

# Curriculum Vitae



## General information

- **First Name:** Payam
- **Surname:** Zarafshan
- **Date of Birth:** 20/9/1983
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## Education

**Ph.D.:** Applied Mechanical Engineering, School of Engineering, K. N. Toosi University of Technology, Tehran, Iran, 2007 up to now.

**Thesis:** Dynamics and Object Manipulation Control of Robotic Systems with Flexible Members, Supervisor: S. Ali A. Moosavian (Ph.D. from Mc-Gill, Canada, 1997).

**M.Sc.:** Applied Mechanical Engineering, School of Engineering, Amirkabir University of Technology (Polytechnic), Tehran, Iran, 2005-2007.

**Thesis:** Adaptive Controller Design of an Aerial Robot. Supervisor's: M. Bahrami (Ph.D. from Organ, USA, 1982) and S. Ali A. Moosavian (Ph.D. from Mc-Gill, Canada, 1997).

**B.Sc.:** Mechanical Engineering, School of Engineering, K. N. Toosi University of Technology, Tehran, Iran, 2001-2005.

**Thesis:** Modelling and Controller Design for an Aerial Robot. Supervisor: S. Ali A. Moosavian (Ph.D. from Mc-Gill, Canada, 1997).

**Graduate:** GPA 18.95, Rooshd-1 high school, Tehran, Iran, 1997-2001.

## Publications

### **Journals:**

- Comparative Controller Design of an Aerial Robot, **P. Zarafshan**, S. Ali A. Moosavian, M. Bahrami, *Aerospace Science and Technology Journal*, Vol. 14, Issue 4, pp. 276–282, June 2010.
- Rigid-Flexible Interactive Dynamics Modelling Approach, **P. Zarafshan**, S. Ali. A. Moosavian, *Mathematical and Computer Modelling of Dynamical Systems Journal*, Vol. 18, Issue 2, pp. 1-25, 2011.
- Dynamics Modelling and Hybrid Suppression Control of Space Robots Performing Cooperative Object Manipulation, **P. Zarafshan**, S. Ali. A.

- Moosavian, *Journal of Intelligent and Robotic Systems*, 2010. (Second Revision)
- An Adaptive Hybrid Suppression Control to Perform Cooperative Object Manipulation in Space, **P. Zarafshan**, S. Ali. A. Moosavian, *Journal of Advanced Robotics*, 2011. (Second Revision)
  - Cooperative Object Manipulation by a Space Robot with Flexible Appandages, **P. Zarafshan**, S. Ali. A. Moosavian, *Journal of Aerospace Science and Technology*, 2011. (Submitted)
  - Extended Multiple Impedance Control of a Space Robot with Flexible Members, **P. Zarafshan**, S. Ali. A. Moosavian, *Journal of Amir Kabir*, 2012. (written in Persian) (Submitted)
  - Object Manipulation Control of a Space Robot with Flexible Elements Using Fuzzy Tuning Approach, **P. Zarafshan**, S. Ali. A. Moosavian, *Scientia Iranica*, 2012. (Submitted)
  - Adaptive Hybrid Suppression Control of a Wheeled Mobile Robot with Flexible Solar Panels, **P. Zarafshan**, S. Ali. A. Moosavian, *Journal of Tarbiat Modarees*, 2012. (written in Persian) (Submitted)
  - Control Algorithm Study and Their Applications on Spacecraft, **P. Zarafshan**, R. Hosseini Abardeh, *Journal of Oofogh*, Vol. 11, Issue 18, pp. 43-49, 2008. (written in Persian)

### Conferences:

- Comparative Controller Design of an Aerial Robot in Take off Maneuvers, **P. Zarafshan**, S. Ali. A. Moosavian, *Proc. Of the IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM 2012)*, 2012. (Accepted)
- Fuzzy Tuning Manipulation Control of a Space Robot with Passive Flexible Solar Panels, **P. Zarafshan**, S. Ali. A. Moosavian, *Proc. Of the IEEE Int. Conf. On Mechatronics & Automation (ICMA 2011)*, Beijing, China, August, 2011.
- Adaptive Hybrid Suppression Control of a Wheeled Mobile Robot with Active Flexible Members, **P. Zarafshan**, S. Ali. A. Moosavian, *Proc. Of the IEEE Int. Conf. On Mechatronics & Automation (ICMA 2011)*, Beijing, China, August, 2011.
- Control of a Space Robot with Flexible Members, **P. Zarafshan**, S. Ali. A. Moosavian, *Proc. Of the IEEE Int. Conf. On Robotics & Automation (ICRA 2011)*, Shanghai, China, May, 2011.
- Adaptive Hybrid Suppression Control Using Piezoelectric Patches on Flexible Solar Panels, **P. Zarafshan**, S. Ali. A. Moosavian, *Proc. Of the IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM 2011)*, Budapest, Hungary, July 4-6, 2011.
- Hybrid Suppression Control of a Wheeled Mobile Robot with Active Flexible Members, **P. Zarafshan**, S. Ali. A. Moosavian, *Proc. of the ISME Int. Conf. On Mechanical Engineering*, Birjand, Iran, May, 2011.
- Dynamics Modelling of Flexible Mobile Robotics Systems, **P. Zarafshan**, S. Ali. A. Moosavian, *Proc. of the ISME Int. Conf. On Mechanical Engineering*, Birjand, Iran, May, 2011.

- Adaptive Hybrid Suppression Control of a Space Robot with Active Flexible Members, **P. Zarafshan**, S. Ali. A. Moosavian, *Proc. of the Int. Conf. On Aerospace Engineering*, Tehran, Iran, February, 2011.
- Dynamics Modelling of Flexible Space Robotic Systems, **P. Zarafshan**, S. Ali. A. Moosavian, *Proc. of the Int. Conf. On Aerospace Engineering*, Tehran, Iran, February, 2011.
- Manipulation Control of a Space Robot with Flexible Solar Panels, **P. Zarafshan**, S. Ali. A. Moosavian, *Proc. Of the IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM 2010)*, Montreal, Canada, July, 2010.
- PD-Fuzzy Control of An Aerial Robot in Take off Maneuver, **P. Zarafshan**, H. Khodayari, S. H. Saadati, *Proc. of the Int. Conf. On Aerospace Engineering*, Tehran, Iran, February, 2010.
- Optimal Time Trajectory Design for Docking Operations using cooperative manipulators of a Space Robot, **P. Zarafshan**, S. Ali A. Moosavian, *Proc. of the ISME Int. Conf. On Mechanical Engineering*, Tehran, Iran, May, 2009. (written in Persian)
- Optimal Control of an Aerial Robot, **P. Zarafshan**, S. B. Moosavian, S. Ali. A. Moosavian, M. Bahrami, *Proc. Of the IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM 2008)*, Xi'an, China, July, 2008.
- Adaptive Control of An Aerial Robot using Lyapanov Design, **P. Zarafshan**, S. Ali A. Moosavian, M. Bahrami, *Proc. of the IEEE International Conference on Robotics, Automation & Mechatronics (RAM 2008)*, Chengdu, China , September, 2008.
- Operation Comparison of Adaptive and Optimal Controller of an Aerial Robot, **P. Zarafshan**, S. Ali A. Moosavian, M. Bahrami, *Proc. of the ISME Int. Conf. On Mechanical Engineering*, Kerman, Iran, May, 2008. (written in Persian)
- Frequency Response Analysis of an Aerial Robot under Stochastic Thrust Input, **P. Zarafshan**, M. Bahrami, S. Ali A. Moosavian, *Proc. of the Int. Conf. On Aerospace Engineering*, Tehran, Iran, February, 2008. (written in Persian)
- Optimal Control of An Aerial Robot in Crouse Maneuver of Mobile Target , **P. Zarafshan**, S. Ali A. Moosavian, M. Bahrami, *Proc. of the Int. Conf. On Aerospace Engineering*, Tehran, Iran, February, 2008. (written in Persian)
- Frequency Response Analysis of Hydraulic Engine Mount under Stochastic Input, F. Aminravan, M. Bahrami, **P. Zarafshan**, *Proc. of the ISME Int. Conf. On Mechanical Engineering*, Tehran, Iran, May, 2007. (written in Persian)
- Modelling and Path Control of An Aerial Robot, S. Ali A. Moosavian, **P. Zarafshan**, M. Marzban, *Proc. of the ISME Int. Conf. On Mechanical Engineering*, Isfahan, Iran, May, 2006.(written in Persian)

## **Scientific Activities and Records**

- Database System Administrator of International Journal of Robotics of K. N. Toosi Univ. of Tech. from 2011 up to now.
- Master of Machinery Dynamics and Vibration Laboratory of K. N. Toosi Univ. of Tech. from 2011 up to now.
- Master of apprenticeship course of K. N. Toosi Univ. of Tech. from 2010 up to now.
- Teaching Mechanics of Materials in Islamic Azad University, Shahre-e-Rey Branch from 2008 up to now.
- Teaching Automatic Power Transmission Systems in Islamic Azad University, Shahre-e-Rey Branch from 2008 up to now.
- Paper Review in International Journals
  - International Journal of Robust and Nonlinear Control
  - Journal of IET Control Theory & Applications
  - International Journal of Robotics Research
  - Journal of Advanced Robotics (RSJ)
- Paper Review in International Conferences
  - IEEE/RSJ International Conference on Intelligent Robots and Systems
  - IEEE/ASME International Conference on Advanced Intelligent Mechatronics
- Paper Review in Student Conferences
- Collaborating in Control and Robotic Laboratory of K. N. Toosi University of Technology from 2007 up to now.
- Collaborating in Advanced Robotics & Automated Systems (ARAS) Laboratory of K. N. Toosi University of Technology from 2007 up to now.
- Teacher Assistance (TA) of Advanced Dynamics Course in Mechanical Engineering School of K. N. Toosi University of Technology from 2008 up to now.
- Teacher Assistance (TA) of Advanced Robotics Course in Mechanical Engineering School of K. N. Toosi University of Technology from 2008 up to now.
- Teacher Assistance (TA) of Synthesis Mechanisms Course in Mechanical Engineering School of K. N. Toosi University of Technology from 2008 up to now.
- Teaching Advisor of Pre-University Stage of High School and Pre-University Station of Rooshd-1 from 2008 up to now.

## **Fields of Interests**

- Control, Dynamics
- Robotics
- Vibrations
- Airspace System
- Stochastic process
- Mechanism Synthesis
- Flexible Multi-Body Systems

## **Theoretical and Academic Activities**

- Modelling and Control of a 2D Space Free Flying Robot with S. Ali A. Moosavian.
- Designing of Intelligent Inference Fuzzy System for Fault Detection of Gearbox with Dr. A. Ghaffari.
- Modelling and Control for Robotic Systems with S. Ali A. Moosavian.
- Studying Fuzzy Control System with Dr. A. Ghaffari.
- Studying Types of Industrial Robotic Systems with Dr. F. Najafi.
- Studying Fuzzy Control Systems with Dr. M. B. Menhaj.
- Studying Adaptive Control Systems with Dr. M. Kabgani.
- Studying Modern Control on Flexible Joints with Dr. M. Naraghi.
- Designing the Adaptive Hydraulic Engine Mount with Dr. A. Ohadi.
- Studying Random Vibrations with Dr. M. Bahrami.
- Analysis of Thin Tissue Cylinder with GDQ Method with Dr. M. M. Aghdam.
- Designing the Controller for Water Storages Altitude Systems with Dr. A. Ghafari.
- Designing the Power Transition Axis's and Gearbox with Dr. A. Nemati.
- Designing the Universal Icehouse with Dr. S. A. Moosavi naenian.
- Designing the Air Conditioning Systems by Carrier with Dr. S. A. Moosavi naenian.

## **Industrial Experiences**

- Working in as a Production Engineer, Line Production (trim)-1, Iran Khodro Industrial Group, Tehran, Iran, summer, 2003.
- Working in Azarban Industrial Group, Kaveh Industrial City, Saveh, Iran, summer, 2005.

## **Computer Skills**

AutoCAD, MATLAB, Maple, Solid Works, Working Model, Carrier, ANSYS, ADAMS, C++, MS windows 2000, Windows XP Professional, Windows Vista, Windows 7, Microsoft Office, Photoshop, Web Design.

## **Seminar**

- Seminar Presentation about Changing in Drag Coefficients of Cone Section to Contrast with Environment Elements.
- Seminar Presentation about Adaptive and Fuzzy Control System of Spacecraft.
- Seminar Presentation about Perturbation Theory and Its Application on Dynamic Equation of an Airplane.
- Seminar Presentation about Non-Destructor Test and Response Analysis of an Aerial Vehicle under Stochastic Input.
- Seminar Presentation about History of Robots and Studying Types and Their Applications.

## **Honors and Awards**

- Rank 1715<sup>th</sup> in the National University Entrance Exam of 2001 among 450000 Participants and Accepting in Mechanical Engineering at K. N. Toosi University of Technology in 2001.
- Rank 4<sup>th</sup> in the Azad university entrance exam of 2005 for M.Sc. degree in Applied Mechanics among nearly 4500 participants.
- Accepting in Entrance Exam of M.Sc. degree in Mechanical Engineering at Amirkabir University of Technology (Polytechnic) in 2005.
- Accepting in Entrance Exam of Ph.D. degree in Mechanical Engineering at K. N. Toosi University of Technology in 2007.

## **Social Activities**

- IEEE member.
- ASME member.
- Cooperation with the Executive Committee of Future Researches, Technology & Development Preview Conference, Amirkabir University of Technology (Polytechnic), Tehran, Iran, May, 2006.
- Cooperation with the Student Journal of Mechanical Engineering School of K. N. Toosi University of Technology (Barayand) as Redactor, 2007 up to now.

## **Language Skills**

- English Language (Reading and Writing and Speaking)

## **Recommenders**

- Prof. G. Eftekhar Jahromi, [G\\_Eftekhar@sbu.ac.ir](mailto:G_Eftekhar@sbu.ac.ir)  
Professor and Chair of Law School, Shahid Beheshty University.
- Prof. S. Ali A. Moosavian, [moosavian@kntu.ac.ir](mailto:moosavian@kntu.ac.ir)  
Professor of Mechanical Engineering School, K. N. Toosi University of Technology.
- Prof. A. Ghaffari , [ghaffari@kntu.ac.ir](mailto:ghaffari@kntu.ac.ir)  
Professor of Mechanical Engineering School, K. N. Toosi University of Technology.
- Prof. M. Bahrami , [mbahrami@aut.ac.ir](mailto:mbahrami@aut.ac.ir)  
Professor of Mechanical Engineering School, Amirkabir University of Technology (Polytechnic).
- Prof. M. Mahmodian Bidgoli  
Professor of Civil Engineering School of Islamic Azad University, South-Tehran Branch.