Mohammadmahdi Koochali

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AI and Bioinformatics researcher with a Master's in Bioinformatics and a Bachelor's in Computer Science, backed by over 4 years of applied research at DFKI. Experienced in computer vision, biomedical image analysis, and generative modeling. Proficient in Python, PyTorch, and molecular simulation workflows. Passionate about nanonetwork communication, machine learning, and interdisciplinary research at the interface of biology, medicine, and engineering.

Work Experience

German Research Center for Artificial Intelligence (DFKI) **September 2021 – Present**
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.

Sensifai **November 2019 – October 2020**
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

Education

Saarland University **March 2025**
M.Sc. Bioinformatics *Saarbruecken, Germany*

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

Kharazmi University **November 2020**
B.Sc. Computer Science *Tehran, Iran*

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

Publications

- 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*

Skills & Interests

- **Technical Skills**:
  - **Programming & Frameworks:** C++, Python (including libraries like PyTorch, TensorFlow, Keras, Scikit-learn, Numpy, Pandas), SQL, Docker, Git, CI/CD
  - **Data Science & Machine Learning:** Object Detection, Object Tracking, Generative Models, Anomaly Detection, Deep Learning, Computer Vision, AB Testing, Large Language Models (LLMs), VLMs
  - **Data Visualization:** Matplotlib, Plotly, Seaborn
  - **Tools & Platforms:** AWS SageMaker, Elasticsearch, Kubeflow
  - **Mathematics & Statistics:** Statistical Modeling, Predictive Analytics, Probability Theory
- **Soft Skills**: Effective Communicator, Problem Solver & Creative Thinker, Fast Adopter, Leader & Team Player
- **Interests**: Football, Video Games, Movies

Language Proficiency

- **English**: Full professional proficiency **German**: Limited working proficiency