

Amirreza Mahbod

Assistant Professor at Danube Private University & Part-time Lecturer at Medical University of Vienna

	Personal Information
	Current Location: Vienna, Austria
	Citizenship: Austria & Iran
	Primary Email: amirreza.mahbod@dp-uni.ac.at
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	Profile: www.linkedin.com/in/amirreza-mahbod
	Education
Nov 2016 – Jan 2020	 PhD in Medical Informatics, Biostatistics and Complex Systems Medical University of Vienna (Vienna, Austria) & TissueGnostics GmbH (Vienna, Austria) GPA: 1.18 in scale of 1 (excellent) to 5 (insufficient) Thesis title: Towards Improvement of Automated Segmentation and Classification of Tissues and Nuclei in Microscopic Images Using Deep Learning Approaches (Link) Supervisors: Prof. Isabella Ellinger (Medical University of Vienna), Prof. Rupert Ecker (TissueGnostics GmbH) Funded by the Horizon 2020 research and innovation programme (Link)
Oct 2017 - Jun 2018	Visiting Researcher KTH Royal Institute of Technology (Stockholm, Sweden) Research area: Developing Algorithms for Histological Image Segmentation and Classification Based on Deep Neural Networks Supervisors: Dr. Chunliang Wang, Prof. Örjan Smedby
Sep 2014 - Sep 2016	M.Sc. in Medical Engineering KTH Royal Institute of Technology (Stockholm, Sweden) Master Thesis title: Structural Brain MRI Segmentation Using Machine Learning Technique Supervisors: Dr. Chunliang Wang
Sep 2009 – Mar 2012	M.Sc. in Electrical Engineering – Bioelectric Iran University of Science and Technology (Tehran, Iran) Master Thesis title: <i>Determining Quality of Fruits by Ultrasonic Waves</i> Supervisors: Prof. Hamid Behnam

Sep 2004 – Sep 2009	B.Sc. in Electrical Engineering – Control Iran University of Science and Technology (Tehran, Iran) Master Thesis title: <i>Design & Implementation of the Automatic Regulatory System of</i> <i>Car's Headlighte</i> Supervisors: Prof. Jahed Motlaghg
	Interests
	 Deep Learning & Machine Learning Computer Vision Medical Image Analysis Foundation Models
	Work Experiences
Sep 2023 - Present	Assistant Professor at Danube Private University, Austria Deep learning/machine learning methods for medical Image analysis Technical Environment: Deep learning frameworks and computer vision tools
Sep 2022 - Present	Lecturer (part-time) at Medical University of Vienna, Austria Institute for Pathophysiology and Allergy Research Courses: Creative and Critical Journal Club, Diplomand Innen Seminar
Aug 2022 – Aug 2023	Al Researcher at Danube Private University, Austria Deep learning/machine learning methods for medical Image analysis such as segmen- tation, classification, and detection Technical Environment: Python, Keras, Tensorflow, PyTorch, Monai, OpenCV, SciPy, Scikit-learn, Pandas, Matplotlib, NumPy, PyCharm, Matlab, Git, Docker, Ubuntu, \amelet T_EX
Apr 2020 – Jul 2022	Post-doctoral fellow at Medical University of Vienna, Austria Deep learning/machine learning methods for computer vision tasks such as segmenta- tion, classification, and detection Technical Environment: Python, Keras, Tensorflow, PyTorch, OpenCV, SciPy, Scikit- learn, Pandas, Matplotlib, NumPy, PyCharm, Matlab, Git, Docker, Ubuntu, LATEX
Nov 2016 – Mar 2020	Research scientist at TissueGnostics GmbH, Austria Deep learning/machine learning methods for computer vision tasks such as segmenta- tion, classification, and detection Technical Environment: Python, Keras, Tensorflow, PyTorch, OpenCV, SciPy, Scikit- learn, Pandas, Matplotlib, NumPy, PyCharm, Matlab, MatConvNet, Git, Ubuntu, &TEX
	Computer Skills
	Computer Programming languages • Python, C Related software/tools • Matlab, PyCharm, LATEX, Git, Docker Deep Learning Frameworks • Keras, TensorFlow, PyTorch, MONAI, MatConvNet Operating Systems • Windows and Linux (Ubuntu)

Publications (Google Scholar link, 2400+ citations, h-index:18)

Journal Papers:

- Mahbod A, Saeidi N, Hatamikia S, Woitek R, Evaluating Pre-trained Convolutional Neural Networks and Foundation Models as Feature Extractors for Content-based Medical Image Retrieval, Engineering Applications of Artificial Intelligence, March 2025 (Link)
- Mahbod A, Polak C, Feldmann K, Khan R, Gelles K, Dorffner G, Woitek R, Hatamikia S, Ellinger I, NuInsSeg: A Fully Annotated Dataset for Nuclei Instance Segmentation in H&E-Stained Histological Images, Nature Scientific Data, March 2024 (Link)
- Mahbod A, Wang C, Ellinger I, Galdran A, Gopalakrishnan S, Niezgoda J, Yu Z, FUSeg: The Foot Ulcer Segmentation Challenge, Information, March 2024 (Link)
- Mahbod A, Dorffner G, Ellinger I, Woitek R, Hatamikia S, Improving Generalization Capability of Deep Learning-Based Nuclei Instance Segmentation by Nondeterministic Train Time and Deterministic Test Time Stain Normalization, Computational and Structural Biotechnology Journal, January 2024 (Link)
- Hatamikia S, George G, Schwarzhans F, Mahbod A, Woitek R, Breast MRI radiomics and machine learning radiomics-based predictions of response to neoadjuvant chemotherapy-how are they affected by variations in tumour delineation?, Computational and Structural Biotechnology, January 2024 (Link)
- Mahbod A, Schaefer G, Dorffner G, Ecker R, Ellinger I, A Dual Decoder U-Net-Based Model for Nuclei Instance Segmentation in Hematoxylin and Eosin-Stained Histological Images, Frontiers in Medicine, November 2022 (Link)
- Verma R, ..., Mahbod A, ..., Sethi A, MoNuSAC2020: A Multi-organ Nuclei Segmentation and Classification Challenge, IEEE Transactions on Medical Imaging, June 2021 (Link)
- Mahbod A, Schaefer G, Löw C, Dorffner G, Ecker R, Ellinger I, Investigating the impact of bit depth of fluorescence-stained images on the performance of deep learning-based nuclei instance segmentation, Diagnostics, May 2021 (Link)
- Mahbod A, Schaefer G, Bancher B, LÖw C, Dorffner G, Ecker R, Ellinger I, *CryoNuSeg: A Dataset for Nuclei Instance Segmentation of Cryosectioned H&E- Stained Histological Images*, Computers in Biology and Medicine, March 2021 (Link)
- Mahbod A, Tschandl P, Langs G, Ecker R, Ellinger I, *The Effects of Skin Lesion* Segmentation on the Performance of Dermatoscopic Image Classification, Computer Methods and Programs in Biomedicine, August 2020 (Link)
- Mahbod A, Schaefer G, Wang C, Ecker R, Dorffner G, Ellinger I, Transfer Learning Using a Multi-Scale and Multi-Network Ensemble for Skin Lesion Classification, Computer Methods and Programs in Biomedicine, March 2020 (Link)
- Kumar N, ..., Mahbod A, ..., Sethi A, A Multi-Organ Nucleus Segmentation Challenge, IEEE Transactions on Medical Imaging, October 2019 (Link)

- Mahbod A, Schaefer G, Ellinger I, Ecker R, Pitiot A, Wang C, Fusing Fine-tuned Deep Features for Skin Lesion Classification, Computerized Medical Imaging and Graphics, January 2019 (Link)
- Commowick O, ..., Mahbod A, ..., Barillot C, Objective Evaluation of Multiple Sclerosis Lesion Segmentation using a Data Management and Processing Infrastructure, Nature Scientific Reports, September 2018 (Link)
- Mahbod A, Chowdhury M, Smedby Ö, Wang C, Automatic brain segmentation using artificial neural networks with shape context, Pattern Recognition Letters. January 2018 (Link)

Peer-reviewed Conference Papers:

- Mahbod A, Entezari R, Saukh O, Ellinger I, Deep Neural Network Pruning for Nuclei Instance Segmentation in Hematoxylin & Eosin-Stained Histological Images, MICCAI workshop on Applications of Medical Artificial Intelligence, September 2022 (Link)
- Mahbod A, Ecker R, Ellinger I, Automatic Foot Ulcer Segmentation Using an Ensemble of Convolutional Neural Networks, International Conference on Pattern Recognition (ICPR), August 2022 (Link)
- Bancher B, Mahbod A, Ellinger I, Ecker R, Dorffner G, Improving Mask R-CNN for Nuclei Instance Segmentation in Hematoxylin & Eosin-Stained Histological Images, MICCAI workshop on Computational Pathology, September 2021 (Link)
- Mahbod A, Schaefer G, Wang C, Ecker R, Dorffner G and Ellinger I, Investigating and Exploiting Image Resolution for Transfer Learning-based Skin Lesion Classification, IEEE International Conference on Pattern Recognition (ICPR). March 2021 (Link)
- Mahbod A, Schaefer G, Ecker R, Ellinger I, Pollen Grain Microscopic Image Classification Using an Ensemble of Fine-Tuned Deep Convolutional Neural Networks, ICPR workshop on Artificial Intelligence for Healthcare Applications. March 2021 (Link)
- Mahbod A, Schaefer G, Wang C, Ecker R, and Ellinger I, *Skin Lesion Classification Using Hybrid Deep Neural Networks*, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP). May 2019 (Link)
- Mahbod A, G Schaefer, Ellinger I, Ecker R, Smedby O, Wang C, A Two-Stage U-Net Algorithm for Segmentation of Nuclei in H&E-Stained Tissues, European Congress on Digital Pathology (ECDP). January 2019 (Link)
- Mahbod A, Ellinger I, Ecker R, Smedby Ö, Wang C, Breast Cancer Histological Image Classification Using Fine-Tuned Deep Network Fusion, International Conference Image Analysis and Recognition (ICIAR). June 2018 (Link)
- Mahbod A, Wang C, Smedby Ö, Automatic Multiple Sclerosis Lesion Segmentation Using Hybrid Artificial Neural Networks, MSSEG Challenge Proceedings at MICCAI Conference. October 2016 (Link)

Preprints/In submission:

- Saeidi N, Karshenas H, Shoushtarian B, Hatamikia S, Woitek R, Mahbod A, Leveraging Medical Foundation Model Features in Graph Neural Network-Based Retrieval of Breast Histopathology Images, December 2024 (Preprint Link)
- Handa P, Dhir M, Mahbod A, Schwarzhans F, Woitek R, Goel N, Gunjan D, WCEbleedGen: A wireless capsule endoscopy dataset and its benchmarking for automatic bleeding classification, detection, and segmentation, Aug 2024 (Preprint Link)
- Handa P, Mahbod A, Schwarzhans F, Woitek R, Goel N, Chhabra D, Jha S, Dhir M, Gunjan D, Kakarla J, Raman B, Capsule Vision 2024 Challenge: Multi-Class Abnormality Classification for Video Capsule Endoscopy, Aug 2024 (Preprint Link)

Grants

- 2024 2026 WWTF grant (No. LS23-006), "LymphoidStructureMiner: AI-based exploration of the immunological contexture of lymphoid structures in translational research", Role: Co-Principal Investigator, Amount: €480,000
- 2022 2025 Bridge FFG grant (No. 895420), "Development of a deep learning-based decision support system for classification of oral dysplasia grades", Role: Project Collaborator, Amount: €360,000
- 2024 2025 Ernst Mach Grant from OeAD (No. MPC-2024-01396), "Histopathological Image Classification by Nuclei-based Graph Convolutional Network", Role: Supervisor, 9month scholarship
- 2023 2024 Ernst Mach Grant from OeAD (No. MPC-2023-00569), "Image retrieval and classification in radiological images using graph neural networks", Role: Supervisor, 9-month scholarship
- 2020– 2022 Bridge Young Scientists FFG grant (No. 872636), "Deep learning for improved nuclei segmentation and knowledge transfer methods in microscopic images", Role: Postdoc Fellow, Amount: €227,000

Honors & Awards & Mini Grants

- Ranked 1st and 2nd in Track 1 and Track 2 of the "Panoptic segmentation of nuclei and tissue in advanced melanoma" challenge, March 2025
- Ranked in top 2.43% in overall all fields, top 3.55% in computer science, and top 0.11% in the skin condition specialty according to ScholarGPS Ranks, Jan 2025
- O Travel Grant to participate in the ICML conference, MDPI, Basel, June 2024
- O Ranked 1st in the MICCAI 2021 Foot Ulcer Segmentation Challenge, August 2021
- FFG Talente: Praktika f
 ür Sch
 ülerinnen und Sch
 üler (student internship grant), Role: Supervisor, 2021
- Ranked 1st in the MoNuSAC post-challenge and Ranked 2nd considering all phases for multi-organ nuclei segmentation and classification in H&E-stained histological images, June 2020
- FFG Talente: Praktika f
 ür Sch
 ülerinnen und Sch
 üler (student internship grant), Role: Supervisor, 2020
- Ranked 2nd in the ISIC 2018 challenge online leaderboard (Task3: Lesion diagnosis) for dermoscopic skin lesion classification, January 2020 (Accessed on 2020-05)
- O Awarded Grant from the Kaggle Open Data Research, January 2020

- Ranked among top 5 for the Austrian Science2Business Award for the project entitled "Development of deep learning-based algorithms for automated histological image classification, detection and segmentation for digital pathology and medical research" (I. Ellinger, A. Mahbod, Rupert Ecker, and G. Dorffner), September 2019
- Postgrad Congress Scholarship (Travel Grant), Medical University of Vienna, April 2019
- Ranked 14th in Kaggle data science competition in identifying metastatic tissue in histopathologic scans of lymph node sections among 1,157 teams, March 2019
- NVIDIA GPU Grant, granted a Titan V GPU to support our research at Medical University of Vienna, January 2019
- Ranked 10th in the MICCAI 2018 Multi-Organ Nuclei Segmentation Challenge (MoNuSeg) among 37 teams, August 2018
- Postgrad Congress Scholarship (Travel Grant), Medical University of Vienna, March 2018
- Marie Sklodowska-Curie Scholarship holder as an Early Stage Researcher (ESR) in the CaSR Biomedicine Project (Horizon 2020), 2016 to 2019
- Ranked 6th (total) and Ranked 2nd (brain segmentation) in the open MICCAI Grand Challenge on MR Brain Image Segmentation (MRBrainS13), June 2016 (Assessed on 2016-06)
- Holder of Tuition Fee Waiver Scholarship for Master Program in Medical Engineering at KTH Royal Institute of Technology (cover 290.000SEK tuition fee for the master's degree), 2014 to 2016
- Ranked 3rd (on the basis of total GPA) among M.Sc. students of biomedical engineering (Iran University of Science and Technology), 2012
- Honored & selected patent of Iran's National Elites Foundation (INEF) Fair for Designing Round Fruits Automatic Categorizing Machine, South Khorasan, Iran, November 2011
- Ranked 563rd among more than 500,000 Mathematics and Physics participants in national university entrance exam, 2004

Patents

- Mahbod A and Behnam H, "Design & Implementation of device to determine the quality of fruits by ultrasonic waves", January 2012, Patent Certificate Number 73346 (Registered on State Deeds & Real Properties Organization, Iran)
- Mahbod A, Lak Aliabadi S and Ghanbari M, "Round Fruits Automatic Categorizing Machine", August 2011, Patent Certificate Number 70911, (Registered on State Deeds & Real Properties Organization, Iran)
- Mahbod A, "Design & Implementation of the Automatic Regulatory System of Car's Headlight", July 2011, Patent Certificate Number 70893, (Registered on State Deeds & Real Properties Organization, Iran)

Supervision

- Sep 2024 Sep 2026 **Main supervisor**, Postdoc (Nima Torbati), Danube Private University, Title: "LymphoidStructureMiner: Al-based exploration of the immunological contexture of lymphoid structures in translational research "
- Sep 2024 Sep 2026 **Co technical supervisor**, Postdoc (Kountay Dwivedi), Medical University of Vienna, Title: "Development of a deep learning-based decision support system for classification of oral dysplasia grades"

Oct 2024 – Oct 2027	Co technical supervisor, PhD student (Carmen Colin), Medical University of Vienna,
	Title: "Development of a highly innovative label-free & deep-learning based analysis
	method: Histoplasmonic Tissue Cytometry"

Dec 2024 – Aug 2025 Main supervisor, PhD visiting student (Nematollah Saeidi), Danube Private University, Title: "Histopathological Image Classification by Nuclei-based Graph Convolutional Network"

- Sep 2023 Sep 2024 **Co technical supervisor**, Master Thesis (Bianca Flatschart), University of Applied Sciences Krems, Title: "Quantitative comparison of automated and manual segmentations of breast cancer on MRI"
- Sep 2023 May 2024 **Main supervisor**, PhD visiting student (Nematollah Saeidi), Danube Private University, Title: "Image retrieval and classification in medical images using graph neural networks"
- Feb 2022 Mar 2023 **Main supervisor**, Master Thesis (Marcel Koseler), Medical University of Vienna, Title: "Improving Generalisation Capability of Deep Learning-Based Nuclei Instance Segmentation Model"
- Mar 2020 Jan 2022 **Main supervisor**, Master Thesis (Benjamin Bancher), Medical University of Vienna, Title: "Nuclei Segmentation using improved Mask-RCNN"

Teaching

- $_{\odot}$ Scientific Module (WS 2024, SS and WS 2023 and WS 2022 at DPU)
- Creative und Critical Journal Club (SS and WS 2024, SS and WS 2023, SS and WS 2022, SS and WS 2021 at MedUni Wien)
- \odot Diplomand Innen Seminar (SS 2023, WS 2022, SS 2021, and SS 2020 at MedUni Wien)

Certificates

- Research, Innovation Entrepreneurship (Novartis, Basel, Switzerland, Jan 2019)
- O Management Systems and Internal Auditor Training (Andrew Hollo-Tas, Jan 2019)
- $_{\odot}$ Self-presentation & Communication (BioTalentum, GOdOllő, Hungary, May 2018)
- Introduction to Academic Teaching (The University of Manchester, Manchester, UK, Sep 2017)
- Translational Drug Research (University of Copenhagen, Copenhagen, Denmark, May 2017)
- CaSR: Molecular and Clinical Aspects (University of Oxford, Oxford, UK, Dec 2016)
- Course certificates are available on LinkedIn in the "Licenses & Certifications" section.

Outreach Activities

- Presneter at the The Long Night of Research, Wiener Neustadt, Austria, May 2024 (Link)
- Trainer at the European Researchers' Night, Vienna, Austria, May 2022 (Link)
- Trainer at the European Researchers' Night, Vienna, Austria, September 2018 (Link)
- Workshop trainer at the Children University, Medical University Vienna "What is Gyro Gearloose doing? How scientists do research." July 2018 (Link)
- Workshop trainer at the Children University, Medical University Vienna "What is Gyro Gearloose doing? How scientists do research." July 2017 (Link)

Languages

- Farsi (Native)
- English (Fluent) TOEFL iBT Test Score:101 (2013)
- German (Intermediate) official ÕIF B2 certificate (2023)

Scientific Editor

- Editorial Board Member of Nature Scientific Data Journal (Since January 2025) (Link)
- Guest editor of Bioengineering Journal (Special Issue: Machine Learning-Aided Medical Image Analysis, April 2024 - June 2025) (Link)
- Guest editor of Diagnostics Journal (Special Issue: Advances in Computer-Aided Segmentation, Detection, and Classification of Nuclei in Histological Images, February 2022 November 2022) (Link)
- Guest editor of Diagnostics Journal (Special Issue: Advances in Skin Lesion Image Analysis Using Machine Learning Approaches, October 2020 - January 2022) (Link)

Scientific Reviewer

Grant

• European Research Council (ERC) Starting Grant

Journals

- Medical Image Analysis
- IEEE Transaction on Medical Imaging
- $_{\odot}$ IEEE Journal of Biomedical and Health Informatics
- \odot Expert Systems with Applications
- Nature Scientific Data
- \odot GigaScience
- O Computer Methods and Programs in Biomedicine
- O Artificial Intelligence in Medicine
- O Engineering Applications of Artificial Intelligence
- O Artificial Intelligence Review
- IEEE Access
- Diagnostics Journal
- \odot Sensors Journal
- Annals of Biomedical Engineering
- Cluster Computing
- IET Image Processing Journal
- O Biocybernetics and Biomedical Engineering Journal
- \odot International Journal of Imaging Systems and Technology
- Computer Assisted Surgery Journal
- Computers and Electrical Engineering Journal
- \odot Data in Brief
- Cancer Biomarkers Journal

Conferences

- o ISBI 2023
- \odot ISIC Skin Image Analysis Workshop at ECCV 2022
- 0 MIDL 2022
- O MICCAI 2021
- \odot ISIC Skin Image Analysis Workshop at CVPR 2021
- O MIDL 2021
- O MICCAI 2020
- \odot ISIC Skin Image Analysis Workshop at CVPR 2020

Membership

- O Marie Curie Alumni Association
- Digital Pathology Association
- $_{\odot}$ Medical Image Computing and Computer Assisted Interventions
- O Medical Imaging Cluster (MIC) at the Medical University of Vienna
- IEEE Young Professionals & IEEE Signal Processing Society

References

- Associate Professor Dr. Isabella Ellinger (isabella.ellinger@meduniwien.ac.at) Institute for Pathophysiology and Allergy Research Medical University of Vienna, Vienna, Austria
- Dr. Chunliang Wang (Docent) (chunliang.wang@sth.kth.se)
 Division of Biomedical Imaging
 KTH Royal Institute of Technology, Stockholm, Sweden