fatehi.dev
arash@fatehi.dev
/in/arash-fatehi/
platonic-realm

Arash Fatehi

Software Engineer & Computer Scientist



Expertise

- **Deep learning** for biomedical images
- **LLMs**: transformer architectures and internals, multimodality
- **Computer vision**: segmentation and morphometry in 2D and 3D
- **HPC** and **Linux administration**
- **Software engineering**, six years in industry

Skills

- **Machine Learning:** PyTorch, TensorFlow, Hugging Face Transformers, U-Net, SwinUNETR
- **HPC and Systems:** Slurm, CUDA, ROCm, Ansible, Linux, Podman, VMware ESXi
- **Programming:** Python, C/C++, Go, Zig, SQL

Research

- **Computer vision** for bio-images
- The **emergence and mathematical structure** of intelligence
- **Modality-Socket**: DNA as a new modality without training

Languages

- **English**, **Farsi**, **German**

Experience

Oct. 2026 – Present
Postdoctoral Researcher
*at **MPI for Biology of Ageing***
- Deep-learning quantification of nucleoli in microscopy images.

Aug. 2022 – Sep. 2026
Machine Learning Researcher
*at **Uniklinik Köln***, Germany
- Developed AMAP-APP, an open-source desktop tool for podocyte segmentation and morphometry in super-resolution microscopy.
- Deep-learning 3D reconstruction of the glomerular basement membrane, with GPU morphometry of its thickness.
- Led a team of three to build and maintain the Lyn HPC cluster.

2022 – Present
Co-founder
*at **Magnephy AB***
Advanced microscopy with deep-learning analysis and quantification, for pharma companies and research institutions.

Aug. 2012 – Dec. 2018
Software Engineer
*at **Iranian Classification Society***, Iran
- Full-stack developer of a distributed suite for the inspection and certification of more than 9000 vessels.
- Lead developer of the organisation's ERP: project management, CRM, secretariat and accounting.
- System administration: Active Directory for more than 100 staff, virtual infrastructure on VMware ESXi.

Education

2022 – 2026 PhD **Computer Science** *at **University of Cologne***
Thesis: Deep Learning for Nanoscale Morphometry of the Glomerular Filtration Barrier. Defended in October 2026, **magna cum laude**.

2020 – 2022 Master's Degree **Computer Science** *at **University of Malaya***
CGPA: 98%. **Thesis:** Convolutional neural networks extended with predefined kernels in image classification.

2012 – 2018 Bachelor's Degree **Software Engineering**
*at **Payam-e Noor University***

Publications

2026
Kidney360
AMAP-APP: Efficient Segmentation and Morphometry Quantification of Fluorescent Microscopy Images of Podocytes. A. Fatehi et al. Accepted.

2026
IEEE Transactions on Medical Imaging
Beyond Isotropic Assumptions: Continuity-Constrained Segmentation and GPU Morphometry for Nanoscale GBM Analysis. A. Fatehi et al. Submitted; preprint arXiv:2608.07575.

2026
Kidney International
Nanoscale Podocyte Morphometrics Predict Disease Progression in IgA Nephropathy. R. Ebbestad, A. Fatehi et al. Submitted; preprint on medRxiv.

Personal projects

Present
Zios
A small kernel in **Zig** for **RISC-V**, in its early stages.

2026
TelFS
A filesystem on a Telegram channel, in **Go**.