Mohammad Mahdi Rahimi

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Education

M.Sc. in Mechanical Engineering, University of Tehran, Tehran, Iran Sep 2023 – Present
GPA (20-point): 16.54/20 — GPA (4-point): 3.44/4.00 (*final year:* 3.75/4.00).
Thesis (in progress): Spontaneous imbibition of non-Newtonian fluids in porous media.
Expected graduation: **Sep 2026**.

B.Sc. in Mechanical Engineering, Urmia University, Urmia, Iran Sep 2017 – Sep 2021
Overall GPA: 2.98/4.00 (*final year:* 3.44/4.00).
Thesis: 2-D incompressible flow via the streamfunction–vorticity formulation.

Research Interests

CFD Non-Newtonian fluid dynamics Biofluids Rheology Porous media

Selected Coursework (sample grades)

Non-Newtonian Fluids *(17.00/20)* Computational Fluid Dynamics I *(18.29/20)*
Fluid Mechanics in Biological Systems *(18.30/20)* Micro–Nano Fluid Mechanics *(18.50/20)*
Advanced Engineering Mathematics *(18.50/20)*

Research & Projects

- Modeling and simulation of gas flow in a microchannel (COMSOL Multiphysics). *2025*
- Thermally driven rarefied microchannel flow and heat transfer (COMSOL Multiphysics). *2025*
- CTC separation via dielectrophoresis in a Y–Y microchannel (COMSOL Multiphysics). *2025*
- Liquid argon in a platinum nanochannel (LAMMPS, molecular dynamics). *2025*
- Pulsatile non-Newtonian blood flow in an elastic artery (COMSOL Multiphysics). *2024*
- Blasius boundary layer of a Walter's B fluid; linear stability (MATLAB). *2024*
- Numerical solution of Buerger's equation (Keller–Box, Thomas block; MATLAB). *2024*
- Steady flow in concentric cylinders; solver comparison (MATLAB). *2024*
- Power-law fluid in a concentric annulus (OpenFOAM). *2024*
- Poiseuille flow between porous plates; linear stability (MATLAB). *2023*

Professional Experience

R&D Assistant, OilPet Nov 2022 – Aug 2023
Plant biofuels from waste cooking oils; exploratory work on biolubricants

- Ran bench experiments for biofuel process optimisation; recorded conditions, yields, and quality observations.
- Assisted with parameter sweeps (temperature, catalyst amount, settling time) to improve product stability and clarity.
- Conducted a scoping study on **biolubricants** (base oils, additives, rheology needs) to inform future concepts.

Site Manager & Coordinator, Medwave Dec 2019 – Oct 2021
High-tech air & surface disinfection device (electronics & assembly)

- Coordinated procurement of electronic parts and managed small-batch assembly; tracked orders and inventory.
- Contributed to **electronic circuit design** and hands-on assembly with a small team; supported troubleshooting during bring-up.
- Liaised across design, assembly, and testing to keep builds on schedule and document procedures.

Engineering Intern (R&D), Maral Sanat Jun 2018 – Aug 2018
Trailer and axle components

- Trained on **CATIA** and worked with engineering drawings and documentation in the R&D section.
- Modeled parts of trailers and trailer axles in CATIA for ongoing projects under supervision; followed drawing standards and version control.

Teaching & Leadership

Private Tutor (Physics, Statics, Thermodynamics; English/French basics) 2017–2021
Mechanical Engineering Society of Urmia University (MESAUU) 2018–2020

- Active member for two years; supported peer study groups, organised problem-solving sessions, and helped coordinate lab access and student outreach events.

Honours & Awards

National graduate full-ride scholarship (University of Tehran) 2023
Nationwide graduate entrance exam rank **5 / 9,000** 2023
Silver Medal, TEKNOFEST/ISIF'21 2021
National undergraduate full-ride scholarship 2017
Top 1% (rank 854 / 148,000), nationwide undergraduate entrance exam 2017

Skills

Modeling/Simulation: COMSOL Multiphysics (Proficient); OpenFOAM (Basic); LAMMPS (Basic); CATIA (Proficient); EES (Basic).
Programming/Math: MATLAB (Working); Python (Working); Mathematica (Basic); LaTeX (Proficient).

Languages & Certifications

Turkish (native), Persian (fluent), English (fluent), French (intermediate).
IELTS 7.0 Nov 2023.