Alireza Alfi

Professor

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ACADEMIC DEGREES

- **Ph.D. Control Engineering, 2007**
  Iran University of Technology, Tehran, Iran
  Thesis Title: "*A New Control Structure for Bilateral Transparent Teleoperation Systems with Perturbed Delay Time in Communication Channel*"

- **M.Sc. Control Engineering, 2002**
  Iran University of Technology, Tehran, Iran
  Thesis Title: "*Fuzzy Control of Four-Wheel-Steering Vehicle*"

- **B.Sc. Control Engineering, 2000**
  Ferdowsi University of Mashhad, Mashhad, Iran
  Thesis Title: "*Design and Implementation of Control System for Control Laboratory*"

SCIENTIFIC SOCITIES MEMBERSHIP

- IEEE Senior Member
- Member of the Iranian Society of Instrumentation & Control Engineering

HONORS AND AWARDS

- Rank 1 among Ph.D. students of Control Engineering at Iran University of Science Technology.
- Rank 2 among graduate students of Control Engineering at Iran University of Science Technology.
- Superior Researcher in SUT 2020,2019,2018,2017,2016,2015,2013, 2012, 2011
- Superior academic member in SUT 2010, 2011
- Superior researcher in Semnan province 2018

FIELDS OF INTEREST

- Control Theory
- Time Delay Systems
- Robust Control
- Evolutionary Algorithms and Optimization
- Fractional Order Systems

TAUGH COURSES

- **Undergraduate**

  Linear Control Systems, Signals & Systems, Electric Circuits I and II, Engineering Mathematics, Robot Sensors

- **Postgraduate**

  Robust Control, Multivariable Control, Predictive Control, Artificial Intelligence, Modern Control

Supervised Ph.D. Students (Selective)

- *Robust control structure design for telerobotic systems with time delay*
- *Finite time H∞ stability analysis for network control systems under time delay and packet dropout*
- *Stability analysis of fractional order systems under saturation*
- *Stability analysis of fractional order leaky integrator echo state neural networks*
- *Stability analysis of fractional order systems of neutral-type with input saturation*

Supervised MSc. Students (Selective)

- *Design and implementation of fuzzy sliding mode control for two-wheeled mobile robots*
- *Optimized robust controller design for robot manipulator*
- *An adaptive fuzzy-neural controller design for path trajectory of two-wheeled mobile robots*
- *Optimal position tracking for tele-robotic systems*
- *Predictive control for tele-robotic systems*
- *Tele-robotic systems using modified Smith predictor*

PUBLICATIONS

- **Journal Papers**

  94. Stability analysis of uncertain fractional order neutral-type delay systems with actuator saturation, *Frontiers of Information Technology & Electronic Engineering, Accepted,* 2021.

  93. LMI-based stability analysis of fractional order systems of neutral type with time varying delays under actuator saturation, *Computational and Applied Mathematics*, DOI:10.1002/mma.7282, 2021.

  92. Observer-based control approach for fractional-order delay systems of neutral type with saturating actuator, *Mathematical Methods in the Applied Sciences,* vol. 90, pp. 1035–1048, 2021.

91. H_∞ consensus of heterogeneous vehicular platooning systems with packet dropout and communication delay, *IEEE Transactions on Systems, Man and Cybernetics: Systems,* DOI: 10.1109/TSMC.2021.3071994, 2021.

90. An intelligent control strategy for cancer cells reduction in patients with CML using the reinforcement learning and considering side effects of the drug, *Expert Systems*, vol. 38, no. 3, 2021.

89. Robust stability of uncertain fractional order systems of neutral type with distributed delays and control input saturation, *ISA Transactions*, vol. 111, pp. 144-155, 2021.

88. Stability analysis and performance evaluation of delayed bilateral telerobotic systems over a lossy communication channel, *Journal of Systems Science and Complexity*, vol. 34, no. 1, pp. 157-179, 2021.

87. Robust stability analysis of uncertain fractional order neutral-type delay nonlinear systems with actuator saturation, *Applied Mathematical Modelling*, vol. 90, pp. 1035–1048, 2021.

86. Stability analysis of fractional order neutral-type systems considering time varying delays, nonlinear perturbations, and input saturation, *Mathematical Methods in the Applied Sciences,* vol. 90, pp. 1035–1048, 2021.

85. Robust LMI-based active fault tolerant pitch Control of a wind turbine using a fuzzy model, Journal of Control Engineering and Applied Informatics, vol. 22, no. 4, pp. 34-42, 2020.

84. Control stability evaluation of multiple distribution static compensators based on optimal coefficients using Salp swarm algorithm, *Iranian Electric Industry Journal of Quality and Productivity*, vol. 9, no. 4, pp. 50-61, 2020.

83. Fuzzy logic embedding of sliding mode and state feedback controllers for projective synchronization of uncertain fractional order chaotic systems, *Computational and Applied Mathematics*, vol. 39, pp. 1-16, 2020.

82. Robust stability analysis of uncertain fractional order systems under input saturation using the direct Lyapunov method, *Applied Mathematical Modelling*, vol. 81, pp. 663-672, 2020.

81. Finite-time stabilisation of discrete networked cascade control systems under transmission delay and packet dropout via static output feedback control, *International Journal of Systems Science*, vol. 81, pp. 87-101, 2020.

80. Enhanced fractional chaotic whale optimization algorithm for parameter identification of isolated wind-diesel power systems, IEEE Access, vol. 8, 140862-140875, 2020.

79. Unequal limit cuckoo optimization algorithm: An algorithm for optimal design of nonlinear field calibration problem of a triaxial accelerometer, *Measurement,* Vol. 164, 107963, 2020.

78. Design of adaptive robust controller for second-order non-affine systems with input saturation, *Journal of Control, Automation and Electrical Systems*, vol. 31, pp. 535–547, 2020

77. Backstepping-based active fault tolerant control of wind turbine system using nonlinear fuzzy state observer, *Journal of Energy Management and Technology***,** vol. 5, pp. 1-7, 2020.

76. Complex-order particle swarm optimization, *Communications in Nonlinear Science and Numerical Simulation***,** vol. 92, 105448, 2020.

75. Stochastic H_∞ finite-time control of networked cascade control systems under limited channels, packet dropouts and network-induced delays, *ISA Transactions*, DOI: 10.1016/j.isatra.2019.07.020, 2019.

74. A comparative study of multi-objective finite set predictive control methods with new max-min strategy applied on a seven-Level PUC inverter, *IET Power Systems*, vol. 12, no. 9, pp. 2170-2178, 2019.

73. Robust performance rate control to enhance MANET networks routing issue, *Journal of Electrical Engineering & Technology*, DOI: 10.1007/s42835-019-00218-6, 2019.

72. A robust controller design for uncertain nonlinear non-affne systems, *International Journal of Dynamics and Control*, DOI: 10.1007/s40435-019-00544-7, 2019.

71. Fuzzy-hierarchical routing algorithm for MANET networks hierarchical allocation rates problem, *Iranian Journal of Science and Technology, Transactions of Electrical Engineering*, DOI: 10.1007/s40998-019-00253-z, 2019.

70. Matching of the estimating covariance in bearings-only tracking algorithm for moving surface targets in multiple model filter, *Tabriz Journal of Electrical Engineering*, vol. 50, no. 2, pp. 531-542, 2020.

69. Delay independent robust stability analysis of delayed fractional quaternion-valued leaky integrator echo state neural networks with QUAD condition, *Applied Mathematics and Computation*, vol. 359, pp. 278-293, 2019.

68. Delay-dependent stability analysis of the QUAD vector field fractional order quaternion-valued memristive uncertain neutral type leaky integrator echo state neural networks, *Neural Networks*, vol. 117, pp. 307-327, 2019.

67. Optimal observer path planning For bearings-only moving targets tracking using Chebyshev polynomials, *Journal of Control*, vol. 13, no. 3, 2019 (in Persian).

66. Target tracking with bearing and frequency measurements using adaptive modified covariance extended Kalman filter, *Journal of Control*, vol. 12, no. 4, pp. 14-24, 2019 (in Persian).

65. PV-based multiple D-statcoms control in unbalanced distribution network, Journal of Solar Energy Research, vol. 3, no. 4, pp. 313-323, 2018.

64. Guaranteed cost control in delayed bilateral teleoperation systems under input saturation, *Iranian Journal of Science and Technology, Transactions of Electrical Engineering*, vol. 43, pp. 827–835, 2019.

63. Conformable fractional order sliding mode control for a class of fractional order chaotic systems, *Iranian Journal of Electrical and Electronic Engineering*, vol. 2, no. 2, pp. 145-154, 2019.

62. Robust adaptive unscented Kalman filter for underwater target tracking, *Applied Ocean Research*, vol. 87, pp. 223-232, 2019.

61. H∞ consensus control of discrete-time multi-agent systems under network imperfections and external disturbance, *IEEE/CAA Journal of Automatica Sinica*, vol. 3, no. 6, pp. 1-10, 2019.

60. Fractional fixed-structure H-infinity controller design using augmented Lagrangian particle swarm optimization with fractional order velocity, *Applied Soft Computing*, vol. 77, pp. 688-695, 2019.

59. Doppler and bearing tracking using fuzzy adaptive unscented Kalman filter, *Iranian Journal of Fuzzy Systems*, DOI: 10.22111/ijfs.2019.4379, 2019.

58. Stability analysis of fractional order quaternion-valued leaky integrator echo state neural network with/without time delays, *Neurocomputing*, vol. 331, pp. 388-402, 2019.

57. Bilateral control of uncertain telerobotic systems using iterative learning control: design and stability analysis, *Acta Astronautica*, vol. 156, pp. 58-69, 2019.

56. Fractional calculus-based firefly algorithm applied to parameter estimation of chaotic systems, *Chaos, Solitons & Fractals*, vol. 114, pp. 202–215, 2018.

55. Target tracking with bearing and frequency measurement using adaptive modified covariance extended Kalman filter, *Journal of Control*, vol. 12, pp. 14-24, 2018.

54. Stability analysis of a class of nonlinear fractional-order systems under control input saturation, *International Journal of Robust and Nonlinear Control*, vol. 28, pp. 2887-2905, 2018.

53. Adaptive parameter control of search group algorithm using fuzzy logic applied to networked control systems, *Soft Computing*, vol. 22, pp. 7939-7960, 2018.

52. Hybrid control strategy applied to chaos synchronization: new control design and stability analysis, *International Journal of Dynamic and Control*, vol. 6, no. 2, pp. 809-816, 2018.

51. Predictive control design for uncertain bilateral teleoperation systems, *Tabriz Journal of Electrical Engineering*, vol. 47, no. 2, 2017 (in Persian).

50. An optimal robust excitation controller design considering the uncertainties in the exciter parameters, *IEEE Transaction on Power Systems*, vol. 32, no. 6, 4171, 4179, 2017.

49. Robust stability and stabilization of uncertain FO systems subject to input saturation, *Journal of Vibration and Control*, 1077546317708927, 2017.

48. Finite-time H∞ stability analysis of uncertain networked control systems with random packet dropout and varying network delay, *Nonlinear Dynamics*, vol. 91, no. 1, pp. 713–731, 2017.

47. Uniform stability of fractional order leaky integrator Echo state neural network with multiple time delays, *Information Sciences*, vol. 418–419, pp. 703-716, 2017.

46. Finite-time H_∞ control of uncertain networked control systems with randomly varying communication delays, *ISA Transactions*, vol. 69, pp. 65-88, 2017.

45. Chaos suppression in fractional systems using adaptive fractional state feedback control, *Journal of Chaos, Solitons & Fractals*, vol. 103, pp. 488-503, 2017.

44. Robust bilateral control for state convergence in uncertain teleoperation systems with time-varying delay: A guaranteed cost control design, *Nonlinear Dynamics*, vol. 88, pp. 1413-1426, 2017.

43. Balancing and trajectory tracking of two-wheeled mobile robot using backstepping sliding mode control: design and experiments, *Intelligent and Robotic Systems*, vol. 87, pp. 601–613, 2017.

42. Gradient-based Water Cycle Algorithm with evaporation rate applied to chaos suppression, *Applied Soft Computing*, vol. 53, pp. 420–440, 2017.

41. Dynamic stability analysis of fractional order leaky integrator Echo state neural networks, *Communications in Nonlinear Science and Numerical Simulation*, vol. 47, pp. 328-337, 2017.

40. Stabilization of fractional-order systems subject to saturation element using fractional dynamic output feedback sliding mode control, *Journal of Computational and Nonlinear Dynamics*, vol. 12, no. 3, pp. 031014, 2017.

39. Design and implementation of robust-fixed structure controller for telerobotic systems, *Intelligent and Robotic Systems*, vol. 83, no. 2, pp 253–269, 2016.

38. TCP congestion control using finite spectrum assignment: A comparative study, *Journal of Control*, vol. 10, no. 1, pp. 23-35, 2016.

37. TLBO-based optimal speed controller design for induction motors using fuzzy sliding mode controller, *Journal of Soft Computing and Information Technology*, vol. 5, no. 1, pp. 1-11, 2016

36. Bilateral teleoperation systems using backtracking search optimization algorithm based iterative learning control, *IJE TRANSACTIONS C: Aspects*, vol. 28, no. 12, pp. 1765-1773, 2015.

35. A fuzzy discrete harmony search algorithm applied to annual cost reduction in radial distribution systems, *Engineering Optimization*, vol. 48, no. 9, pp. 1529-1549, 2016.

34. A memetic algorithm applied to trajectory control by tuning of fractional order proportional-integral-derivative controllers, *Applied Soft Computing*, vol. 36, pp. 599–617, 2015.

33. Reliability analysis of H-infinity control for a container ship in way-point tracking control, *Applied Ocean Research*, vol. 52, pp. 309–316, 2015.

32. An extension of estimation of domain of attraction for fractional order linear system subject to saturation control, *Applied Mathematics Letters*, vol. 47, pp. 26-34, 2015.

31. An adaptive gradient descent-based local search in memetic algorithm for solving engineering optimization problems, *Information Sciences*, vol. 299, pp. 117–142, 2015.

30. A comparison between optimization algorithms applied to synchronization of bilateral teleoperation systems against time delay and modeling uncertainties, *Applied Soft Computing*, vol. 24, pp. 447–456, 2014.

29. Optimal synchronization of teleoperation systems via Cuckoo optimization algorithm, *Nonlinear Dynamics*, vol. 78, no. 4, pp. 2359–2376, 2014.

28. Design and implementation of hybrid SOC estimation for lithium-ion batteries, *IET Power Electronics*, vol. 7, no. 11, pp. 2758-2764, pp. 1–7, 2014.

27. Adaptive fuzzy sliding mode control for synchronization of uncertain non-identical chaotic systems using bacterial foraging optimization, *Journal of Intelligent and Fuzzy Systems*, vol. 26, pp. 2567–2576, 2014.

26. Swarm-based structure-specified controller design for bilateral transparent teleoperation systems via μ synthesis, *IMA Journal of Mathematical control and Information*, vol. 31, pp. 111–136, 2014.

27. Delay-dependent stability for transparent bilateral teleoperation system in presence of model mismatch: an LMI approach, *Journal of AI and Data Mining*, vol. 1, no. 2, pp. 75-87, 2013.

24. Teaching-learning-based optimal interval type-2 fuzzy PID controller design: A nonholonomic wheeled mobile robots, *Robotica*, vol. 31, no. 7, pp. 1059-1071, 2013.

23. Control of a class of nonlinear uncertain chaotic systems via an optimal type-2 fuzzy PID controller, *IET Science, Measurement & Technology*, vol. 7, no. 1, pp. 50-58, 2013.

22. Optimal state feedback control design and stability analysis of boost DC-DC converters in fuel cell power systems using PSO, *Intelligent Systems in Electrical Engineering*, vol. 3, pp. 65-74, 2012.

21. Design of optimal self-regulation Mamdani-type fuzzy inference controller for type 1 diabetes mellitus, *Arabian Journal for Science and Engineering*, vol. 39, pp. 977-986, 2014.

20. Optimal design of type-2 fuzzy controller using particle swarm optimization for HVAC systems, *Automatika- Journal for Control, Measurement, Electronics, Computing and Communications*, vol. 55, vol. 1, pp. 69-78, 2014.

19. Swarm optimization tuned Mamdani fuzzy controller for diabetes delayed model, *Turkish Journal of Electrical Engineering and Computer Sciences*, vol. 21, pp. 2110-2126, 2013.

18. Constrained nonlinear optimal control via a hybrid BA-SD, *International Journal on Engineering*, vol. 25, no. 3, pp. 197-204, 2012.

17. Control of nonlinear systems using a hybrid APSO-BFO algorithm: An optimum design of PID controller, *Journal of Advances in Computer Research*, vol. 2, no. 4, pp. 81-93, 2011.

16. Optimal power system stabilizer design to reduce low frequency oscillations via an improved swarm optimization algorithm, *International Journal on Technical and Physical Problems of Engineering*, vol. 4, no. 2, pp. 24-33, 2012.

15. Chaos suppression on a class of uncertain nonlinear chaotic systems using an optimal H_∞ adaptive PID controller, *Journal of Chaos, Solitons & Fractals*, vol. 42, no. 3, pp. 351-357, 2012.

14. Employing adaptive PSO algorithm for parameter estimation of an exciter machine, *ASME Journal of Dynamic Systems, Measurement, and Control*, vol. 134, Issue 1, DOI:10.1115/1.4005371, 2012.

13. Particle swarm optimization algorithm with dynamic inertia weight for online parameter identification applied to Lorenz chaotic system, *International Journal of Innovative Computing, Information and Control*, vol. 8, no. 2, pp. 1191-1203, 2012.

12. PSO with adaptive mutation and inertia weight and its application in parameter estimation of dynamic systems, *Acta Automatica*, vol. 37, no. 5, pp. 541-549, 2011.

11. Intelligent identification and control using improved fuzzy particle swarm optimization, *Expert Systems with Applications*, vol. 38, pp. 12312-12317, 2011.

10. System identification and control using adaptive particle swarm optimization, *Journal of Applied Mathematical Modelling*, vol. 35, pp. 1210-1221, 2011.

9. Identification of nonlinear systems using modified particle swarm optimization: A hydraulic suspension system, *Journal of Vehicle System Dynamics*, vol. 46, no. 6, pp. 871-887, 2011.

8. Parameter estimation of bilinear systems based on an adaptive particle swarm optimization, *Journal of Engineering Applications of Artificial Intelligence*, vol. 23, pp. 1105-1111, 2010.

7. Parameter identification based on a modified PSO applied to suspension system, *Journal of Software Engineering and Applications*, vol. 3, no. 3, pp. 221-229, 2010.

6. Parameter identification of chaotic dynamic systems through an improved particle swarm optimization, *Expert Systems with Applications*, vol. 37, no. 5, pp. 3714-3720, 2010.

5. Prediction of coal grind ability based on petrography, proximate and ultimate analysis using neural networks and particle swarm optimization technique, *Energy Exploration & Exploitation*, vol. 27, no.3, pp. 201-212, 2009.

4. Hybrid state-feedback sliding-mode controller design using fuzzy logic for four-wheel-steering vehicles, *Vehicle System Dynamics*, vol. 47, Issue. 3, pp. 265– 284, 2009.

3. A simple structure for bilateral transparent teleoperation systems with time delay, *ASME Journal of Dynamic Systems, Measurement, and Control*, vol. 130, no. 4, pp. 044502-044508, 2008.

2. Force reflecting bilateral control of master-slave systems in teleoperation, *Journal of Intelligent and Robotic Systems*, vol. 52, no. 2, pp. 209-232, 2008.

1. Bilateral control of teleoperation systems with bounded uncertain time delay, *Iranian Journal of Electrical and Computer Engineering*, vol. 7, no. 1, pp. 39-46, 2008.

- **Conference Papers**:

40. Optimal robust control scheme to enhance power system oscillations damping via STATCOM, IEEE International Conference on Smart Energy Systems and Technologies (SEST), 19996515, 2020.

39. Coordinated robust control scheme for rotor angle and voltage oscillations damping via STATCOM based on PSO, 28th Iranian Conference on Electrical Engineering (ICEE), 20208489, 2020.

38. Design of optimal path tracking using Chebyshev polynomials, ICCIA, 2017.

37. Design of optimal path tracking using Chebyshev polynomials, ICCIA, 2017.

36. Fuzzy logic based multipath routing algorithm for MANET real time problem, ICCIA, 2017.

35. Providing a tool for the detection of convergence on line in bearing only tracking a moving target, ICEE 2017.

34. Finite-time boundedness for a class of networked control systems with random packet dropout and varying network-induced delay, ICCIA, 2017.

33. Finite-time stabilization of networked control systems with randomly varying communication delays, ICCIA, 2017.

32. Design of Rise feedback controller for chaotic pendulum system in the presence of disturbance, 2nd International Conference on Knowledge-Based Engineering and Innovation, 2015.

31. PID type fuzzy logic controller optimization for networked control systems using meta-heuristic algorithm, 2nd International Conference on Electrical, Computer, Mechanical and Mechatronics Engineering, 2015.

30. Reliability analysis of ship designed controller, 3th International Reliability Engineering Conference (Accepted for publication), 4-5 February 2014.

29. Model predictive control of transparent bilateral teleoperation systems under uncertain communication time-delay, 9th Asian Control Conference, pp. 1-6, 2013.

28. Reinforcement learning-based control of Chronic Myelogenous Leukemia (CML), 1th Isfahan Electrical Engineering Conference, pp. 822-827, 15-17 May 2012.

27. μ-Synthesis for teleportation system in presence of uncertainties in time delay and task environment, 20th Iranian Conference on Electrical Engineering, pp. 822-827, 15-17 May 2012.

26. Design of optimized reduced order observer for glucose control with intelligent methods, 20th Iranian Conference on Electrical Engineering, pp. 617-622, 15-17 May 2012.

25. An LMI based delay-dependent robust controller for transparent bilateral teleoperation System, 2nd International Conference on Control, Instrumentation, and Automation (ICCIA), Iran, 27-29 December 2011.

24. Designing power system stabilizer using improved PSO method to reduce low frequency oscillations, 7th International Conference on Technical & Physical Problems of Power Engineering, pp. 124-129, Turkey, 2011.

23. Stability analysis and state feedback controller design of boost DC-DC convertors based on average and detailed model in fuel power systems, ICEE 2011. (in Persian)

22. Chaos Synchronization of Fractional-Order Chaotic Lorenz-Stenflo System via Fractional Sliding Mode Control, 5th SASTECH 2011.

21. A study on FOREX forecasting steps utilizing neural network model, 5th SASTECH 2011.

20. An improved PID neural network controller for long time delay systems using particle swarm optimization algorithm, 5th International Symposium on Advances in Science and Technology (SASTECH), 2011.

19. Robust controller design for DC stimulation of generator as a current source, 25th International Power System Conference PSC 2010, pp. 1-8, Iran, 2010.
18. Designing a robust controller for doubly-fed wind generator, 6th International Conference on Technical & Physical Problems of Power Engineering (ICTPE), Iran, 14-16 September 2010.
17. Designing of mixed H_2 and H_∞ controller for doubly-fed wind generator, 6th International Conference on Technical & Physical Problems of Power Engineering, Iran, 14-16 September 2010.
16. A particle swarm optimization approach for parameter identification of Lorenz chaotic system, 35th Annual Conference on the IEEE Industrial Electronics Society IECON 2009, pp. 3303-3308, Portugal, 3-5 November 2009.
15. Sliding mode control of Lorenz chaotic system on a moving fuzzy surface, International IEEE Conference EUROCON 2009, pp. 964-970, Russia, 2009.
14. Robust control for bilateral teleoperation systems with time delay in Communication Channel, The Second International Conference on Control, Instrumentation and Mechatronic Engineering, pp. 43-48, Malaysia, 2009.
13. Bilateral control of master-slave manipulators, 15th Annual (International) Conference on Mechanical Engineering, Tehran, Iran, 2007.
12. Bilateral transparent teleoperation with long time-varying delay: new control design and stability analysis, IEEE Conference on Decision and Control, pp. 4502-4507, San Diego, USA, 2006.
11. Bilateral control to achieve transparent teleoperation with perturbation of static time delay, IEEE Industrial Electronic Conference, Paris, France, 2006.
10. On the closed-loop stability analysis of transparent teleoperation systems with time-varying delay using a new structure, 6th IFAC Workshop on Time-Delay Systems, vol. 6, no. 1, pp. 240-245, L'Aquila, Italy, 2006.
9. A new control method for telerobotic systems, 14th Annual (International) Conference on Mechanical Engineering, Isfahan, Iran, 2006.
8. Robust bilateral teleoperation with varying time-delay, 14th Iranian Conference on Electrical Engineering, Tehran, Iran, 2006.
7. Control of flexible-joint robot manipulators moving in vertical plane in presence of disturbances, 13th Annual (International) Conference on Mechanical Engineering, Isfahan, Iran, 2005. (in Persian)
6. Handling improvement of four-wheel-steering vehicles at high speeds, 12th Iranian Conference on Electrical Engineering, Mashhad, Iran, 2004. (in Persian)
5. Adaptive fuzzy controller for handling improvement of four-wheel-steering systems, 15th IFAC World Congress, Barcelona, Spain, 2002.
4. Fuzzy-sliding state-feedback control of nonlinear ball suspension system," 15th IFAC World Congress, Barcelona, Spain, 2002.
3. Robust and stable state-feedback controller design in sliding mode for four-wheel-steering vehicles, 10th Iranian Conference on Electrical Engineering, Tabriz, Iran, 2002. (in Persian)
2. Incremental fuzzy P+ID controller design for four-wheel-steering vehicles for improvement of handling characteristics, 10th Annual (International) Conference on Mechanical Engineering, Tehran, Iran, 2002. (in Persian)
1. Design of adaptive fuzzy controller for four-wheel steering vehicles with fuzzy modeling, 9th Iranian Conference on Electrical Engineering, vol. 4, pp. 401-407, Tehran, Iran, 2001. (in Persian)

- **<u>Book Chapters</u>**

A. Hajizadeh, **A. Alfi**, "Chapter 15- Intelligent Control of Hybrid Electric Vehicles", Advances in Energy Research: Energy and Power Engineering, NOVA Science Publishers, INC, pp. 407-424, 2012.

- **Translation of Books**

  Feng Lin, *Robust Control Design: An Optimal Approach*, John Wiley & Sons, 2016.

  Qing-Chang Zhong, *Robust Control of Time Delay Systems*, Springer, 2020.

- **Books**

  5. **A. Alfi** and et al., Exam of Electrical Engineering-Solution of Azad Exams, Day System, 2012. (*For Master of Science*-Electrical Engineering)

  4. **A. Alfi**, Linear Control Systems, Alavi Farhikhtegan, 2006. (*For Master of Science*)

  3. **A. Alfi**, Electric Circuits, Alavi Farhikhtegan, 2006. (*For Master of Science*-Electrical Engineering)

  2. **A. Alfi**, Electronics, Sanjesh Takmili, 2005. (*For Bachelor of Science*-Electrical Engineering)

  1. **A. Alfi**, Electric Circuits, Sanjesh Takmili, 2005. (*For Bachelor of Science*-Electrical Engineering)

- **Executive Responsibilities**

  1. Dean of Technology Incubator, Semnan Science and Technology Park (2008-2011)

  2. Dean of Automation and Artificial Intelligent Research Center, SUT (2012-Continue)

  3. Head of Control Group, Faculty of Electrical and Robotic Engineering, SUT (2017-2018)

  3. Dean of Faculty of Computer Engineering, SUT (2018-Continue)

- **Research Laboratory**

  Complex and Control Systems Lab

- **Research Projects**

  1. Robust control of master-slave systems, Shahrood University of Technology.

  2. Study of bactericidal and bacteriostatic effect alternating current against staphylococcus aureus and pseudomonas aeroginosa, Shahrood University of Technology.

  3. Teleoperation control using iterative learning control, Shahrood University of Technology.

  4. Design, implementation and control of balancing mobile robots, Shahrood University of Technology.

  5. Optimal fuzzy sliding mode controller for speed and position of induction motors using evolutionary algorithms, Shahrood University of Technology.

  6. Design and implementation of 3 DOF robot for raining objectives (Phase 1), Shahrood University of Technology.

  7. Design and implementation of 3 DOF robot for raining objectives (Phase 1), Shahrood University of Technology.

  8. Fabrication of a 6 Axis Parallel Robot (Extended Delta Robot), Shahrood University of Technology.