Mahdi.koochali@gmail.com – +4915730210773 – Saarbrucken, Germany
Mahdi-koochali.github.io

AI Engineer and Computer Vision specialist with hands-on experience in deep learning, generative AI, and biomedical image analysis. Skilled in building scalable pipelines in cloud environments (AWS, GCP), turning complex data into real-world solutions — from segmentation and tracking to multimodal analysis and synthetic data generation. Experienced in collaborative software engineering, driven by curiosity, clear communication, and problem-solving.

Research Assistant *Saarbruecken, Germany*

- Applied deep learning models for live cell segmentation and tracking in microscopy images.
- Created and refined datasets for microscopy image analysis to improve model performance.
- Developed SAT model for cell segmentation and tracking, featuring BoxSAT with +15.96 MOTA improvement over current state-of-the-art on CTMC using single-box first-frame annotations, and PointSAT achieving 80%+ MOTA with first-frame point annotations for efficient, scalable analysis across diverse datasets and imaging modalities, significantly reducing annotation time and cost.

Data Scientist *Tehran, Iran*

- Developed, trained, and deployed deep learning models (such as YOLO series, EfficientDET, RetinaNet, and CenterNet) for Object Detection, Face Recognition, Fire Detection, and Violence Detection tasks

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M.Sc. Bioinformatics *Saarbruecken, Germany*

- : Segment and Track Anything for Microscopy (Grade: 1.0/1.0)
- : Applied Computer Vision (Image Segmentation: Segment Anything, SAM2, YOLO, and Object Tracking: ByteTrack, PIPS, CoTracker, DeepSort, TapNet), Generative Models

B.Sc. Computer Science *Tehran, Iran*

- : Representing UbiqLog Dataset in three different mediums (Music Generation, Narrative, Animation with Deep RL)
- : Creative AI, Multimodal Learning, Deep Reinforcement Learning, Representation Learning, Generative Models

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- Box it, Track it: A Weakly Supervised Framework for Cell Tracking, *DAGM GCPR 2025*
- SAT: Segment and Track Anything for Microscopy, *ICCART 2025*
- CellGenie: An End-to-End Pipeline for Synthetic Cellular Data Generation and Segmentation: A Use Case for Cell Segmentation in Microscopic Images, *Conference on Medical Image Understanding and Analysis (MIUA 2024)*
- DeepMuCS: a framework for co-culture microscopic image analysis: from generation to segmentation, *IEEE-EMBS International Conference on Biomedical and Health Informatics (BHI)*
- Point2mask: a weakly supervised approach for cell segmentation using point annotation, *MIUA 2022*

- :
  - C++, Python (including libraries like PyTorch, TensorFlow, Keras, Scikit-learn, Numpy, Pandas), SQL, Docker, Git, CI/CD
  - Object Detection, Object Tracking, Generative Models, Anomaly Detection, Deep Learning, Computer Vision, AB Testing, Large Language Models (LLMs), VLMs
  - Matplotlib, Plotly, Seaborn
  - AWS, Elasticsearch, Kubeflow, OData
  - Statistical Modeling, Predictive Analytics, Probability Theory
- : Effective Communicator, Problem Solver & Creative Thinker, Fast Adopter, Leader & Team Player

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- : Full professional proficiency : Limited working proficiency