

# Erfan Mashayekh

## Computational Engineer



27 March 1990



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Erfan-Mashayekh



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### Programming Languages

- Object-Oriented Programming: Python (PyTorch, TensorFlow, pandas, NumPy, etc.), C++ (MPI, OpenMP, etc.)
- Procedural: FORTRAN, C

### Version Control & OS

Git, Bash, Linux, Windows

### Scientific Software

MATLAB, Ansys FLUENT, OpenFOAM, COMSOL

### CAD & Data Representation

CATIA, SpaceClaim, DesignModeler, Paraview, Tecplot, Microsoft Excel, Word, PowerPoint, LaTeX, SQL

### Languages skill

Persian: Mother Tongue  
English: Fluent-C1  
German: Basic-A2 (Improving)

### Volunteer Activities

- Teaching Assistant in courses Aerodynamics (2013), and Fluid Dynamics (2012)
- Active member of the Aerospace Scientific Association at Azad University, providing mentorship and conducting workshops for aerospace students. Offered guidance and support to students in engineering and simulation software. Also spearheaded composite glider and water jet competitions, promoting innovation, teamwork, and friendly competition within the aerospace community (2010-2012)

*Erfan M*  
*Mashayekh*

Erfan Mashayekh  
November 6, 2023

## Summary

Aerospace and Computational Engineering M.Sc. graduate with 2+ years of experience in carbon-removal and gas turbine industries, eager to apply numerical and analytical skills to develop carbon-free technologies.

## Education

### 10/20 - 9/23 M.Sc. Computational Science and Engineering

Technical University of Munich, Germany

- GPA: 1.9
- Thesis Topic: CFD Modeling of Lab-scale Microwave Plasma Torch for Carbon Dioxide Dissociation ([Thesis Link](#))
- Covered Topics: Advanced Programming, Parallel Programming, Computational Fluid Dynamics, Scientific Computing, Machine Learning, Deep Learning, and Reduced-order Models.

### 9/13 - 1/16 M.Sc. Aerospace

Sharif University of Technology, Tehran, Iran ([1st rank in national universities](#))

- Thesis Topic: A numerical solution for 2D compressible flow with a high-order compact finite difference scheme using Immersed Boundary Method.
- Covered Topics: Gas Dynamics, Combustion, and Advanced Thermodynamics.

### 9/08 - 8/13 Bachelor's Aerospace Engineering

Azad University - Science And Research Branch - Tehran, Iran

- Covered Topics: Fluid Mechanics, Aerodynamics, Statics, Dynamics, and Aircraft Design.

## Experiences

### 3/23 - 10/23 Working Student + Master Thesis

Max Planck Institute For Plasma Physics

- Developed CFD model for microwave plasma reactor at 6000 Kelvin.
- Developed models in Python and C and leveraged neural networks for simulations. ([Github](#))
- Facilitated and oversaw team meetings, coordinating them once or twice a week, while managing project timelines.

### 3/23 - 9/23 Working Student

Carbon Atlantis, Munich, ([Website](#))

- Designed initial phase of heat reduction system for flue gas of cement factory with 300,000 m<sup>3</sup>/hr flow rate.
- Collaborated on constructing lab-scale direct air capture demonstrator, involving frame construction, component assembly, and piping and instrumentation diagram (P&IDs) generation.

### 5/22 - 3/23 Graduate Research Assistant

Technical University Of Munich

- Modeled and optimized fluid-solid interactions (FSI) using OpenFOAM and CalculiX. Integrated PreCICE library to couple fluid and solid solvers in Python.
- Created analytical test problems to test multidisciplinary optimizations. ([Github](#))

### 9/17 - 1/19 Duty Soldier

Iran Mandatory National Service, Tehran

- Exercised personal responsibility and accountability, consistently making timely decisions and taking ownership of actions.

### 10/16 - 9/17 Gas Turbine Engineer

Turbotec, Tehran, ([Website](#))

- Developed, optimized and maintained FORTRAN model for 300 MW gas turbine performance prediction.
- Worked on system design integration and collaborated with various project teams.
- Coordinated input/output processes among compressor, turbine, combustion chamber, cooling systems, and structures.