

Ali Falsafi

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23-Feb-1991 Swiss residence permit with working permission

More Info: my publications: [My Google Scholar](#) and my experiences: [My LinkedIn](#), and [My Gitlab](#)

Key Competencies

- Doctoral researcher in computational mechanics
- Expert in computer programming and software development (6 years of coding experience)
- Expert in data science and machine learning (projects on real world data)

PhD

2018–Now [EPFL](#), [LAMMM](#), *École Polytechnique Fédérale de Lausanne*, Lausanne, Switzerland.

Thesis Title *Efficient Multi-Scale Modeling of Alkali-Silica-Reaction Damage in Concrete*

Description Developed a fast FFT-based solver which facilitates RVE solution 1000x faster compared with conventional FEM solvers and applying it on concrete cancer (ASR) as a show case.

Master

2013–2016 [Sharif University of Technology\(SUoT\)](#), Tehran, Iran, *summa cum laude*.

Thesis Title *Modeling of Interactions between Scanning Probe Microscopy Tip in Trolling Mode and Environment*

Description Implemented a new coarse-grain potential in LAMMPS source code to simulate and understand the influence of needle-liquid interaction on SPM trolling mode imaging.

Bachelor

2009–2013 [Shiraz University](#), Shiraz, Iran, *summa cum laude*.

Thesis Title *Control of under-actuated pole and cart system*

Honors & Awards

- 2016 Ranked 1st among 126 classmates in Master, Sharif University of Technology, GPA: 19.13/20.00
- 2013 Ranked 1st among 113 classmates in Bachelor, Shiraz University, GPA: 18.51/20.00
- 2012 Ranked 14th among 500 participants in National Mechanical Engineering Olympiad (top 3%)
- 2008 Ranked 318th in National Entrance exam among over 200,000 participants (top 0.02%)

Projects (links to projects' source available by clicking on their title and also in my linkedin)

- 2018–2021 [μSpectre](#), Fast and versatile library for fast Fourier transform (FFT)-based homogenisation in C++, Python interface developed using Pybind, Multi-OS/Multi-compiler compatibility maintained through CI/CD pipelines running unit tests on Docker containers.
- 2019 [Particles Simulator](#), 5 C++ core projects on applying scientific programming for engineering.
- 2019 [Different thread based Parallelizing methods](#), Comparison of different thread based parallelization methods such as **OpenMP**, **Intel Thread Building Block**, and **C++17 threads**.
- 2020 [Time, Temperature, and Mobility](#), Data analysis on the location data from two social media vs. weather data and holiday, using **Pandas** and **Scikit**.
- 2021 [Deep learning framework](#), Implementing a deep-learning framework from scratch, **Python**.
- 2021 [NN architectures](#), Examined different archs for classification-comparison task, using **Pytorch**.
- 2021 [Clinical Data Analysis](#), Statistical analysis of clinical data on COVID-19 patients with acute kidney injury, using **Pandas** and **Scikit**.

Experiences, Internships, & Courses

- 03.2021 – 08.2021 **Experience**, Senior Data Scientist manager, Managing Scrum teams (**JIRA**) to process and analyze marketing data to make recommendation for companies and businesses using **Google Analytics**, **Python**, **Pandas**, and **Scikit**, **CREWASIS**, 5 months, part-time.
- 03.2019–03.2021 **Courses at EPFL**, Parallel programming, Scientific programming for engineers, Applied data analysis, Deep learning, Machine learning for engineers.
- 08.2015 – 10.2015 **Student Internship**, Developing particle based model for intestinal tissue growth using **C** programming language, Jülich Forschungszentrum, 3 months.

Skills

Computer Skills

Coding and programming	Git, C++, Python, OpenMP, MPI parallel programming	● ● ● ● ●
General	Dockers, Linux, Windows, L ^A T _E X, Office	● ● ● ● ●

Data Science Skills

Data Analysis and Big Data	Pandas, Seaborn, Spark, Appache, ...	● ● ● ● ●
Machine Learning	Scikit, Statsmodel	● ● ● ● ●
Deep Learning	PyTorch, TensorFlow, Jax, Flex (CNN, RNN, Attention models, ...)	● ● ● ● ●

Mechanical Engineering Skills

Solid Mechanics	FEM Simulation, FFT-based RVE solvers	● ● ● ● ●
Particle Based model	Molecular and coarse-grained simulations (LAMMPS,...)	● ● ● ● ●

Soft Skills

- Dedicated team player with good communication skills
- Hardworking and Flexible
- Troubleshooting skills

Languages

English: Proficient **Deutsch:** Intermediate(B1) **Français:** Beginner(A1) **Persian:** Native

Hobbies

- Hiking, Solo Traveling, Podcasts, Cooking, Volleyball (member of University team at SUoT)

Publications

Ali Falsafi and Hossein Nejat Pishkenari. Martini coarse-grained model of solid–liquid interface. *The Journal of Physical Chemistry C*, 120(46):26259–26269, 2016.

Ali Falsafi and Hossein Nejat Pishkenari. A many-body dissipative particle dynamics study of nanoneedle-liquid interface. *Journal of Applied Physics*, 124(21):214301, 2018.

Richard J. and Ali Falsafi et al. Elimination of ringing artifacts by finite-element projection in fft-based homogenization, 2021.

Thahereh Sabaghian, et al, and Ali Falsafi. Prognostic factors in patients with aki and covid-19. *Under Review*, 2021.

References

- Prof. Williams Curtin, Professor at EPFL, PhD supervisor, william.curtin@epfl.ch
- Dr. Till Junge, Researcher and Lecturer at EPFL, PhD supervisor, till.junge@epfl.ch
- Dr. Hossein Nejat Pishkenari, Professor at SUoT, Master supervisor, nejat@sharif.edu