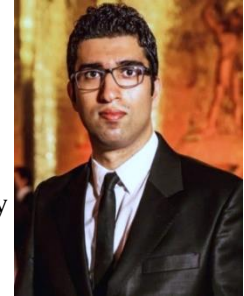


Amirreza Mahbod



Personal Information

Citizenship: Iran
 Current Location: Vienna, Austria
 Current Position: AI Researcher at Danube Private University & Part-time Lecturer at Medical University of Vienna
 Primary Email: amirreza.mahbod@dp-uni.ac.at
 Secondary Email: amirreza.mahbod@gmail.com
 Profile: https://www.meduniwien.ac.at/researcher/amirreza_mahbod

Education



Nov 2016 – Jan 2020 Medical University of Vienna, Vienna, Austria
 TissueGnostics GmbH, Vienna, Austria

PhD in Medical Informatics, Biostatistics and Complex Systems

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 (MedUni Vienna), Dr. Rupert Ecker (TissueGnostics GmbH)

Funded by the Marie Skłodowska-Curie Actions, Project no. 675228 ([Link](#))



Oct 2017 - June 2018 KTH Royal Institute of Technology
 Stockholm, Sweden

Visiting Researcher at Department of Biomedical Engineering and Health Systems

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 KTH Royal Institute of Technology
 Stockholm, Sweden

M.Sc. / Medical Engineering

GPA: 4.39 / 5.00

Department of Biomedical Engineering and Health Systems

Master Thesis title: *"Structural Brain MRI Segmentation Using Machine Learning Technique"* ([Link](#)), Supervisor: Dr. Chunliang Wang



Sep 2009 – March 2012 Iran University of Science and Technology
 Tehran, Iran

M.Sc. / Electrical Engineering – Bioelectric

GPA: 17.36 / 20.00

Master Thesis title: *"Determining Quality of Fruits by Ultrasonic Waves"*, Supervisor: Prof. Hamid Behnam



Sep 2004 – Sep 2009 Iran University of Science and Technology
 Tehran, Iran

B.Sc. / Electrical Engineering – Control

GPA: 15.15 / 20.00 (last three years GPA: 16.56 / 20.00)

Bachelor Thesis title: *"Design & Implementation of the Automatic Regulatory System of Car's Headlight"*, Supervisor: Prof. Jahed Motlagh

Interests

- ✓ Deep Learning & Machine Learning
- ✓ Computer Vision
- ✓ Medical Image Analysis

Work Experiences

-
- August 2022 – present** **Danube Private University, Krems, Austria**
- ✓ **AI Researcher:** Deep learning/machine learning methods for medical Image analysis such as segmentation, classification, and detection
Technical Environment: Python, Keras, Tensorflow, PyTorch, OpenCV, SciPy, Scikit-learn, Pandas, Matplotlib, NumPy, PyCharm, Matlab, Git, Docker, Ubuntu, LaTeX
- September 2022 – present** **Medical University of Vienna, Austria**
- ✓ **Lecturer:** Institute for Pathophysiology and Allergy Research (part-time)
Courses: [Creative and Critical Journal Club](#), [Diplomand Innen Seminar](#)
- April 2020 – July 2022** **Medical University of Vienna, Austria**
- ✓ **Post-doctoral fellow:** Deep learning/machine learning methods for computer vision tasks such as segmentation, classification, and detection
Technical Environment: Python, Keras, Tensorflow, PyTorch, OpenCV, SciPy, Scikit-learn, Pandas, Matplotlib, NumPy, PyCharm, Matlab, Git, Docker, Ubuntu, LaTeX
- November 2016 – March 2020** **TissueGnostics GmbH, Vienna, Austria**
- ✓ **Research scientist:** Deep learning/machine learning methods for computer vision tasks such as segmentation, classification, and detection
Technical Environment: Python, Keras, Tensorflow, PyTorch, OpenCV, SciPy, Scikit-learn, Pandas, Matplotlib, NumPy, PyCharm, Matlab, MatConvNet, Git, Ubuntu, LaTeX
- August 2012 – February 2013** **A&D (Andishe & Darman), Tehran, Iran**
- ✓ **Biomedical engineer:** Installing and repairing EEG & EMG equipments and analyzing data
Technical Environment: Nihon Kohden software, Matlab
- May 2008 -- December 2008** **RA Tech, Tehran, Iran**
- ✓ **Research engineer:** Designing blackout system for elevators
Technical Environment: Simulation, Matlab, LabView, PSpice
- June 2007 -- September 2007** **Bonyan Sanat Hamrah, Tehran, Iran**
- ✓ **Internship:** Siemens PLC programming and automation
Technical Environment: PLC S7, Matlab, STL
- January 2006 -- August 2006** **Iran University of Science & Technology**
- ✓ **Research engineer:** Design & implementation of a line follower robot
Technical Environment: Matlab, Basic, AVR Microcontroller, Bascom
-

Computer Skills

- ✓ Computer Programming languages
 - Python, C
 - ✓ Related software/tools
 - Matlab, PyCharm, LaTeX, Git, Docker
 - ✓ Deep Learning Frameworks
 - Keras, TensorFlow, PyTorch, MatConvNet
 - ✓ Operating Systems
 - Windows and Linux (Ubuntu)
-

Publications (Google Scholar)

Journal Papers

- ✓ **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***, submitted to *Frontiers in Medicine Journal*, July 2022

- ✓ Wang C, **Mahbod A**, Ellinger I, Galdran A, Gopalakrishnan S, Niezgoda J, Yu Z, *FUSeg: The Foot Ulcer Segmentation Challenge*, submitted to Advances in Wound Care Journal, January 2022 ([Preprint 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 Journal. 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 Program 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 Program 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*, Accepted in International Conference on Pattern Recognition (ICPR), March 2022 ([Preprint 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 Ö, 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](#))

Grants

-
- ✓ Bridge FFG project, “Development of a deep learning-based decision support system for classification of oral dysplasia grades”, (K Janjić, A. Mahbod, Rupert Ecker, Felicitas Mungenast), 2022 – 2025, **Amount: 360,000 €**
 - ✓ Bridge Young Scientists/FFG project, “Deep learning for improved nuclei segmentation and knowledge transfer methods in microscopic images” (I. Ellinger, A. Mahbod, G. Dorffner and Rupert Ecker), 2020 – 2022, **Amount: 227,000 €**
 - ✓ FFG Talente: Praktika für Schülerinnen und Schüler 2021 (student internship), **Amount: 1200 €**
 - ✓ FFG Talente: Praktika für Schülerinnen und Schüler 2020 (student internship), **Amount: 1200 €**

Honours And Awards

-
- ✓ **Ranked 1st** in the [MICCAI 2021 Foot Ulcer Segmentation Challenge](#), August 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
 - ✓ **Ranked 2nd** in the [ISIC 2018 challenge online leaderboard](#) (Task3: Lesion diagnosis) for dermoscopic skin lesion classification, January 2020 (Accessed on 2020-05)
 - ✓ **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 (totally) and Ranked 2nd (brain segmentation)** in the open MICCAI Grand Challenge on MR Brain Image Segmentation ([MRBrainS13](#)) among 37 teams, 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, Tehran, 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, Tehran, 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, Tehran, Iran)

Supervision

- ✓ Master Thesis by Marcel Koseler, Medical University of Vienna, Title: "Improving Generalisation Capability of Deep Learning-Based Nuclei Instance Segmentation Model" (February 2022 – present)
- ✓ Master Thesis by Benjamin Bancher, Medical University of Vienna, Title: "Nuclei Segmentation using improved Mask-RCNN" (March 2020 – January 2022)

Teaching

- ✓ Scientific Module (Winter Semester 2022 at DPU)
- ✓ Creative und Critical Journal Club (Summer and Winter Semester 2022, Summer and Winter Semester 2021 at MedUni Wien)
- ✓ Diplomand Innen Seminar (Winter Semester 2022, Summer Semester 2021, and Summer Semester 2020 at MedUni Wien)

Conferences, training schools & presentations

- ✓ Medical Image Computing and Computer Assisted Intervention conference, Singapore (Virtual), September 2022 (workshop paper presentation)
- ✓ Reveal the Secrets of Tissue Microenvironment Workshop (Virtual), India, May 2022 (invited speaker)
- ✓ Artificial Intelligence and Big Data in Digital Era, Ho Chi Minh City,

- ✓ Vietnam, December 2021 (Technical Program Committee)
- ✓ 4th MIC Festival “Success by imaging: How to lift my research to the next level”, Vienna Austria, December 2021 (poster presentation)
- ✓ Artificial Intelligence in Clinical Imaging Forum, Klagenfurt, Austria, November 2021 (attendee)
- ✓ Medical Image Computing and Computer Assisted Intervention conference, Strasbourg, France (Virtual), September 2021 (challenger and workshop paper presentation)
- ✓ 11th Retreat of the Center for Pathophysiology, Infectiology and Immunology, Vienna, Austria, September 2021 (Abstract submission)
- ✓ Young Scientist Symposium, Vienna, Austria, June 2021 (poster presentation)
- ✓ 25th International Conference on Pattern Recognition, Milan, Italy (Virtual), January 2021 (two poster presentations)
- ✓ 3rd MIC Festival “Driving the Evolution of Medicine with Imaging”, Vienna Austria (Virtual), December 2020 (rapid oral presentation)
- ✓ Medical Image Computing and Computer Assisted Intervention conference, Lima, Peru (Virtual), October 2020 (attendee)
- ✓ MoNuSAC workshop at International Symposium on Biomedical Imaging, Iowa, USA (Virtual), April 2020 (oral presentation)
- ✓ Artificial Intelligence in Clinical and Preclinical Settings Symposium, Vienna, Austria, November 2019 (invited speaker)
- ✓ 10th Retreat of the Center for Pathophysiology, Infectiology and Immunology, Vienna, Austria, September 2019 (poster presentation)
- ✓ ETN Annual Meeting “PhD Achievements”, Vienna, Austria, September 2019 (oral presentation)
- ✓ Young Scientist Symposium, Vienna, Austria, June 2019 (poster presentation)
- ✓ 2nd MIC Festival “Digital Revolution in Medical Imaging”, Vienna, Austria, June 2019 (poster presentation)
- ✓ Symposium on Machine Learning in Medicine & Biology, Vienna, Austria, June 2019 (attendee)
- ✓ Austrian Computer Science Day “Business Meets Computer Science”, Vienna, Austria, June 2019 (attendee)
- ✓ IEEE International Conference on Acoustics, Speech and Signal Processing, Brighton, UK, May 2019 (poster presentation)
- ✓ European Congress on Digital Pathology, Warwick, UK, April 2019 (oral presentation)
- ✓ MCAA General Assembly and Annual Conference, Vienna, Austria, Feb 2019 (attendee)
- ✓ ETN Training School “Research, Innovation Entrepreneurship”, Basel, Switzerland, January 2019 (attendee)
- ✓ Training school “Medical Imaging Meets Deep Learning”, Favignana, Italy, Aug 2018, (poster presentation)
- ✓ Medical Image Computing and Computer Assisted Intervention conference, Granada, Spain, September 2018 (challenge participant & oral presentation)
- ✓ 1st MIC Festival “Medical Imaging in Personalized Medicine”, Vienna, Austria, June 2018 (poster presentation)
- ✓ International Conference on Image Analysis and Recognition, Póvoa de Varzim, Portugal, June 2018 (poster presentation)
- ✓ Young Scientist Symposium, Vienna, Austria, June 2018 (oral presentation)
- ✓ ETN Training School “Self-presentation & Communication”, Gödöllő,

- ✓ Hungary, May 2018 (attendee)
- ✓ Annual Swedish Symposium on Image Analysis, Stockholm, Sweden, March 2018 (attendee)
- ✓ KTH Deep Learning workshop, Stockholm, Sweden, December 2017 (oral presentation)
- ✓ 8th Retreat of the Center for Pathophysiology, Infectiology and Immunology, Vienna, Austria, September 2017 (poster presentation)
- ✓ ETN Training school and annual meeting “Introduction to Academic Teaching”, Manchester, UK, September 2017 (oral presentation)
- ✓ Young Scientist Symposium, Vienna, Austria, June 2017 (poster presentat
- ✓ ETN Training School “Translational Drug Research”, Copenhagen, Denmark, May 2017 (attendee)
- ✓ ETN Training School and Annual Meeting “CaSR: Molecular and Clinical Aspects”, Oxford, UK, December 2016 (oral presentation)
- ✓ TG-Symposium "Optics, Algos and Ice", Obergurgl, Austria, November 2 (attendee)
- ✓ Medical Image Computing and Computer Assisted Intervention conference, Athens, Greece, October 2016 (challenge participant & poster presentation)

Certificates

- ✓ Research, Innovation Entrepreneurship (Novartis, Basel, Switzerland, Jan 2019)
- ✓ Management Systems and Internal Auditor Training (Andrew Holo-Tas, Jan 2019)
- ✓ Self-presentation & Communication (BioTalentum, Gödöllő, 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 [here](#)

Third Mission Activities

- ✓ 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
- ✓ German (Intermediate) – official ÖIF B1 certificate

Scientific Reviewer

Journals:

- ✓ Medical Image Analysis ([Link](#))
- ✓ IEEE Transaction on Medical Imaging ([Link](#))
- ✓ IEEE Journal of Biomedical and Health Informatics ([Link](#))

- ✓ Expert Systems with Applications ([Link](#))
- ✓ Computer Methods and Programs in Biomedicine ([Link](#))
- ✓ Artificial Intelligence in Medicine ([Link](#))
- ✓ Artificial Intelligence Review journal ([Link](#))
- ✓ IEEE Access ([Link](#))
- ✓ Diagnostics Journal ([Link](#))
- ✓ Sensors Journal ([Link](#))
- ✓ Annals of Biomedical Engineering ([Link](#))
- ✓ IET Image Processing Journal ([Link](#))
- ✓ Biocybernetics and Biomedical Engineering Journal ([Link](#))
- ✓ International Journal of Imaging Systems and Technology ([Link](#))
- ✓ Computer Assisted Surgery Journal ([Link](#))
- ✓ Computers and Electrical Engineering Journal ([Link](#))
- ✓ Data in Brief ([Link](#))
- ✓ Cancer Biomarkers Journal ([Link](#))
- ✓ Iranian Journal of Electrical and Computer Engineering ([Link](#))

Conferences:

- ✓ ISIC Skin Image Analysis Workshop at ECCV 2022 ([Link](#))
- ✓ MIDL 2022 ([Link](#))
- ✓ MICCAI 2021 ([Link](#))
- ✓ ISIC Skin Image Analysis Workshop at CVPR 2021 ([Link](#))
- ✓ MIDL 2021 ([Link](#))
- ✓ MICCAI 2020 ([Link](#))
- ✓ ISIC Skin Image Analysis Workshop at CVPR 2020 ([Link](#))

Scientific Editor

- ✓ 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](#))

Membership

- ✓ Marie Curie Alumni Association
- ✓ Digital Pathology Association
- ✓ Medical Image Computing and Computer Assisted Interventions
- ✓ Medical Imaging Cluster (MIC) at the Medical University of Vienna
- ✓ IEEE Young Professionals & IEEE Signal Processing Society

References

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