

# CURRICULUM VITAE

## Mohsen Rafiee Sandgani

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### Education:

- **M.Sc. in Control Engineering**, *K.N Toosi University of Technology*, Tehran, Iran [Sep 2011- present].
    - ✓ **Advisor:** Dr. Mahdi Aliyari Shore Deli
    - ✓ **Thesis:** Synchronization of Flexible Joint Manipulator with Chaotic System and Analyzing of Chaotic Signal Existence on Performance of the Controlled System.
    - ✓ **Total GPA:** **18.75** out of **20**
    - ✓ **Ranked** in Top 5% Student of Control Department.
  - **B.Sc. in Electrical Engineering**, *University of Tehran, Tehran, Iran* [2007 - 2011].
    - ✓ **Advisor:** Dr. Tooraj Abbasian Najaf Abadi
    - ✓ **Thesis:** 3-Phase Induction Motor Drive with the Purpose of Reducing Input Power
    - ✓ **Total GPA:** **15.62** out of **20**
    - ✓ **Ranked** in Top 10 % Student of Electrical Engineering Faculty.
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### Honors and Awards:

- **Ranked 132<sup>nd</sup>** among nearly 500000 participants in nationwide university entrance exam for B.Sc. degree (Summer 2007).
  - **Ranked 117<sup>th</sup>** among nearly 45000 participants in nationwide university entrance exam for M.Sc. degree in Electrical Engineering (Summer 2011).
  - **1<sup>st</sup> Rank**, Achieving the highest GPA among all university Electrical Engineering graduate students in year 2013.
  - **Faculty of Engineering Scholarship** as an exceptional student (up to now)
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### Research Interests:

- Nonlinear Systems, Nonlinear Control and their Stability Analysis.
  - Chaotic Systems in the Engineering and Chaos Synchronization.
  - System Identification.
  - Fault Diagnosis and Fault Tolerant.
  - Intelligent Control Systems.
  - Flexible Joint Robots.
  - Adaptive Control.
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### Publications:

- **M. Rafiee Sandgani**, M. Aliyari Shore Deli, "Feedback Linearization and Chaotic Anti-Control for Flexible Joint System and Analysis of Chaotic Signal Existence Effectiveness with Experimental Validation" Submitted to *Nonlinear Dynamics Journal* .
  - **M. Rafiee Sandgani**, M. Aliyari Shore Deli, "Lyapunov Rule-Based Fuzzy Control and Chaotic Anti-Control for Flexible Joint System and Analysis of Chaotic Signal Existence Effectiveness with Experimental Validation" Accepted in 13<sup>th</sup> Iranian Conference on Fuzzy Systems (IFS2013).
  - H. MonirVaghefi, **M. Rafiee Sandgani**, "Interval Type-2 Adaptive Network-based Fuzzy Inference System with Type-2 non-singleton fuzzification" Accepted in 13<sup>th</sup> Iranian Conference on Fuzzy Systems (IFS2013).
  - A. Rahimabadi, **M. Rafiee Sandgani**, "Evaluating of an Undetectable Fault which Caused by Perron Effect and Obtain a New Boundary for Perron Parameter" in Progress.
  - A. Rahimabadi, **M. Rafiee Sandgani**, H. D. Taghirad "Effective Function Algorithm for Autonomous systems analysis" in Progress.
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### **Teaching Experience:**

- **Teaching Assistant**, Multivariable Control at *ECE Department University of Tehran (Prof. Ali Khaki-Sedigh)* Fall 2012.
  - **Teaching Assistant**. System Identification at *ECE Department K.N Toosi University of Technology (Dr. Mahdi Aliyari Shore deli)* Spring 2013.
  - **Tutor**, Linear Control and Modern Control at *ECE Department K.N Toosi University of Technology*, [2012-2013]
  - **Teacher**, Mathematics Course, *Ghulamchi Institute* [2009-2011].
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### **Work Experience:**

- **Researcher**, Working as researcher and design control engineer on servo drives and controlling of stabilizers in *Faraz Sanaat Sharif institute*. [2010-2012].
  - **Editor**, Working as editor of high school mathematics books in *Ghulamchi Institute* [2009-2011].
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### **Selected Academic Projects:**

- 1) **Nonlinear Control Project:** An Introduction of Chaos [Fall 2011].  
**Advisor: Prof. Hamid D. Taghirad**
- 2) **Adaptive Control Project:** Robustness of Continuous-Time Adaptive Control Algorithms in the Presence of Unmodeled Dynamics [Spring 2012].  
**Advisor: Prof. Ali Khaki-Sedigh**
- 3) **System Identification Project:** Identification of Systems Using Self-Organizing Controller and Implementation of Self-Organizing Approximation Based Controller [Spring 2012].  
**Advisor: Dr. Mahdi Aliyari Shore Deli**
- 4) **Soft Computing Project:** a Fuzzy Control Scheme for the Gantry Crane Position and Load Swing Control [Spring 2012].  
**Advisor: Dr. Alireza Fatehi**

- 5) **Soft Computing Project:** Modified Wavelet Neural Network in Function Approximation and its Application in Prediction of Time-Series Data [Spring 2012].  
**Advisor: Dr. Alireza Fatehi**
  - 6) **Fault Detection & Identification in Mechatronics Systems Project:** Fault Tolerant Control Based on Nonlinear Observers in Nonlinear Systems [Fall 2013].  
**Advisor: Dr. Mahdi Aliyari Shore Deli**
  - 7) **Optimal Control Project.** Performance Comparison Between HJB and LQR Controller for an Inverted Pendulum System.  
**Advisor: Dr. Mohammad Ali Nekoui**
  - 8) **Industrial Electronic Project:** Designing and Constructing a *4-wheels vehicle for carrying goods up to 25 kg.* [Spring 2010]  
**Advisor: Dr. Behzad Asaee**
  - 9) **Fundamental of Mechatronic Engineering project:** Designing and Simulation of different Controllers for the Segway System [Spring 2011].  
**Advisor: Dr. Manoochehr Moradi and Dr. Tooraj Abbasian Najaf Abadi**
  - 10) **Electronics II project:** Designing and simulating high gain amplifiers with specific traits by means of MOSFETs and BJTs using HSPICE [Fall 2009].  
**Advisor: Dr. Ali Afzali Kousha**
  - 11) **General Workshop project:** Designing and Constructing a Tracker Robot.  
**Advisor: Dr. Sied Mehdi Fakhraie**
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### **Language Skill:**

- **Persian:** Mother Tongue
  - **English:** Fluent
  - **Arabic:** Intermediate
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### **Computer Skill:**

- **Programming Languages:**
  - ✓ C/C++ (Expert)
  - ✓ Assembly Language for: 1. Microprocessors : 8086 & 8088 families(Expert)  
2. Microcontrollers: 80851(Expert), AVR(Expert).
- **Engineering Software:**
  - ✓ MATLAB(Expert) - SIMULINK(Expert) , Maple, Global Drive Controller (GDC) for LENZE Servo Drives(Expert).
- **Engineering Simulation Software:** Pspice, Hspice, Modelsim, Quartus, Codevision, Protel, Proteus, AVRStudio, WinAvr and Lab View (Expertl) ; Advanced Modeling Environment for performing Simulations of engineering systems (AMESim) , PLC software (familiar).
- **Operating Systems:** Windows Vista/Seven/XP/2000/98, Dos (Expert) ; Linux, MAC (familiar).
- **Others:** Windows Microsoft Office 2003/2007/2010 (Excel, Word, Power Point, Visio, etc.) (Expert).