Curriculum Vitae

- **Individual Profile**

Name: **Mohammad Rasool** Surname: **Najafi**
Born: 1975, Qom, Iran Married, has one child
Occupation: Faculty Member of Mechanical Engineering Department, University of Qom
Academic rank: Instructor

- **Education**

➢**PhD:**

PhD Student, Mechanical Engineering, Field of Dynamics, Vibrations and Control, Shahid Beheshti University, Since 2014
Thesis: "*Intelligent Extraction and Fusion of Vibration Features of a Rotating Cracked Shaft for Prognosis and Life Estimation*", Supervisor: Dr. Seyed Majid Yadavar Nikravesh

➢**MSc:**

Mechanical Engineering, Applied Design, Shiraz University, 2000-2003
Thesis: "*Analysis of Across-Wind Vibrations of Tall Cylindrical Structures Due to Vortex Shedding*", Supervisor: Dr. Mohammad Hassan Kadivar

➢**BSc:**

Mechanical Engineering, Solid Mechanics, Islamic Azad University, Tehran Central Branch, 1994-1999
Final Project: "*Design and Construction Methods with Composite Materials*", Supervisor: Dr. Shahrokh Ghaffari

- **Teaching Experience**

Cooperation with the universities of Qom province as follows:

- University of Qom, Faculty member, School of Engineering, Department of Mechanical Engineering, Since 2011
- University of Qom, Guest lecturer, Faculties of Science and Engineering, 2005-2011
- Islamic Azad University of Qom, Guest lecturer, Faculties of Science and Engineering, 2007-2012
- Qom University of Technology, Guest lecturer, Faculty of Engineering, 2009-2011
- Shahab Danesh University, Guest lecturer, Faculty of Engineering , 2021-2023

➢**Main Courses / Presentation Semesters:**

Automatic Control / 921, 922, 932, 942, 951, 952, 962, 971, 972, 982, 991, 992, 002, 012, 022,
Mechanical Vibrations / 912, 921, 931, 941, 951, 961, 962, 971, 981, 982, 991, 001, 011, 021, 031,
Dynamics of Machinery / 911, 921, 931, 932, 941, 942, 952, 991, 992, 011, 012, 022,
Statics / 851, 861, 871, 881, 902, 973, 983, 013,
Dynamic / 901, 912, 921,
Mechanics of Materials I / 893, 911, 912,
Industrial Drawing I / 851, 861, 871, 881, 901, 911, 921, 931,
Industrial Drawing II / 852, 862, 872, 882, 902,
Mechanics of Materials lab / 911, 921, 931, 932,
Dynamics and Vibrations lab / 922, 931, 932, 951,

➢Specialized Courses / Presentation Semesters:

Mechanism Design / 922,
Hydraulic and Pneumatic Systems / 932, 951, 961, 972, 982, 992, 4001, 4011, 4021, 4031,
Robotics and Laboratory / 941,
Industrial Control Systems / 942,

➢Basic Courses / Presentation Semesters:

Physics I / 841, 851,
Computer Programming (VBasic) / 852, 862, 872, 882, 892,
Computer Programming (C++) / 901,
Computer Programming (Fortran) / 911, 912, 922,
Computer Programming (Matlab) / 952, 972,
Numerical Analysis / 981,

➢ Compilation of Educational Contents:

- MATLAB Programming for Science and Engineering Students, Qom, University of Qom Publications, 2016
- FORTRAN Programming for Science and Engineering Students, Qom, University of Qom Publications, 2012
- Visual Basic Programming for Science and Engineering Students, Qom, University of Qom Publications, 2011
- C++ Programming for Science and Engineering Students, Qom, University of Qom Publications, 2009
- Drawing with AutoCAD, Qom, University of Qom Publications, 2007
- Classical Control Theory, Qom, University of Qom Publications, 2019
- Numerical Analysis, Qom, University of Qom Publications, 2019
- Agenda of Mechanics of Materials Laboratory, Qom, University of Qom Publications, 2011
- Agenda of Machine Dynamics and Vibration Laboratory, Qom, University of Qom Publications, 2021
- Development of MATLAB training courses (Advanced Programming, Numerical Analysis, Optimization, System Control, Signal Processing, Machine Learning) University of Qom, 2022
- Providing educational content for the University of Qom Virtual Education Center (Statics, Mechanical Vibrations, Automatic Control, Pneumatic Systems, Dynamics of Machinery, Mechanics of Human Motion), 2020-2023

• Research

➢ Journal Articles:

1. M. Sadegh Amalnik, MR Najafi, Development of Design and Manufacturing Support Tool for Optimization of Ultrasonic Machining (USM) and Rotary USM, Journal of Modern Processes in Manufacturing and Production, Vol. 3, No. 2, pp. 59-74, 2014

2. M. Mazare, M. Taghizadeh, MR Najafi, Design, Manufacturing and Kinematic Analysis of a Kind of 3-DOF Translational Parallel Manipulator, Modares Mechanical Engineering, Vol. 16, No. 7, pp. 327-334, 2016 (in Persian)

3. M. Mazare, M. Taghizadeh, MR Najafi, Dynamic Modeling and Sliding Mode Control of a Three DOF Parallel Robot with 3[P2(US)] Structure, Modares Mechanical Engineering, Vol. 16, No. 10, pp. 60-68, 2016 (in Persian)

4. M. Mazare, MR Najafi, Adaptive Control of a 3-PUU Parallel Robot on Optimized Trajectories Generated by Harmony Search Algorithm, Modares Mechanical Engineering, Vol. 16, No. 11, pp. 187-198, 2016 (in Persian)

5. M. Mazare, M. Taghizadeh, MR Najafi, Kinematic Analysis and Design of a 3-DOF Translational Parallel Robot, International Journal of Automation and Computing, Vol. 14, No. 4, pp. 432-441, 2017

6. M. Mazare, M. Taghizadeh, MR Najafi, Contouring Control of a 3-[P-2(US)] Parallel Manipulator, Advanced Robotics, Vol. 31, No. 9, pp. 496-508, 2017

7. M. Mazare, P. Ghaf-Ghanbari, M. Gh. Kazemi, MR Najafi, Dynamic Modeling and Optimal Adaptive Robust Control of an Omni Directional Mobile Robot Using Harmony Search Algorithm, Modares Mechanical Engineering, Vol. 17, No. 8, pp. 191-200, 2017 (in Persian)

8. A. Hadi, M. Mazare, MR Najafi, Optimal Nonlinear Control for a 2D Under-Actuated Crane System Based on Harmony Search Algorithm, Modares Mechanical Engineering, Vol. 18, No. 01, pp. 141-152, 2018 (in Persian)

9. M. Mazare, M. Taghizadeh, MR Najafi, Inverse Dynamics of a 3-P[2(US)] Translational Parallel Robot, Robotica, Vol. 37, No. 04, pp. 708-728, 2019, doi:10.1017/S0263574718001273

➢ **Conference Articles:**

1. MK Moayyedi, MR Najafi, A Surrogate Low-dimensional POD Approach for Free Vibration Simulation of Linear Beam Model, The 2nd International Conference On Acoustic and Vibration, Sharif University of Technology, Tehran, Iran, December 26-27, 2012

2. MK Moayyedi, MR Najafi, M. Najafbeyghi, A Low-dimensional POD-HOSVD Model for Free Vibration Simulation of Linear Beam under Variations of Several Parameters, The 4th International Conference On Acoustic and Vibration, Iran University of Science and Technology, Tehran, Iran , December 10-11, 2014

3. A. Khobzi, MR Najafi. "Crack Depth Specification of a Circular-Section Bar Using Peak Frequencies from Impact Test and Support Vector Machine Classification.", The 13th International Conference On Acoustic and Vibration, Iran University of Science and Technology, Tehran, Iran, December 20-21, 2023

➢ **Author of the Books:**

- M. R. Najafi, M. H. Sadafi, S. Saffar, "Solution Manual to Accompany with Kinematics and Dynamics of Machines", Isargaran, Tehran 2007, fifth edition, 2014
- M. R. Najafi, M. Deheshti, "Fundamental Mechanics for Sports Sciences", University of Qom, 2010

➢ **Master's Thesis Supervising:**

- Alireza Ahaninpanjeh, “Shaft Misalignment Diagnosis in Rotating Machines Using Vibration Feature Extraction by Finite Element Simulation and Machine Learning Techniques”, Summer 2024
- Ehsan Hossein Zarandi, “Transverse Crack Detection on Femur Bone Tissue Using FEM Simulation and Classification of Static and Frequency Features”, Summer 2024
- Alireza Haji Ayoubi, “Design, Simulation, Construction and Test of model and Gating System of Super-Safety Samand Rear Brake Caliper Shell and Definition of Mass Production Indicators in Disa240B Disamatic Vertical Casting Production Line”, Summer 2024

➢ **Reviews and Arbitrations:**

- Review of scientific research articles, Modarres Mechanical Engineering, Scientific Research Journal, 19 items
- Review of ISI articles, Journal of Robotica, 4 items
- Arbitration of Patents, Qom Science and Technology Park, 12 items

➢ **Student Projects:**

- Static analysis of wind turbine blades made of composite materials, Islamic Azad University, Tehran Central Branch, 1999
- Preparation of five degrees of freedom robot analysis and control program, Shiraz University, 2002
- Preparation of analysis and design program for tall process towers resistant to vibrations caused by wind, Shiraz University, 2003
- Preparation of cam design software with roller follower by defining movement curves, Tehran, 2005
- Modeling and control of three degrees of freedom delta parallel robot, Shahid Beheshti University, 2015
- Condition monitoring, diagnosis and prediction of the life of rotors with crack, Shahid Beheshti University, 2016

- **Executive and Technical Records**

- Internship and cooperation in the design and engineering services office of "Nivpay Manufacturing and Industrial Company" (machine design and construction of industrial and mining equipment), Tehran, 1996 to 1999

- Deputy of the Mechanical Engineering Department, University of Qom, Since 2013

- Setting up the laboratory of “Machine Dynamics and Vibrations”, University of Qom, 2013

- Setting up the "Modal Analysis and Condition Monitoring" research laboratory, University of Qom, 2022

- **Side Features**

- Skill certificates: “ICDL I/II” and “Internet Network Operator”, Technical and Vocational Education Organization

- Certificate of “Pneumatic Circuit Controller”, Technical and Vocational Education Organization

- English language test MSRT with a total score of 69/100, 2015

- Mastery of software: AutoCAD, Mathcad, CATIA, and Festo FluidSim

- Mastery of computer programming in languages: MATLAB, Visual Basic, Fortran, and C++

- Familiarity with software: ABAQUS, Mechanical Desktop, MSC ADAMS, and Simulink

- Familiarity with programming language Python and VBA scripting in Excel

- **Cultural and Social Records**

- Consultant advisor of the Scientific Association of the Mechanical Engineering Department, University of Qom, since 2017

- Scientific and cultural supervisor of mechanical engineering students, entrance 2013, entrance 2023

- Establishment and consulting of the Mechanical Engineering Technology Teams, 2019

- Collaboration and membership in the editorial board of the "Islamic University" journal, University of Qom, 2011 to 2014

- Manager in charge of "Paystar" publication of Mechanical Engineering Scientific Association of the University of Qom, since 2014

- Participation and completion of the career "Shahid Beheshti Student Howzeh of Islamic Teachings of ", Shiraz 2001 to 2003, Tehran 2003 to 2005

- Membership in the "New Islamic Civilization Association" (participation in compiling the regulations of the Knowledge Institution, participation in compiling the principles of Responsible Governance), Qom, since 2020

- **Research Interests**

  - Dynamics and Vibrations
  - Systems Dynamics and Control
  - Analysis, Design, and Simulation of Mechanisms
  - Robotics and Industrial Automation, Parallel Robots
  - Vibration Signal Processing and Modal Analysis
  - Condition Monitoring of Rotating Machines
  - Application of Artificial Intelligence in Fault Diagnosis of Machines
  - Future Research in the Field of Engineering Education
  - History of Islam
  - Physics and philosophy
  - Graphics

- **Contact Information**

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