Reza Sadeghi
Mechanical Engineer

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EDUCATION

Polytechnic University of Milan & Linköping University   Italy-Sweden
Master of Energy Engineering   *2022 - 2024*

- Thesis title: Fault Diagnosis of Combustion Engines: Hybrid models, non-linear dynamic modeling (Supervisors: Dr Daniel Jung, and Dr Claudio Sbarufatti)
- Erasmus Program at Linköping University
- Notable course: Digital Twin, Industrial Automation, Optimal Control, and Risk & Reliability analysis

Iran University of Science and Technology - IUST   Tehran, Iran
Bachelor of Mechanical Engineering   *2017 - 2021*

- Thesis title: Bearing Fault Diagnosis Using EMD and Ensemble Neural Network
- Grade: 18.64/20 – 3rd rank on the campus
- Notable Courses: Mechatronics, Measurement Systems, Bearing & Lubrication, Condition Monitoring & NDT

EXPERIENCE

Mechatronics/Material Laboratory Assistant   2023 – 2024
Linköping University   *Linköping, Sweden*

- Managing Tensile Test Machine as a Laboratory Assistant at KMAT Lab, ensuring precision in materials testing processes (Under Dr Viktor Norman's supervision).
- Mechatronics Laboratory Assistant - FLUMES Lab (Under Dr Robert Braun's supervision).

Mechanic R&D Engineer   2021 – 2022
ISENSE - Structural Health Monitoring   *Tehran, Iran*

- Designed & built a calibration setup with $10\mu m$ accuracy for crack meters.
- Vibration analysis, signal processing and research on mechanical joints.
- Mechanical Design, DAQ enclosures design & analysis (3D-CAD, Heat Transfer Analysis, Dynamic Modeling)

Mechanical Designer   2020 – 2021
IPC - International Silicon Power   *Tehran, Iran*

- Develop a laboratory pressure mat using FSR and its interactive software for movement monitoring (using PyQt and Arduino).
- Designed PMMA structures & sheet metal enclosures for switching rectifiers (2D/3D CAD)

Teaching Assistant - Dynamics & Vibration   2020
Iran University of Science and Technology - IUST   *Tehran, Iran*

- Teaching Assistant (TA) of mechanical vibration and vector dynamics (two semesters)
- Head of MATLAB competition instructors for two and instructor of MATLAB for three semesters competitions

Mechanical R&D Intern   2019
Nabz Hooshmand Co. (Nava Ava)   *Tehran, Iran*

- Designing a stethoscope acoustic test chamber plus its analysis in Abaqus (Medical Applications)
- Conduct research on signal & systems field

NOTABLE PROJECTS

Turbine Flow Meter Fault Diagnosis   2019-2022
Iran University of Science and Technology - IUST

- Industrial Project – Data Analysis and Data Acquisition
- TFM Fault detection and health index evaluation using ultrasonic data and ML methods.

Chemical Reactor System   2021-2022
Beta Resin - Ava Polymer

- 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 patient is under submission.

Personal Projects   2017-Present
Lambert
- 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 SFLA
- Designing 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)

PUBLICATION

Equivalent Young's Modulus Based on Resonance Frequencies   2023
Journal of Materials Performance and Characterization - ASTM
- Authors: **Reza Sadeghi** and M. T. Ahmadian
- Contribution: Modeling and Simulation, Analytical methods, Writing the manuscript

Ergonomic Design and Posture Modification for Prevention of Occupational Traumas   2020
Journal: Archives of Trauma Research
- Authors: Hassan Naeini, Zahra Kaviani, Karmegam Karuppiah, **Reza Sadeghi**
- Contribution: Mechanical design and modeling with Abaqus

Turbine Flow Meter Fault Diagnosis Using Ultrasonic Signal   2024*
*Under submission
- Authors: **Reza Sadeghi**, M. Ghahghaei, Y. Kardan, K. Samradjah, M. Rajabi
- Contribution: Data acquisition, Modeling, and Data Analysis (ML Models), Writing the manuscript

SKILLS

Software: SolidWorks (Advanced), COMSOL, Abaqus, Adams (beginner), AutoCAD, Corel Draw
Programming: MATLAB (+Simulink/Simscape), SQL (SQLite), Python (TensorFlow, Sklearn, Bokeh, Selenium, ...)
Languages: English (Fluent), Swedish (A1), Persian (Native)

CERTIFICATIONS

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

AWARDS

- 3rd rank of mechanical engineering campus (2021)
- Got admission from Uni. Of Tehran (UT), Sharif University (SUT) for direct master program
- Honorary member of the Scientific Society of Mechanical Engineering (2020 - 2021)
- Acceptance as the top one percent University Entrance Exam (2017)
- Acceptance in the first stage of the Physics Olympiad (2016)
- Acceptance in the first stage of the Astrophysics Olympiad (2016)

ACADEMIC REFERENCES

- Dr Viktor Norman - Linköping University - University lecturer - IEI Department (viktor.norman@liu.se)
- Dr Majid Rajabi - IUST - Associate Professor, School of Mechanical Engineering (majid_rajabi@iust.ac.ir)
- Dr Siavash Kazemirad - IUST - Assistant Professor, School of Mechanical Engineering (skazemirad@iust.ac.ir)