

Esmaeil Atashpaz Gargari

Electrical and Computer Eng. Dept.

Texas A&M University

College Station, Texas

Homepage: <http://www.atashpaz.com>

Email: atashpaz_e@tamu.edu , atashpaz.gargari@gmail.com

EDUCATION

- Ph.D.** **Genomic Signal Processing**
September 2009 – Present
Genomic Signal Processing Lab
Department of electrical and Computer Eng.,
Texas A&M university, College Station, Texas.
- M.Sc.** **Control and Intelligent Processing**
September 2005 – 2008
Control and Intelligent Processing Center of Excellence, Department of electrical and Computer Eng.,
University of Tehran, Tehran, Iran.
Thesis: “Developing a Socially Inspired Optimization Strategy and Investigating its Efficiency”
Distinguished Student of Electrical Engineering, University of Tehran, June 2007
- B.Sc.** **Electrical Engineering**
September 2001 – September 2005
Department of electrical and Computer Eng., Tabriz University, Tabriz, Iran, 2005.
Project Title: “Design and Implementation of Voltage Control and Monitoring System”.
Ranked 3rd among B.Sc. Students.
Ranked 10th in the 10th National Scientific Olympiad for Undergraduate Students in Electrical Engineering, 2005.
- High School Diploma** **Physics and Mathematics**
Ferdosi School, Hadishahr, Iran.
September 1997 – September 2000
Ranked 1st

RESEARCH INTERESTS

- Gene Regulatory Networks
- Pattern Recognition
- Evolutionary Computation and Optimization
- Machine Learning
- Computer Vision and Image Processing
- System Identification

HONORS and AWARDS

- Selected and Awarded as the **Electrical Engineering Distinguished Student** of University of Tehran, June 2007.
- Developing “*Imperialist Competitive Algorithm (ICA)*”, a novel global optimization algorithm. Since its inception, this algorithm is used to solve many optimization problems. This novel algorithm has absorbed the attention of many researchers in the area of Evolutionary Computation and Optimization. More information about this algorithm is available in its Wiki Page.
 - http://en.wikipedia.org/wiki/Imperialist_competitive_algorithm

- Ranked 10th in the 10th National Scientific Olympiad for University Students in Electrical Engineering, 2005.
- Ranked 23th among more than 15000 EE students in the University Entrance National Exam for M.Sc. Degree, 2005
- Ranked 4th among 120 EE students and 3rd in Electronics Major in the School of Electrical and Computer Engineering at the end of B.Sc. Program 2005.

Some of the PUBLICATIONS

Books

- B. Abdi, M. Keshavarzmehr & **E. Atashpaz Gargari**, translation of the “*MATLAB Programming for Engineers*, by S. J. Chapman” into Farsi, Published by Nopardazan, ISBN: 964-8142-95-5
- Ramin Rajabioun, **Esmail Atashpaz-Gargari** and Caro Lucas, “*Colonial Competitive Algorithm as a Tool for Nash Equilibrium Point Achievement*”, Book Chapter, Springer Lecture Notes in Computer Science, Springer, 2008. pp. 680-695.
- **Esmail Atashpaz Gargari**, etal. , “*Solution Manual for Electrical Engineering National Entrance Examination Problems for Graduate Program*”, Pardazeshgaran Publication, ISBN: 978-964-8628-89-0

Journal Papers

Published Journal Papers

- **E. Atashpaz Gargari**, Farzad Hashemzadeh, Ramin Rajabiyoun, Farzad Rajaiee Salmasi, “*A Decentralized PID controller based on Optimal Shrinkage of Gershgorin Bands and PID tuning Using Colonial Competitive Algorithm*”. *International Journal of Innovative Computing, Information and Control (IJICIC)*. Vol 5, 2009, pp. 3217-3240.
- **Esmail Atashpaz Gargari**, Farzad Hashemzadeh, Ramin Rajabioun and Caro Lucas, “*Colonial competitive algorithm: A novel approach for PID controller design in MIMO distillation column process*”, *International Journal of Intelligent Computing and Cybernetics (IJICC)*, Vol. 1 No. 3, 2008, pp. 337-355, **Invited Author**
- Biabangard-Oskouyi, **E. Atashpaz-Gargari**, N. Soltani, C. Lucas, “*Application of Imperialist Competitive Algorithm for Materials Property Characterization from Sharp Indentation Test*”, to be appeared in *International Journal of Engineering Simulation*.
- Arash Khabbazi, **Esmail Atashpaz Gargari** and Caro Lucas, “*Imperialist Competitive Algorithm for Minimum Bit Error Rate Beamforming*”, To be appeared in *International Journal of Bio-Inspired Computation (IJBIC)*, **Invited Author**

Under Preparation Journal Papers

- **E. Atashpaz Gargari** & B. N. Araabi, “*Conformal Transformations for Line and Circle Detection in Images*”.

Conference Papers

- **E. Atashpaz Gargari** & Caro Lucas, “*Imperialist Competitive Algorithm: An Algorithm for Optimization Inspired by Imperialistic Competition*”, *IEEE Congress on Evolutionary Computation*, Singapore, 2007, pp 4661-4667.
- Ramin Rajabioun, Farzad Hashemzadeh, **Esmail Atashpaz-Gargari**, Bahman Mesgari & Farzad Rajaiee Salmasi, “*Identification of a MIMO Evaporator and Its Decentralized PID Controller Tuning Using Colonial*

Competitive Algorithm”, *Proceedings of the 17th World Congress, The International Federation of Automatic Control*, Seoul, Korea, July 6-11, 2008, pp. 9952-9957

- **E. Atashpaz Gargari**, Farzad Hashemzadeh & Caro Lucas, “*Designing MIMO PIID Controller using Colonial Competitive Algorithm: Applied to Distillation Column Process*”, *Proceeding of IEEE CEC 2008, within IEEE WCCI 2008*, Hong Kong, pp. 1929-1934.
- **E. Atashpaz Gargari**, Babak N. Araabi & Caro Lucas, “*Optimal Fuzzy Passing Strategy for Robot Soccer Players*”, *Proceeding of IEEE International Conference on Fuzzy Systems, within IEEE WCCI 2008*, Hong Kong, pp. 1576-1581.
- Mahnaz Roshanaei, **Esmail Atashpaz-Gargari**, Caro Lucas, “*Adaptive Beamforming Using Colonial Competitive Algorithm*”, *2nd International Joint Conference on Computational Engineering*, Vancouver, Canada, 2008.
- Ashkan M. Jasour, **Esmail Atashpaz Gargari**, Caro Lucas, “*Vehicle Fuzzy Controller Design Using Imperialist Competitive Algorithm*”, *Second First Iranian Joint Congress on Fuzzy and Intelligent Systems*, Tehran, Iran, 2008.
- **E. Atashpaz Gargari** & B. N. Araabi, “*Line Detection in Complex Environment by using Conformal Transformation*” (In Farsi), *4th Iranian biennial Conference on Machine Vision & Image Processing (MVIP2007)*, Feb, 14-15 2007 Mashhad, Iran
- **E. Atashpaz Gargari** & Caro Lucas, “*Designing an optimal PID controller using Colonial Competitive Algorithm*”, *First Iranian Joint Congress on Fuzzy and Intelligent Systems*, Mashhad, Iran, 2007
- **E. Atashpaz Gargari** & Caro Lucas, “*A Strategy for Passing by Robot Soccer Players using Fuzzy Logic*”, *15th Iranian Conference on Electrical Engineering (ICEE 2007)*, 15th – 17th May 2007, Tehran, Iran.
- **E. Atashpaz Gargari**, “*Hiding Secret Messages in Images, Steganography*”, *9th Iranian Student Conference on Electrical Engineering (ISCEE 2006)*, Sep 2006, Tehran, **Best Paper Award**.
- **E. Atashpaz Gargari** & A. Dargahi, “*DC Motor Digital PID Controller Design and Implementation*”, *8th Iranian Student Conference on Electrical Engineering (ISCEE 2005)*, Sep 2005, Kerman, Iran. **My first paper**.

PATENTS

- Behrooz Abdi, **Esmail Atashpaz Gargari** & Marziye Ayougi, “*Intelligent Keypad for Mobile Phone*”, (Iran Patent Office, Registration Number: 81345).

PASSED Graduate COURSES and some of ACCOMPLISHED PROJECTS

- **Advanced Stochastic Processes**
- **Classical Analysis**
- **Statistical Computation in Genomic Signal Processing**
- **Applied Probability**
- **Statistical Inference**
- **Stochastic Processes**
- **Fuzzy Sets and Theory**
 - *Design and implementation of an intelligent pass strategy for robot soccer players*. Using fuzzy logic, in this project I implemented an intelligent passing strategy for soccer robots.
- **Pattern Recognition**
 - *Survey on clustering incomplete data*.
- **System Identification**

- **Nonlinear Control Systems**
 - *Semi global enlargement of domain of attraction for a class of affine 3rd order nonlinear systems.*
- **Computer Vision**
 - *Line and circle detection in cluttered images using conformal transformation.* I developed a new method for line and circle detection in cluttered images. Using a conformal transformation, in this novel method the image is mapped into a space in which, line and circles are more separable.
 - *Image Steganography, the Art of hiding information in the image.* I prepared software for image steganography using LSB method.
- **Bio-Inspired Computing**
 - *An Optimal Fuzzy Passing Strategy for Robot Soccer Players.* I used evolutionary methods to improve the pass strategy for robot soccer players.
- **Social Cognitive and Behavioral Systems**
 - *Imperialist Competitive Algorithm: A socio-politically inspired optimization strategy.* In this project I developed "*Imperialist Competitive Algorithm (ICA)*", a novel socio-politically inspired optimization strategy. ICA is a novel global search heuristic that uses imperialism and imperialistic competition process as a source of inspiration. This algorithm is being used in many research projects to solve different kinds of optimization problems.

TEACHING EXPERIENCES

- Basic Circuit Theory I, Teaching Assistance, University of Tehran, [Spring 2007].
<http://ece.ut.ac.ir/Classpages/S86/ECE359/>
- Advanced Engineering Mathematics, Teaching Assistance, University of Tabriz, [Fall 2004]
- Linear Control Systems, Teaching Assistance, University of Tehran, [Fall 2006]
- Linear Control Systems, Teaching Assistance, University of Tehran, [Spring 2006]
- Power Electronics, Lecturer, Azad University of Masjede Soleyman. [Fall 2006]
- Basic Circuit Theory I, Lecturer, Azad University of Masjede Soleyman. [Fall 2006]
- Basic Circuit Theory II, Lecturer, Azad University of Masjede Soleyman. [Fall 2006]

SKILLS

- Programs: MATLAB, C++, PSpice, BASCOM, Simulink
- Microcontroller-based Controller Design (AVR Atmel series)
- Electronic Circuit Design
- DC and Stepper Motor Controller Design
- Other Programs: Macromedia Dreamweaver, Photoshop, ...

LANGUAGES

- **Azeri:** Mother Tongue
- **Farsi:** (Perfect)
- **Turkish:** Listening, Speaking
- **English:** (Fluent)
- **Arabic:** (Reading and Understanding)

MEMBERSHIP

- Member of IIA (Iranian Inventors Association)
- Student Member IEEE and IEEE Computational Intelligence Society [2006 - Present].
- Member of Iranian Fuzzy Systems Society, [2007 - present]
- Program committee of 6th Iranian Student Conference on Electrical Engineering [2002 -2003]