

**Position:**

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**Habib Ahmadi**

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**Research Interests:**

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- Dynamics Modeling
- Nonlinear Control
- Vibration of Linear and Nonlinear Systems
- Robotics

**Teaching Experiences:**

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1. Vibration
2. Automatic Control
3. Dynamics
4. Machines Dynamics
5. Design of Linkages
6. Nonlinear Vibration
7. Nonlinear Control
8. Advanced Automatic Control
9. Advanced Dynamics
10. Advanced Mathematics
11. Industrial Automation
12. Robot Kinematics and Dynamics
13. Advanced Robotics

**Education:**

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Ph.D.: Mechanical Engineering, 2010,  
Department of Mechanical Engineering,  
Isfahan University of Technology, Isfahan, Iran.

Supervisors: Dr. M.J.Sadigh

Thesis Title: Safe Grasping of Two Dimensional Delicate Objects

M.Sc.: Mechanical Engineering, 2001,  
Department of Mechanical Engineering,  
Isfahan University of Technology, Isfahan, Iran.

Supervisor: Dr. Hasan Nahvi

Project: Dynamics Analysis and Simulation of Robots with Flexible Joints and Links.

B.Sc.: Mechanical Engineering, 1999,  
Department of Mechanical Engineering,  
Ferdowsi University of Mashhad, Mashhad, Iran.

Supervisor: Dr. Jalil Rezaee Pazhand

Project: Vibration Analysis and Simulation of a Sensor Structure.

### **Published Papers:**

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### **مقاله‌های ژورنالی:**

1. جعفر صدیق، حبیب احمدی، جابجایی اجسام ظریف دوبعدی بوسیله یک پنجه با دو انگشت سه‌بندی، چاپ شده در مجله

کنترل، دانشگاه خواجه نصیرالدین طوسی

2. H. Ahmadi, H. Esmaeeli, M.M. Fateh, Slip compensation of grasped objects in robot gripper, Modares Mechanical Engineering, 15(1) 151-162, 2015 (In Persian).
3. H. Khafi, H. Ahmadi, Trajectory Design for 3D Biped Robot by Considering Active Toe Rotation, Modares Mechanical Engineering, Vol. 15, No. 7, pp. 139-148, 2015 (In Persian)
4. H. Ahmadi, M. Bamdad, S. M. M. Bahri, Adaptive Control Design for Tendon-based continuum robot, Modares Mechanical Engineering, Vol. 15, No. 9, pp. 235-246, 2015 (In Persian)
5. H. Hosseinpour Kalateh, H. Ahmadi, Adaptive Backstepping Control for Safe Grasping of an Object by a Robotic Gripper, Modares Mechanical Engineering, Accepted 2015 (In Persian)

6. M. Bamdad, F. Parivash, H. Ahmadi, Gravity compensation improvement for a cable-actuated elbow rehabilitation robot using sliding mode control, *Modares Mechanical Engineering*, Accepted 2015 (In Persian)
7. Foroutan, Kamran, Alireza Shaterzadeh, and Habib Ahmadi. "Nonlinear dynamic analysis of spiral stiffened functionally graded cylindrical shells with damping and nonlinear elastic foundation under axial compression." *Structural Engineering And Mechanics* 66.3 (2018): 295-303.
8. Foroutan, Kamran, Alireza Shaterzadeh, and Habib Ahmadi. "Nonlinear dynamic analysis of spiral stiffened cylindrical shells rested on elastic foundation." *Steel and Composite Structures* 32.4 (2019): 509-519.
9. Shaterzadeh, Alireza, Kamran Foroutan, and Habib Ahmadi. "Nonlinear Static and Dynamic Thermal Buckling Analysis of Spiral Stiffened Functionally Graded Cylindrical Shells with Elastic Foundation." *International Journal of Applied Mechanics* 11.01 (2019): 1950005.
10. Foroutan, Kamran, Alireza Shaterzadeh, and Habib Ahmadi. "Nonlinear static and dynamic hygrothermal buckling analysis of imperfect functionally graded porous cylindrical shells." *Applied Mathematical Modelling* 77 (2020): 539-553.
11. Ahmadi, Habib, and Kamran Foroutan. "Combination resonance analysis of FG porous cylindrical shell under two-term excitation." *Steel and Composite Structures* 32.2 (2019): 253-264.
12. Ahmadi, Habib, and Kamran Foroutan. "Superharmonic and subharmonic resonances of spiral stiffened functionally graded cylindrical shells under harmonic excitation." *International Journal of Structural Stability and Dynamics* (2019).
13. Ahmadi, Habib, and Kamran Foroutan. "Nonlinear primary resonance of spiral stiffened functionally graded cylindrical shells with damping force using the method of multiple scales." *Thin-Walled Structures* 135 (2019): 33-44.

14. Ahmadi, Habib. "Nonlinear primary resonance of imperfect spiral stiffened functionally graded cylindrical shells surrounded by damping and nonlinear elastic foundation." *Engineering with Computers* 35.4 (2019): 1491-1505.
15. Ahmadi, Habib, and Kamran Foroutan. "Nonlinear vibration of stiffened multilayer FG cylindrical shells with spiral stiffeners rested on damping and elastic foundation in thermal environment." *Thin-Walled Structures* 145 (2019): 106388.
16. Foroutan, K., A. Jalali, and H. Ahmadi. "Investigations of energy absorption using tuned bistable nonlinear energy sink with local and global potentials." *Journal of Sound and Vibration* 447 (2019): 155-169.
17. Foroutan, K., H. Ahmadi, and E. Carrera. "Nonlinear vibration of imperfect FG-CNTRC cylindrical panels under external pressure in the thermal environment." *Composite Structures* 227 (2019): 111310.
18. Ahmadi, H, and Foroutan, K. "Effect of the Multi Vibration Absorbers on the Nonlinear FG Beam Under Periodic Load with Various Boundary Conditions." *Journal of Solid and Mechanics* 11. 3 (2019): 523-534.
19. Bayati Chaleshtari, Mohammad Hossein, Elahe Norouzi, and Habib Ahmadi. "Optimizing control motion of a human arm with PSO-PID controller." *Journal of Computational & Applied Research in Mechanical Engineering (JCARME)* 7.1 (2017): 23-34.
20. Aris, Hamid, and Habib Ahmadi. "Nonlinear vibration analysis of FGM truncated conical shells subjected to harmonic excitation in thermal environment." *Mechanics Research Communications* 104 (2020): 103499.
21. Moghaddam, Seyyed Morteza Fatemi, and Habib Ahmadi. "Active vibration control of truncated conical shell under harmonic excitation using piezoelectric actuator." *Thin-Walled Structures* 151 (2020): 106642.

22. Ahmadi, Habib, and Kamran Foroutan. "Nonlinear static and dynamic thermal buckling analysis of imperfect multilayer FG cylindrical shells with an FG porous core resting on nonlinear elastic foundation." *Journal of Thermal Stresses* 43.5 (2020): 629-649.
23. Foroutan, Kamran, and Habib Ahmadi. "Nonlinear free vibration analysis of SSMFG cylindrical shells resting on nonlinear viscoelastic foundation in thermal environment." *Applied Mathematical Modelling* 85 (2020): 294-317.
24. Ahmadi, Habib, and Kamran Foroutan. "Active vibration control of nonlinear stiffened FG cylindrical shell under periodic loads." *Smart Structures and Systems, An International Journal* 25.6 (2020): 643-655.
25. Foroutan, Kamran, Habib Ahmadi, and Mohammad Shariyat. "Asymmetric large deformation superharmonic and subharmonic resonances of spiral stiffened imperfect FG cylindrical shells resting on generalized nonlinear viscoelastic foundations." *International Journal of Applied Mechanics* 12.05 (2020): 2050052.
26. Rahmati, A., S. M. Varedi-Koulaei, M. H. Ahmadi, and H. Ahmadi. "Dimensional synthesis of the Stirling engine based on optimizing the output work by evolutionary algorithms." *Energy Reports* 6 (2020): 1468-1486.
27. Foroutan, Kamran, and Habib Ahmadi. "Nonlinear static and dynamic buckling analyses of imperfect FGP cylindrical shells resting on nonlinear elastic foundation under axial compression." *International Journal of Structural Stability and Dynamics* 20.07 (2020): 2050074.
28. Foroutan, Kamran, and Habib Ahmadi. "Effect of dynamic absorber on the nonlinear vibration of SFG cylindrical shell." *Advances in Aircraft and Spacecraft Science* 7.4 (2020): 291.
29. Zamanzadeh, Amin, and Habib Ahmadi. "Inverse kinematic of European Robotic Arm based on a new geometrical approach." *AUT Journal of Mechanical Engineering* 5.1 (2021): 13-48.

30. Foroutan, Kamran, and Habib Ahmadi. "Combination resonances of imperfect SSFG cylindrical shells rested on viscoelastic foundations." *Structural Engineering and Mechanics, An Int'l Journal* 75.1 (2020): 87-100.
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32. Foroutan, K., E. Carrera, and H. Ahmadi. "Nonlinear hygrothermal vibration and buckling analysis of imperfect FG-CNTRC cylindrical panels embedded in viscoelastic foundations." *European Journal of Mechanics-A/Solids* 85 (2021): 104107.
33. Foroutan, Kamran, and Habib Ahmadi. "Simultaneous resonances of SSMFG cylindrical shells resting on viscoelastic foundations." *Steel and Composite Structures, An International Journal* 37.1 (2020): 51-73.
34. Ahmadi, Habib, Aliakbar Bayat, and Nguyen Dinh Duc. "Nonlinear forced vibrations analysis of imperfect stiffened FG doubly curved shallow shell in thermal environment using multiple scales method." *Composite Structures* 256 (2021): 113090.
35. Foroutan, K., E. Carrera, and H. Ahmadi. "Static and dynamic hygrothermal postbuckling analysis of sandwich cylindrical panels with an FG-CNTRC core surrounded by nonlinear viscoelastic foundations." *Composite Structures* 259 (2021): 113214.
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40. سینا کریمی، حبیب احمدی و کامران فروتن، "تحلیل تشدیدهای مافوق هارمونیک و مادون هارمونیک یک غشای مستطیلی هایپرالاستیک بر بستر الاستیک غیرخطی با استفاده از روش مقیاس‌های چندگانه." *نشریه مهندسی مکانیک امیرکبیر* 53 no. 8, (2021): 4535-4564.
41. مهناز شریف نیا و حبیب احمدی، "کنترل‌کننده ترمینال غیر منفرد مودلغزشی مرتبه کسری با استفاده از الگوریتم سوپرتوئیسیتینگ برای ربات دو درجه آزادی." *مکانیک سازه‌ها و شاره‌ها* 11.2 (2021): 41-56.
42. Foroutan, K., Carrera, E., Pagani, A., & Ahmadi, H. (2021). Post-buckling and large-deflection analysis of a sandwich FG plate with FG porous core using Carrera's Unified Formulation. *Composite Structures*, 272, 114189.
43. Bayat, Aliakbar, Amir Jalali, and Habib Ahmadi. "Nonlinear dynamic analysis and control of FG cylindrical shell fitted with piezoelectric layers." *International Journal of Structural Stability and Dynamics* 21.06 (2021): 2150083.
44. Foroutan, Kamran, and Habib Ahmadi. "Nonlinear static and dynamic buckling analysis of imperfect stiffened double-layer FGP shallow spherical shells embedded within elastic foundations." *International Journal of Applied Mechanics* 13.06 (2021): 2150070.
45. AbdolMohammadi, Masoud, Habib Ahmadi, Seyyed Mojtaba Varedi-Koulaei, and Javad Ghalibafan. "Active Vibration Control of a Nonlinear System with Optimizing The Controller Coefficients Using Metaheuristic Algorithms." *AUT Journal of Mechanical Engineering* 5, no. 4 (2021): 511-534.

46. Aris, Hamid, and Habib Ahmadi. "Nonlinear forced vibration and resonance analysis of rotating stiffened FGM truncated conical shells in a thermal environment." *Mechanics Based Design of Structures and Machines* 51.7 (2023): 4063-4087.
47. Rahmati, A., S. M. Varedi-Koulaei, M. H. Ahmadi, and H. Ahmadi. "Dynamic synthesis of the alpha-type stirling engine based on reducing the output velocity fluctuations using Metaheuristic algorithms." *Energy* 238 (2022): 121686.
48. Ahmadi, Habib, and Kamran Foroutan. "Nonlinear buckling analysis of FGP shallow spherical shells under thermomechanical condition." *Steel and Composite Structures, An International Journal* 40.4 (2021): 555-570.
49. Foroutan, Kamran, Seyyed Mojtaba Varedi-Koulaei, Nguyen Dinh Duc, and Habib Ahmadi. "Non-linear static and dynamic buckling analysis of laminated composite cylindrical shell embedded in non-linear elastic foundation using the swarm-based metaheuristic algorithms." *European Journal of Mechanics-A/Solids* 91 (2022): 104420.
50. Khalatbari, Arash, Amir Jalali, Habib Ahmadi, and Kamran Foroutan. "Effects of bi-stable grounded nonlinear energy sink on energy dissipation of the system." *Proceedings of the Institution of Mechanical Engineers, Part K: Journal of Multi-body Dynamics* 235, no. 4 (2021): 668-682.
51. Mohamhashemi, Vahid, Amir Jalali, and Habib Ahmadi. "Nonlinear forced vibration analysis of smart curved CNTs conveying fluid." *International Journal of Structural Stability and Dynamics* 22, no. 02 (2022): 2250023.
52. Karimi, Sina, Habib Ahmadi, and Kamran Foroutan. "Nonlinear vibration and resonance analysis of a rectangular hyperelastic membrane resting on a Winkler–Pasternak elastic medium under hydrostatic pressure." *Journal of Vibration and Control* 29, no. 5-6 (2023): 1323-1341.
53. Sarani, Babak, and Habib Ahmadi. "Mechanical design and control of a novel variable impedance actuator (VIA) for knee joint of a rehabilitation exoskeleton." *Journal of the Brazilian Society of Mechanical Sciences and Engineering* 44, no. 3 (2022): 81.



54. Foroutan, Kamran, Habib Ahmadi, and Erasmo Carrera. "Free vibration analysis of a sandwich cylindrical shell with an FG core based on the CUF." *Smart Structures and Systems* 30, no. 2 (2022): 121.
55. علی اصغر مهدی زاده سولا، مصطفی نظری، حبیب احمدیو محسن نظری. "کنترل مود لغزشی اندازه قطرات در یک میکروکانال با تنظیم دبی پمپ تزریق: بررسی تجربی." *نشریه مهندسی مکانیک امیرکبیر* 54, 2239-2254 (2022): no. 10.
56. آیدین زردست، حبیب احمدی و مهناز شریف نیا. "تحلیل سینماتیک مستقیم و معکوس ربات دلتا دارای مچ کروی با استفاده از سیستم استنتاج فازی عصبی تطبیقی." *مکانیک سازه ها و شاره ها* 12, 13-30 (2022): no. 5.
57. Mirhashemi, Sajad, Majid Saeidiha, and Habib Ahmadi. "Dynamics of a harmonically excited nonlinear pipe conveying fluid equipped with a local nonlinear energy sink." *Communications in Nonlinear Science and Numerical Simulation* 118 (2023): 107035.
58. Foroutan, Kamran, and Habib Ahmadi. "Nonlinear vibration of SSMFG cylindrical shells with internal resonances resting on the nonlinear viscoelastic foundation." *Structural Engineering and Mechanics, An Int'l Journal* 84, no. 6 (2022): 767-782.
59. Aris, Hamid, and Habib Ahmadi. "Using the higher-order shear deformation theory to analyze the free vibration of stiffened rotating FGM conical shells in a thermal environment." *Thin-Walled Structures* 183 (2023): 110366.
60. فرزین پرهام، حبیب احمدی، کامران فروتن، محمد حیدری سرائی. "کنترل فعال ارتعاشات غیرخطی تیر مدرج تابعی در حضور نامعینی تحت بارگذاری متناوب با شرایط مرزی مختلف." *مهندسی مکانیک دانشگاه تبریز* 52, 367-376 (2023): no. 4.
61. Aris, Hamid, and Habib Ahmadi. "Superharmonic and subharmonic vibration resonances of rotating stiffened FGM truncated conical shells." *STRUCTURAL ENGINEERING AND MECHANICS* 85, no. 4 (2023): 545-562.
62. Duc, Nguyen Dinh, Kamran Foroutan, Seyyed Mojtaba Varedi-Koulaei, and Habib Ahmadi. "Nonlinear Vibration Analysis of Laminated Composite Cylindrical Shell Under External Loading Utilizing Meta-Heuristic Optimization Algorithms." *Iranian Journal of Science and Technology, Transactions of Mechanical Engineering* (2023): 1-21.

63. Ayoubi, Pejman, and Habib Ahmadi. "Free vibration analysis of circular graphene sheet with centric circular defect based on two-phase local/nonlocal elasticity theory." *Acta Mechanica* (2023): 1-11.
64. Foroutan, Kamran, Habib Ahmadi, and Sina Karimi. "Nonlinear vibration and resonance analysis of a rectangular hyperelastic membrane surrounded by nonlinear elastic foundation." *Mechanics Based Design of Structures and Machines* (2023): 1-26.
65. Ayoubi, Pejman, and Habib Ahmadi. "Vibration investigation of circular graphene sheet with geometrical defect considering two-phase local/nonlocal theory exposed to the magnetic field." *International Journal of Applied Mechanics* (2023).
66. Tazkari, Amir, Habib Ahmadi, Kamran Foroutan, and Sina Karimi. "Vehicle Longitudinal Control with the Sliding Mode Method Considering Uncertainty of the Model." *Journal of Modern Mechanical Engineering and Technology* 10 (2023): 113-123.

## مقاله‌های کنفرانسی:

1. فرزین پرهام، حبیب احمدی، کامران فروتن و محمد حیدری سرائی، کنترل ارتعاشات تیر مدرج تابعی در حضور نامعینی تحت بارگذاری پریودیک، بیست و هشتمین کنفرانس سالانه بین المللی انجمن مهندسان مکانیک ایران، 1399، تهران.
2. سینا کریمی، حبیب احمدی، کامران فروتن، بررسی ارتعاشات غیرخطی پوسته مستطیلی هایپرالاستیک بر روی بستر الاستیک غیرخطی با روش مقیاسهای چندگانه، نهمین کنفرانس بین المللی آکوستیک و ارتعاشات 1398، تهران.
3. Masoome Daliry Moghadam, Habib Ahmadi, Mahdi Bamdad, Designing a Twisting Algorithm for Delta Parallel Robot Control, 10th RSI International Conference on Robotics and Mechatronics, 2022, Tehran, Iran.
4. Hassan Mohammadi, Habib Ahmadi, Hamid Aris, Improvement of performance of Actuator with Adjustable Stiffness (AwAS) using Adaptive control methodology, 2022

IEEE 5th International Conference on Electronic Information and Communication  
Technology, 2022, Hefei, China.

5. حبیب احمدی، ایمان حسینی، محمد مهدی فاتح، گرفتن ایمن یک جسم با استفاده از سیستم استنتاج فازی عصبی تطبیقی توسط گریپر ربات، همایش یافته های نوین در هوافضا و علوم وابسته ، تابستان 1394، تهران
6. حبیب احمدی، حسام خوافی، بهینه کردن ضرایب کنترلر توسط الگوریتم بهینه-سازی اجتماع ذرات جهت کنترل مسیر یک ربات دوپا، همایش یافته های نوین در هوافضا و علوم وابسته ، تابستان 1394، تهران
7. حبیب احمدی، محمد کفراشی، محمد عاروان، گ مدلسازی و کنترل غیرخطی یک جستجوگر ژيروسکوپ آزاد، همایش یافته های نوین در هوافضا و علوم وابسته ، تابستان 1394، تهران
8. H. Ahmadi , and M.J. Sadigh, Safe Grasping in Presence of Multi Phase Friction, in Proc. International Conference on Control, Automation, Robotics and Vision, Hanoi, Vietnam, pp: 155-160 (2008)
9. M.J. Sadigh, and H. Ahmadi, H.: Robust Control Algorithm for Safe Grasping Based on Force Sensing, in Proc. IEEE International Conference on Robotics and Biomimetics, Bangkok, Thailand, Page(s):1279 – 1284 (2009)
10. M.J. Sadigh, and H. Ahmadi ,Investigation of Mass Center Uncertainty For Safe Grasping by A Two Finger Hand, I. Troch, F. Breiteneker, eds. ISBN 978-3-901608-35-3,Page(s):382-388
11. J. Sadigh, and H. Ahmadi, Safe Grasping with Multi-Link Fingers Based on Force-Sensing, Proceeding of the 7th International Symposium on Mechatronics and its Applications (ISMA10), Sharjah, UAE, April 20-22, 2010
12. جعفر صدیق، حبیب احمدی، جابجایی اجسام ظریف دو بعدی بوسیله یک ربات سری روی سطح به کمک اصطکاک، کنفرانس کنترل، ابزار دقیق و اتوماسیون، 6-5 خردادماه 1389، تهران
13. حبیب احمدی، حسن نحوی، مصطفی غیور، تحلیل دینامیکی و شبیه سازی ربات تک عضوی با عضو و مفصل چرخشی انعطاف پذیر، کنفرانس مکانیک، دانشگاه خواجه نصیرالدین طوسی، 1380
14. حبیب احمدی، مصطفی غیور، حسن نحوی، تحلیل دینامیکی و شبیه سازی رباتها با اعضاء و مفاصل چرخشی انعطاف پذیر، کنفرانس مکانیک، دانشگاه خواجه نصیرالدین طوسی، 1380

