



AI for Doctors: Medical Imaging

- ▶ Workshop 1: Basics of AI & Medical Image Segmentation
- ▶ Friday, 25 March 2022 & Saturday, 26 March 2022
- ▶ TranslaTUM, Munich & online

The field of Artificial Intelligence has evolved significantly over the last decade and many potentially significant applications for medical imaging have come up.

Communication between medical professionals and computer scientists is essential for the successful application of AI-based software tools in clinical practice. To promote this interdisciplinary exchange, medical professionals need to obtain a basic understanding of the underlying principles of AI in medical imaging.

This website and our workshops have exactly this goal:

Fostering the responsible use of medical imaging AI in clinical practice through educational programs.

We will offer three workshops on medical imaging AI in the first half of 2022, based on the three topics:

Workshop 1: Basics of AI & Medical Image Segmentation,

Workshop 2: Image Enhancement and Reconstruction

Workshop 3: Medical Decision Support

Our workshops are led by an interdisciplinary team of experts from the Technical University of Munich and are specifically tailored to the needs of medical professionals.



We invite you to explore our website <https://ai-for-doctors.com/>, register for AI-for-Doctors workshops or reach out via mail: contact@ai-for-doctors.com.

**Professor Daniel Rückert, PhD
and PD Dr. med. Dennis M. Hedderich**



Basics of AI & Medical Image Segmentation

Learning goals:

After the workshop, participants will be able to:

- ▶ Define basic principles of Artificial Intelligence
- ▶ Interpret schematic figures of neural networks
- ▶ Describe neural network architectures for different purposes
- ▶ Evaluate main steps for designing and building an AI algorithm
- ▶ Describe pitfalls in medical image segmentation
- ▶ Discuss potentials and current limitations of AI for medical image segmentation in clinical practice.

Dates: Friday, 25 March 2022 & Saturday, 26 March 2022

Location: TranslaTUM, Munich & online

Friday, 25th March 2022

13:00 – 13:15

Welcome & Introduction

13:15 – 14:00

Introduction to Artificial Intelligence in Medical Imaging

Daniel Rückert

14:00 – 15:00

From Machine Learning to Neural Networks

Matthias Keicher

Break

15:30 – 16:30

Basics of Convolutional Neural Networks

Martin Menten

16:30 – 17:15

How to design and build an AI algorithm for Medical Imaging

Tobias Czempel

Break

17:30 – 18:15

Keynote: AI and the Future of Radiology

Julia Schnabel

18:30 – 20:00

Social Event @TranslaTUM

(may be cancelled due to Covid-19 restrictions, local regulations will apply)

Saturday, 26 March 2022

09:00 – 09:45

Segmentation in Medical Imaging:

From image-wise to voxel-wise prediction.

Veronika Zimmer

09:45 – 10:30

Segmentation in Medical Imaging: Evaluation measures and pitfalls

Veronika Zimmer & Anne Rickmann

Break

11:00 – 11:45

State of the art brain segmentation using Deep Learning

Christian Wachinger

11:45 – 12:30

Applications of image segmentation (I): Oncology

Rickmer Braren

Break

13:30 – 14:15

Applications of image segmentation (II): Neuroradiology

Dennis Hedderich

14:15 – 15:00

Applications of image segmentation (III): Pathology

Tingying Peng



Lecturers

Prof. Daniel Rückert, PhD, FREng, FMedSci, FIEEE
Alexander-von-Humboldt-Professor for Artificial Intelligence
in Healthcare and Medicine
Technical University of Munich

Matthias Keicher, Dipl.-Ing.
Chair for Computer-Aided-Medical-Procedures
Technical University of Munich

Martin Menten, PhD
Institute for Artificial Intelligence in Healthcare and Medicine
Technical University of Munich

Tobias Czempiel, MSc
Chair for Computer-Aided-Medical-Procedures
Technical University of Munich

Prof. Julia Schnabel, PhD, FIEEE, FMICCAI, FELLIS
Institute of Machine Learning in Biomedical Imaging
Helmholtz Munich
Professor of Computational Imaging and AI in Medical Imaging
Technical University of Munich

Veronika Zimmer, PhD
Computational Imaging and AI in Medicine
Technical University of Munich

Prof. Christian Wachinger, PhD
Artificial Intelligence in Radiology
Technical University of Munich

Anne Rickmann, MSc
Artificial Intelligence in Radiology
Technical University of Munich

Prof. Dr. Rickmer Braren
Department of Radiology
Technical University of Munich

PD Dr. Dennis M. Hedderich
Department of Neuroradiology
Technical University of Munich

Tingying Peng, PhD
AI for Microscopy and Computational Pathology
Helmholtz Munich



Registration

We will offer three workshops on medical imaging AI in the first half of 2022, based on the three topics: **① Basics of AI & Medical Image Segmentation**, **② Image Enhancement and Reconstruction** and **③ Medical Decision Support**.

All workshops will be held in a hybrid format both on-site in Munich and online. If you are a clinician working with medical imaging (e.g. in the field of radiology, nuclear medicine, pathology, cardiology, but also dermatology and ophthalmology), please check out our program, reach out and join us in Munich or online!

Workshop dates 2022:

Workshop ① : 25 & 26 March 2022
Workshop ② : 13 & 14 May 2022
Workshop ③ : 24 & 25 June 2022

Registration fees

	regular rate	reduced rate
Workshop 1: Basics of AI & Medical Image Segmentation	250€	220€ *
Workshop 2: Image Enhancement and Reconstruction	250€	220€ **
Workshop 3: Medical Decision Support	250€	220€ ***
Package workshops 1-3	650€	600€ *

* until 06/03/2022 and/or for medical residents (before board certification);

** until 12/04/2022 and/or for medical residents (before board certification);

*** until 24/05/2022 and/or for medical residents (before board certification)

A cancellation fee of 50% will apply until two weeks prior to the event. After this, no refund is possible.

Depending on Covid restrictions, the on-site part of the event may be cancelled and the workshop will be held as an online-only event.

More Information and Registration



CME credits will be awarded by the Bavarian Medical Association

For more information and registration please visit our website.

<https://ai-for-doctors.com/registration/>