

Mohammadreza Karafi



CONTACT

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Electro-physical Technologies
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LANGUAGES

Persian – Mother tongue

English – C1

WORK EXPERIENCE

2013 -Present

Associate Professor of Mechanical Engineering
Department, Tarbiat Modares University, Tehran, Iran.

My research area of interests:

- Sensors and actuators composed of smart materials (magnetostrictive and piezoelectric)
- Photonic quantum sensors
- Ultrasonic technology (acoustic devices and ultrasonic power supplies)

My teaching courses:

- Mechatronics 1 & 2
- Control
- Smart materials and structures
- Advanced engineering mathematics

2014 – 2025

Executive manager of ALFA Co.

- Production of ultrasonic, and plasma power supplies, high power switching rectifiers for electro-physical processes, piezoelectric ultrasonic transducers, ultrasonic welding machine for polymers and sheet metals.

web site: www.alfapower.ir

EDUCATION

2002 - 2006

BSc, Mechanical engineering, Iran University of Science and Technology, Tehran, Iran. GPA 17.35 from 20 (1st Rank graduate)

Thesis title: Design and fabrication of continuous welding robot (with capability of the control of the arc length and TIG welding of unflat work pieces)

PROFILE LINK

Google Scholar Profile Link:

https://scholar.google.com/citations?user=Stj_LFAVkawC&hl=en

ResearchGate Profile Link:

<https://www.researchgate.net/profile/Mohammad-Karafi>

LinkedIn Profile Link:

<https://www.linkedin.com/in/mohammad-reza-karafi-0b0a4454/>

Scopus Author ID:

24923463100

ORCID:

0000-0002-2459-7169

2006 - 2008

MSc, Mechanical Engineering, Tarbiat Modares

University, Tehran, Iran. GPA 18.32 from 20 (1st Rank graduate)

Thesis title: Design and Fabrication of novel ultrasonic motor with roller interface

2008 - 2013

PhD, Mechanical Engineering, Tarbiat Modares

University, Tehran, Iran. GPA 18.26 from 20 (1st Rank graduate)

PhD dissertation: Design, fabrication and characteristic investigation of a novel torsional magnetostrictive transducer

2012-2013

PhD student sabbatical, Mechanical Engineering Department, University of British Columbia (UBC) Vancouver, Canada.

2025-2026

One-year sabbatical in Mechanical Engineering Faculty, University College London (UCL), London, UK

Development of the Hybris Gas Magnetic Bearing (HGMB) in aerospace high speed Axial Flux Permanent Magnet (AFPM) motors.

Research collaborations with Faculty of Engineering, University of Galway, Galway, Ireland

Development of an Integrated Ultrasonic Assisted Nozzle (IUAN) system for the 3D printing FDM machines. Filaments can be extruded without conventional heat sources only with the vibrational energy.

SOFTWARE SKILLS

- MATLAB
- CATIA
- ANSYS
- COMSOL Multiphysics
- LAB VIEW
- C Programming language
- python
- IAR
- Keil

TECHNICAL SKILLS AND EXPERTISE

- Machine learning, AI agent development
- Design and manufacture of electrical power supply (DC to DC, DC to AC, AC to AC, Analogue, switching)
- Micro controller & FPGA programming
- Design and implementation of analogue and digital electronic circuits

REFERENCES

Prof. Eng. Farrokh Sassani

Professor of Mechanical Engineering at University of British Columbia (UBC), Vancouver, Canada.

Website: <https://mech.ubc.ca/farrokh-sassani/>

Email: sassani@mech.ubc.ca

Dr. Pedram Asef

Assistant Professor (Lecturer), Department of Mechanical Engineering

University College London

Director of [e-Motion Laboratory](#)

[Advanced Propulsion Laboratory](#)

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