

Reza Sadeghi

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PROFESSIONAL PROFILE

A mechanical engineer (M.Sc) with experience in Engineering Product Development (CAD/CAE) and Condition Monitoring. I have a keen interest in research and have worked with various Measurement Systems and Machine Learning models.

EXPERIENCE

Research Laboratory Assistant

Sep 2023 – Mar 2024

Linköping University

Linköping, Sweden

- Set up a 50kN tensile test machine and conducted approximately 150 tests in total (ISO 6892) at KMAT Lab.
- Lecturing on the theoretical background of the testing process
- Managing Mechanics Laboratory & preparing pneumatic test setup - FLUMES Lab

Mechanical R&D Engineer

Aug 2021 – Aug 2022

ISENSE - Structural Health Monitoring

Tehran, Iran

- Designed and built a calibration setup with $10\mu m$ accuracy for crack meters.
- Conducted vibration analysis using SIES acceleration sensors; diagnosed looseness for post-earthquake damage assessment devices, performed signal processing, and researched mechanical joints.
- Evaluated the accuracy of three versions of SIES acceleration sensors. Plus designing for CNC machine
- Performed thermal & dynamic analysis of data logging enclosures and prepared final revisions for manufacturing.s

Mechanical Designer

Nov 2019 – Mar 2021

IPC - International Silicon Power

Tehran, Iran

- Developed a prototype of a laboratory pressure mat using FSR and its interactive software for real-time movement monitoring (using PyQt and Arduino).
- Designed PMMA structures and enclosures for switching rectifiers
- Developed sheet metal Design of rectifier enclosures and power suppliers

Teaching Assistant

Feb 2020 – Feb 2021

Iran University of Science and Technology - IUST

Tehran, Iran

- Teaching Assistant (TA) of mechanical Vibration and Dynamics courses
- Teaching Assistant vector dynamics
- Tutor of MATLAB for three semesters - SSME
- Head instructor in the first and second national MATLAB competitions

Mechanical R&D Intern

Apr 2019 - Sep 2019

Nabz Hooshmand Co. (Nava Ava)

Tehran, Iran

- Analyzed the stethoscope acoustic structure in Abaqus
- Design and build an acoustic chamber
- Conduct research on signal & systems field

EDUCATION

Polytechnic University of Milan & Linköping University

Italy/Sweden

Master of Energy Engineering (Power Generation)

Aug 2022 - Aug 2024

- Thesis: Fault Detection of Internal Combustion Engine: Exploring Dynamic Relations with SINDy and AR Models
- Notable course: Optimal Control, Digital Twin, and Risk & Reliability

Iran University of Science and Technology - IUST

Tehran, Iran

Bachelor of Mechanical Engineering

Aug 2017 - Aug 2021

- Thesis: Bearing Fault Diagnosis Using EMD-CWT and Ensemble Neural Network
- Grade: 18.64/20 – 3rd rank on the campus
- Notable Courses: Measurement Systems, Automatic Control, Bearing & Lubrication, CM/NDT

NOTABLE PROJECTS

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| Turbine Flow Meter Fault Diagnosis <i>Iran University of Science and Technology - IUST</i> <ul style="list-style-type: none">Industrial Project – Data Analysis and Data AcquisitionTFM Fault detection and health index evaluation using ultrasonic data. | 2019-2022 |
| Chemical Reactor System <i>Beta Resin - Ava Polymer</i> <ul style="list-style-type: none">Build & Design a reactor that is able to control rotational speed and measure its torque.Currently, this device is operating in Beta Resin company, and the patent is under submission. | 2021-2022 |
| Personal Projects <i>Lambert</i> <ul style="list-style-type: none">Prediction flow parameters using AI (LSTM & ConvLSTM)Create a Python package to facilitate the process of using the Heisler charts graphically (Available on GitHub)Build, Design, and optimise a bridge prototype using a GA and SFLADesigning the mechanical parts of a rubber tensile test setup (Scope 3D)Design and manufacture a prototype of an automated yarn winder (Pyro)Data Mining/Analysis of streaming platforms (HipChart – Gowd Community) | 2017-Present |

SKILLS

Software: SolidWorks, COMSOL, Abaqus
Programming: MATLAB (+Simulink), SQL (SQLite), Python (TensorFlow, Sklearn, Bokeh, Selenium, ...)
Languages: English (Fluent), Swedish (A1), Persian (Native)

PUBLICATION

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| Equivalent Young's Modulus Based on Resonance Frequencies <i>Journal of Materials Performance and Characterization - ASTM</i> <ul style="list-style-type: none">Authors: Reza Sadeghi and M. T. AhmadianContribution: Modeling and Simulation, Analytical methods, Writing the manuscript | 2023 |
| Ergonomic Design and Posture Modification for Prevention of Occupational Traumas <i>Journal: Archives of Trauma Research</i> <ul style="list-style-type: none">Authors: Hassan Naeini, Zahra Kaviani, Karmegam Karuppiah, Reza SadeghiContribution: Mechanical design and modeling with Abaqus | 2020 |
| Ultrasonic Data Analysis for Turbine Flow Meter Diagnosis and Accuracy Estimation <i>*Under submission</i> <ul style="list-style-type: none">Authors: Reza Sadeghi, M. Ghahghaei, Y. Kardan, K. Samradjah, M. RajabiContribution: Data acquisition, Modeling, and Data Analysis (ML Models), Writing the manuscript | 2024* |

CERTIFICATIONS

- Linear Algebra for Machine Learning and Data Science (Coursera)
- Bayesian Signal and Image Processing (ISAV)
- Rotor Dynamics (Parsi Tek)
- Deep Learning Summer School (Kharazmy University)
- Bayesian statistics (Coursera)
- NDT Workshop (University of Tehran)
- Other: Advanced SolidWorks, Python, MATLAB, COMSOL & Abaqus