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*
- Energy/Exergy analysis of ORC configurations for waste heat recovery (EES). *2024*
- Poiseuille flow between porous plates; linear stability (MATLAB). *2023*

Professional Experience

Research Assistant, Non-Newtonian and Rheology Computational Laboratory, University of Tehran — Jan 2025 – Present

Computational studies under the supervision of Prof. Keyvan Sadeghy

- Conducting computational simulations related to non-Newtonian and viscoelastic fluid flows in complex geometries.
- Assisting in model development and validation using COMSOL Multiphysics and MATLAB.
- Collaborating with graduate researchers on parametric analyses and rheological behavior characterization.

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 (İstanbul International Inventions Fair) — 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 (intermediate); Python (intermediate); Mathematica (Basic); LaTeX (Proficient).

Languages & Certifications

- Turkish (native)
- Persian (fluent)
- French (intermediate)
- English (fluent)
- IELTS **7.0** 2023 Nov 27

Interests & Hobbies

- Volleyball
- Football
- Swimming
- Cycling
- Chess
- Board games
- Cinema & TV series
- Literature
- Music

References

Prof. Keyvan Sadeghy
Professor
University of Tehran
Google Scholar

Dr. Azadeh Jafari
Assistant Professor
University of Tehran
Google Scholar

Dr. Ata Chitsaz
Assistant Professor
Urmia University
Google Scholar