send-out to "International Exhibition of Inventions of Geneva", Swiss, 2013.
7. Youngest Full Professor of Islamic Azad University.