CURRICULUM VITAE

Name: **Faezeh Farivar**

Lecturer Fellow
Department of Mechatronics Engineering,
Faculty of Engineering,
Science and Research Branch,
Islamic Azad University, Tehran, Iran.

Post-Doctoral Research Fellow
Fault Detection and Identification Lab.,
Faculty of Electrical and Computer Engineering,
K. N. Toosi University of Technology,
Tehran, Iran.

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EDUCATIONS

November 2013-Present

Post-Doctoral Research Fellow, Control and System Engineering
Department of Electrical and Computer Engineering, K. N. Toosi University of Technology
under supervision of Prof. M. Teshnehlab and Dr. M. Aliyari.

September 2011-September 2012

Post-Doctoral Research Fellow, Machine Learning and Robotics
Department of Artificial Intelligence and Robotics
Control and Intelligence Processing Center of excellence, School of ECE, University of Tehran
under supervision of Prof. M. Nili Ahmadabadi.
Research Topics:

- Machine Learning Approaches to Robust Fault Tolerant Control for a Class of Unknown Nonlinear Systems,
- Hopping Systems with Linear and Piecewise Linear Springs,
- Modeling, Path Planning, and Control a Tethered Aerial Robots.

September 2007-August 2011

Ph.D. of Control and System Engineering, *Major:* ***Mechatronics***
Department of Mechatronics Engineering, Science and Research Branch, IAU
Total: *19. 71/20 (3.942/4 according to WES guide)*
Thesis: Intelligent Nonlinear Hybrid Control and Synchronization of Chaotic Gyro Systems with Model Uncertainty, *under supervision of Prof. M. A. Nekoui, Prof. M. Teshnehlab,* and *Dr. M. Aliyari*.

September 2005- September 2007

M.Sc. of Mechatronics Engineering, *Major:* ***Control and system***
Department of Mechatronics Engineering, Science and Research Branch, IAU
Total: *19.16/20 (3.832/4 according to WES guide)*
Thesis: Intelligent Control of Human Eye Movement Models, *under supervision of Prof. M. Teshnehlab* and *Dr. M. Aliyari.*

September 2000- September 2004

B.Sc. of Biomedical Engineering, *Major:* ***Bio-electrics and Electronics***
Department of Biomedical Engineering, Science and Research Branch, IAU
Total: *16.39/20 (3.278/4 according to WES guide)*
Thesis: Quantitative Analysis of the Leg Tremor for Parkinson's Patients Using Accelerometer Methods, *under supervision of Dr. S. Khorramymehr*.

FIELDS OF INTEREST

- Robotics & Mechatronics Systems
- Nonlinear Control
- Intelligent Systems
- Dynamic and Chaotic Systems

JOURNAL PUBLICATIONS

1. **Faezeh Farivar**, Mahdi Aliyari Shoorehdeli, Mohammad Ali Nekoui, Mohammad Teshnehlab, "Synchronization of Under-Actuated Unknown Heavy Symmetric Chaotic Gyroscopes via Optimal Gaussian Radial Basis Adaptive Variable Structure Control ", *IEEE Transactions on Control Systems Technology*, Vol. 21, Issue 6, pp. 2374-2379, 2013.
2. **Faezeh Farivar**, Mahdi Aliyari Shoorehdeli, Mohammad Teshnehlab, Mohammad Ali Nekoui, "Modified Projective Synchronization of Unknown Chaotic Dissipative Gyroscope Systems via Gaussian Radial Basis Adaptive Variable Structure Control ", *Journal of Vibration and Control*, Vol.19, No.4, pp.491-506, 2013.
3. **Faezeh Farivar**, Mahdi Aliyari Shoorehdeli, Mohammad Ali Nekoui, Mohammad Teshnehlab, "Chaos Control and Modified Projective Synchronization of Unknown Heavy Symmetric Chaotic Gyroscope Systems via Gaussian Radial Basis Adaptive Backstepping Control", *Journal of Nonlinear Dynamics* (Springer), Vol.12, No.3, pp.1913-1941, 2012.
4. **Faezeh Farivar**, Mahdi Aliyari Shoorehdeli, Mohammad Teshnehlab, "An Interdisciplinary Overview and Intelligent Control of Human Prosthetic Eye Movements System for the Emotional Support by a Huggable Pet-Type Robot from a Biomechtronical View Point", *Journal of Franklin Institute*, Vol. 349, pp. 2243-2267, 2012.
5. **Faezeh Farivar**, Mahdi Aliyari Shoorehdeli, Mohammad Ali Nekoui, Mohammad Teshnehlab, "Chaos Control and Generalized Projective Synchronization of Heavy Symmetric Chaotic Gyroscope Systems via Gaussian Radial Basis Adaptive Variable Structure Control", *Chaos, Solitons and Fractals*, Vol.45, pp.80-97, 2012.
6. **Faezeh Farivar**, Mahdi Aliyari Shoorehdeli, "Fault Tolerant Synchronization of Chaotic Heavy Symmetric Gyroscope Systems versus External Disturbances via Lyapunov Rule-Based Fuzzy Control", *Journal of ISA Transaction*, Vol. 51, pp.50-64, 2012.
7. **Faezeh Farivar**, Mohammad Ali Nekoui, Mahdi Aliyari Shoorehdeli, Mohammad Teshnehlab, "Modified Projective Synchronization of Chaotic Dissipative Gyroscope Systems via Backstepping Control", *Indian Journal of Physics* (Springer), Vol.86 , No. 10, pp. 901-906, 2012.
8. **Faezeh Farivar**, Mahdi Aliyari Shoorehdeli, Mohammad Ali Nekoui, Mohammad Teshnehlab, "Generalized projective synchronization of uncertain chaotic systems with external disturbance", *Journal of Expert Systems with Applications*, Vol.38, pp.4714-4726, 2011.
9. **Faezeh Farivar**, Mahdi Aliyari Shoorehdeli, Mohammad Ali Nekoui, Mohammad Teshnehlab, "Generalized Projective Synchronization for Chaotic Systems via Gaussian Radial Basis Adaptive Backstepping Control", *Journal of Chaos, Solitons and Fractals*, Vol.42, No.2, pp.826-839, 2009.
10. **Faezeh Farivar**, Majid Nili Ahmadabadi, "Machine Learning Approaches to Robust Fault Tolerant Control for a Class of Unknown Nonlinear Systems", to be submitted *on IEEE Transactions on Neural Networks and Learning Systems, Nov. 2013.*

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11. **Faezeh Farivar,** Mohammad Ali Nekoui, Mahdi Aliyari Shoorehdeli, Mohammad Teshnehlab, "Evolutionary Algorithms to Compute the Optimal Parameters of Gaussian Radial Basis Adaptive Backstepping Control for Chaotic Systems", *Universal Journal of Control and Automation*, Vol. 2, No.1, pp. 25-31, 2014.

12. **Faezeh Farivar**, Mahdi Aliyari Shoorehdeli, Mohammad Ali Nekoui, Mohammad Teshnehlab, "Generalized Projective Synchronization of Chaotic Heavy Gyroscope Systems Via Sliding Rule-Based Fuzzy Control", *Journal of ISRN Artificial Intelligence*, doi:10.5402/2012/576873, Vol. 2012, Article ID 576873, pp.1-10, 2012.
13. **Faezeh Farivar**, Mahdi Aliyari Shoorehdeli, Mohammad Teshnehlab, Mohammad Ali Nekoui, "Chaos Control and Modified Projective Synchronization of Chaotic Dissipative Gyroscope Systems", *Journal of Energy and Power Engineering*, Vol.6, pp.90-100, 2012.
14. Mojtaba Rostami K, **Faezeh Farivar**, Mahdi Aliyari Sh., "Lyapunov Based Control of Flexible Joint Manipulator with Experimental Validation by Using Chaotic Gyroscope Synchronization", International Journal of Mechanic Systems Engineering, Vol.2, No.4, pp.169-175, 2012.
15. **Faezeh Farivar**, Mohammad Ali Nekoui, Mohammad Teshnehlab, Mahdi Aliyari Shoorehdeli, "Neural Sliding Mode Control for Chaos Synchronization of Uncertain Nonlinear Gyros", *Journal of Advances and Applications in Mathematical Sciences*, Mili publications, Vol.4, issue.1, pp.41-56, 2010.
16. Maysam Zamani Pedram, Mahdi Aliyari Sh., **Faezeh Farivar,** Mojtaba Rostami Kandroodi, "Hybrid Concepts of the Control and Anti-Control of Flexible Joint Manipulator", *International Journal of Robotics*, Vol.2, No.1, 2011.
17. Atefeh Saedian, Hassan Zarabadipour, Mahdi Aliyari Sh., **Faezeh Farivar**, "Fault Tolerant Control of Mechatronics System based on Hybrid Control", *International Journal of Physical Sciences* , Vol. 7, No. 12, pp. 1949 - 1958, 2012.
18. Mojtaba Rostami K., **Faezeh Farivar**, Mahdi Aliyari Sh., "Control of Flexible Joint Manipulator via Variable Structure Rule-Based Fuzzy Control and Chaos Anti-Control with Experimental Validation", *Journal of Intelligence Systems in Electrical Engineering*, accepted on 7 May 2013.

CONFERENCE PROCEEDINGS

1. **Faezeh Farivar**, H. Yaghini B., MH. Kani, M. J. Yazdanpanah, M. Nili Ahmadabadi**,** "Comparing Energy Efficiency of Hopping Systems with Linear and Piecewise Linear Spring", proceeding of the 15th *International Conference on Climbing and Walking Robots* (CLAWAR 2012), Johns Hopkins University, pp.475-482, 2012.
2. **Faezeh Farivar**, "Fault Tolerant Synchronization for a Class of Uncertain Chaotic Systems with Model Uncertainty and External Disturbances Using Fuzzy Sliding Mode Control", *the 9th Asian Control Conference (ASCC2013)*, pp.1-6, 2013.
3. **Faezeh Farivar**, Mahdi Aliyari Shoorehdeli, Mohammad Ali Nekoui, Mohammad Teshnehlab, "Chaos Synchronization for a Class of Chaotic Systems with Model Uncertainty and External Disturbances", *IEEE International Conference on Mechatronics (ICM 2011)*, pp.288-293, 2011.
4. **Faezeh Farivar**, Mahdi Aliyari Shoorehdeli, "Fault Tolerant Synchronization of Chaotic Heavy Symmetric Gyroscope Systems via Gaussian RBF Neural Network Based on Sliding Mode Control", *IEEE International Conference on Mechatronics (ICM 2011)*, pp. 300-305, 2011.
5. **Faezeh Farivar**, Mojtaba Rostami Kandroodi, Mahdi Aliyari Shoorehdeli, "Intelligent Control of Human Prosthetic Eye Movements System for the Emotional Support by a Huggable Pet-Type Robot via Gaussian RBF Neural Network Based on Sliding Mode Control", *2nd International Conference on Control, Instrumentation, and Automation*, Indexed on IEEE Explorer, pp. 1080 - 1085, *December 27-29, 2011 in Shiraz ,IRAN.*

6. **Faezeh Farivar**, Mahdi Aliyari Shoorehdeli, Mohammad Ali Nekoui, Mohammad Teshnehlab, "Chaos Synchronization of Uncertain Nonlinear Gyros via Hybrid Control", *IEEE/ASME International Conference on Advanced Intelligent Mechatronics*, pp.1365-1370, 2009.
7. **Faezeh Farivar**, Mahdi Aliyari Shoorehdeli, Mohammad Ali Nekoui, Mohammad Teshnehlab, "Sliding Mode Control of Flexible Joint Using Gaussian Radial Basis Function Neural Networks", *International Conference on Computer and Electrical Engineering'08*, pp.856 – 860. 2008.
8. Mojtaba Rostami Kandroodi, **Faezeh Farivar,** Maysam Zamani Pedram, Mahdi Aliyari Shoorehdeli, "Variable Structure Control and Anti-Control of Flexible Joint Manipulator with Experimental Validation", *IEEE International Conference on Mechatronics (ICM2011)*, pp.294-299, 2011.
9. Maysam Zamani Pedram, **Faezeh Farivar,** Mahdi Aliyari Shoorehdeli, "Feedback Linearization and Chaotic Anti-Control of Flexible Joint Manipulator with Experimental Validation", *2nd International Conference on Control, Instrumentation, and Automation, ,* Indexed on IEEE Explorer, pp. 841 – 846*, December 27-29, 2011 in Shiraz ,IRAN.,*
10. Mojtaba Rostami Kandroodi, **Faezeh Farivar**, Mahdi Aliyari Shoorehdeli, "Control and Anti-Control of Rotary Gantry via Gaussian Radial Basis Function Neural Networks by using Chaotic Gyroscope Synchronization", *the Iranian Conference on Chaos, Fractals and Complex Systems (CFCS)*, pp.8-18, 2011.
11. Mojtaba Rostami K., **Faezeh Farivar**, Hadi Moradi, "A Tethered Aerial Robot for Rescue Operations: Dynamic Modeling and Control", proceeding of *1st RSI/ISM International Conference on Robotics and Mechatronics* (ICRoM 2013).
12. Atefeh Saedian, Hassan Zarabadipour, Mahdi Aliyari Sh., **Faezeh Farivar**, "Inverted Pendulum Fault Tolerant Control Based on Fuzzy Backstepping Design and Anti-Control of Chaos", *proceeding of the third IFAC CHAOS Conference*, pp.65-70, 2012.
13. Negin Farzbod, Hassan Zarabadipour, Mahdi Aliyari Shoorehdeli, **Faezeh Farivar**, "Sliding Adaptive Fuzzy Control for a Class of Time-Delayed Chaotic Systems", *2011 IEEE International Conference on Fuzzy systems*, Taiwan, pp. 18-82-1889, 2011.
14. Negin Farzbod, Hassan Zarabadipour, Mahdi Aliyari Shoorehdeli, **Faezeh Farivar**, "Generalized Projective Synchronization of Time-Delayed Chaotic Systems via Sliding Adaptive Fuzzy Control", *2011 IEEE International Conference on Fuzzy systems*, Taiwan, pp. 1999-2006, 2011.
15. Negin Farzbod, Hassan Zarabadipour, Mahdi Aliyari Shoorehdeli, **Faezeh Farivar**, "Generalized Projective Synchronization of Time-Delayed Chaotic Systems via Sliding Adaptive Radial Basis Function Neural Network Control", *19th Iranian Conference on Electrical Engineering*, 2011.

EDUCATIONAL ACHIVEMENTS AND HONORS

- Winning the research fellowship, University of Tehran, Sep. 2011.
- Winning the research fellowship, K. N. Toosi University of Technology, Nov. 2013.
- Ranked as the first student among all students of Control Engineering Ph.D. of Science and Research Branch, IAU.
- Ranked as the first student among all students of Mechatronics Engineering M. Sc. of Science and Research Branch, IAU.
- Ranked as one of the three best students of Biomedical Engineering B.Sc. of Science and Research Branch, IAU.
- Member of Young Researchers Club, Science and Research Branch, IAU.

TEACHING EXPERINCES

- **Mechatronics I** for Mechatronics M.Sc. students at Science and Research Branch, IAU (fall 2011, spring 2012).
- **Mechatronics II** for Mechatronics M.Sc. students at Science and Research Branch, IAU (fall 2011, spring 2012, spring2014).
- **Nonlinear Control** for Mechatronics M.Sc. students at Science and Research Branch, IAU (spring2014).
- **Advanced Automatic Control** for Mechatronic M.Sc. students at Science and Research Branch, IAU (spring2014).
- **Electronics Circuits I** for B.Sc. students at Science and Research Branch, IAU (fall 2012, spring 2013, fall 2013, spring 2014).
- **Dynamics** for B.Sc. students at Science and Research Branch, IAU (fall 2012, spring 2013, fall 2013).
- **Electronics Circuits I** for B.Sc. students at Sama Branch, IAU (fall 2010, spring 2011).
- **Research Techniques** for Mechatronics M.Sc. students at Science and Research Branch, IAU (fall and spring, 2008 – 2010).
- **MATLAB Software** for B.Sc. students at North Branch, IAU (spring, 2006).

KEYNOTE SPEAKER EXPERINCES

- Workshop Lecturer, "Introduction to Mechatronics", Eslamshahr Branch, Islamic Azad University, 16 Dec. 2011.
- Workshop Lecturer, "Introduction to Mechatronics", Maybod Branch, Islamic Azad University, 16 Dec. 2008.

WORK EXPERINCES

- Research Institute of Robotics, Artificial Intelligence, and Information Science, University of Tehran, school of ECE., 2011-2012.
- Intelligent systems Lab., K. N. Toosi, University of Technology, as a mechatronic engineer, working on Real –Time systems (QUANSER Mechatronics Laboratory systems), 2006- 2011.
- Pars Nikou Afarid Co., as a biomedical engineer, 2004.
- Tajhiz Teb Nour Co., as a biomedical engineer, 2003.
- Jahan Gostaresh Tejarat Co., as a work trainer of the biomedical engineering, 2003-2004.
- Shariati Hospital, the Biomedical engineering unit, as a work trainer of the biomedical engineering, summer 2001-fall 2002.

COMPUTER SKILLS

- ICDL Certification
- Programming Languages; MATLAB
- Electrical Engineering Software; Orcad, Pspice, Electronic Work Bench.

LANGUAGES

- **Persian:** Native
- **English:** MSRT certification, Science Ministry, Iran, MCHE certification, Farhikhtegan Language Department, University of Tehran, Iran.