JENS PETERSEN

Research Group Leader in
Medical Image Computing

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RESEARCH INTERESTS

Time Series
Probabilistic Modeling
Medical Imaging
Implicit Representations

LANGUAGES

German (native)
English (fluent)
Spanish (working proficiency)

SKILLS

Development
Python, C++, HTML/CSS, Javascript
ML & Scientific Computing
Pytorch, Tensorflow, NumPy, Pandas,
scikit-learn, Matlab, Mathematica
MLOps
Docker/Swarm, MLFlow, Lightning
Data Visualization & Design
Matplotlib, Plotly, Photoshop,
Illustrator, Premiere, Davinci Resolve

SUPERVISION

8 PhD students
2 MSc students

REVIEWING

AAAI
MICCAI
IEEE TMI
Journal of Medical Imaging
Nature Scientific Reports
IJCARS

PERSONAL INTERESTS

Mountain Biking
Beach Volleyball
Gymnastics
Bouldering
Graphic Design
Travel Photography & Videography

PROFESSIONAL EXPERIENCE

12/2020 — present — **Postdoctoral Researcher**
German Cancer Research Center (DKFZ)
— Group Leader within the Division of Medical Image Computing (since 03/2020, currently 13 members)
— Co-supervision of junior PhD and MSc students
— Supporting professor with research strategy decisions

12/2018 — present — **Scientific Coordinator**
HIDSS4Health Graduate School
— Building & expanding scientific curriculum
— Overseeing application process

06/2015 — 12/2020 — **Doctoral Researcher**
German Cancer Research Center (DKFZ)
— Deep Learning for Tumor Growth Modeling

06/2015 — 05/2019 — **Research Assistant**
Heidelberg University Hospital, Germany
— Developing framework for automated image processing within hospital IT infrastructure
— Enabling easy deployment of deep learning models for testing on live, clinical routine data

PROJECTS

02/2018 — present — **heidelberg.ai** Host & Organizer
— Meetup & lecture series on AI, >1700 members
— Regular networking events, presentations by researchers & industry professionals

07/2017 — present — **trixi** Core Developer
— Experimentation framework for PyTorch
— Includes logging, visualization, run comparison

05/2016 — present — **OneSurgery** Co-Founder/Tech-Lead
— Startup for AR in minimally invasive surgery
— Secured ~ €1M funding
— Built prototype for surgical hand tracking, now overseeing all technical developments

04/2016 — 05/2017 — **BVM Conference** Lead Organizer
— Largest German Conference on Medical Image Computing
— Secured industry sponsorships, organized scientific program, designed communication materials

EDUCATION

06/2015 — 12/2020 — **PhD Physics (magna cum laude)**
Heidelberg University, Germany
"Learning Distributions of Functions on a Continuous Time Domain"

09/2013 — 11/2014 — **MSc Physics (with Distinction)**
Imperial College London, UK
"Path Length Distribution in Random Directed Acyclic Graphs"

09/2011 — 06/2012 — **Student Exchange (ERASMUS scholarship)**
Universidad Autónoma de Madrid, Spain

10/2009 — 05/2013 — **BSc Physics (very good)**
Heidelberg University, Germany
"Performance Analysis of a Transceiver Chipset & Interference Control for a Wireless Detector Readout at 60GHz"

TALKS

BVM Advanced Deep Learning Tutorial (invited)
03/2021, virtual

German Society for Medical Physics Annual Meeting (invited)
09/2020, virtual

Bildverarbeitung für die Medizin (oral)
03/2020, virtual

EMBL Deep Learning Course (invited)
01/2020, Heidelberg, Germany

BioRN Conference (oral)
11/2019, Heidelberg, Germany

MICCAI (poster)
10/2019, Shenzhen, China

German Society for Medical Physics Annual Meeting (invited)
09/2019, Stuttgart, Germany

German Society for Medical Physics Working Group (invited)
05/2019, Aachen, Germany

BVM Advanced Deep Learning Tutorial (invited)
03/2018, Erlangen, Germany

Bildverarbeitung für die Medizin (oral)
03/2018, Erlangen, Germany

Bildverarbeitung für die Medizin (poster)
03/2017, Heidelberg, Germany

SPIE Medical Imaging (oral)
02/2017, Orlando, FL, USA

Interdisciplinary Center for Neurosciences (invited)
11/2016, Heidelberg, Germany

MICCAI IMIC Workshop (oral)
10/2016, Athens, Greece

Heidelberg Collaboratory for Image Processing (invited)
07/2016, Heidelberg, Germany

PRIZES & AWARDS

11/2019 **Bench to Bedside Award (2nd place)**
BioRN Conference, Heidelberg, Germany
Presentation "DIY Research to Routine: Translation of Deep Learning into Radiological Practice using only Open Source Software"

10/2018 **Winner Medical Segmentation Decathlon**
MICCAI Conference, Shenzhen, China
Contributed evaluation framework and baseline method

06/2018 **EXIST Startup Grant**
German Ministry of Economic Affairs & Energy
Awarded ca. €1M funding for spin-off startup using AR for improved training and communication in minimally invasive surgery

10/2017 **Winner Swiss Legal Tech Hackathon**
Zurich, Switzerland
Developed a mobile app prototype for inheritance distribution

05/2016 **Winner Life Science meets IT Hackathon**
Heidelberg, Germany
Built a prototype for augmented reality assistance in minimally invasive surgery; won both "Best Business Case" and audience award; subsequently secured ~ €1M funding for spin-off

09/2011 **ERASMUS Exchange Scholarship**
European Union
Scholarship to study abroad at Universidad Autónoma de Madrid, Spain

SELECTED PUBLICATIONS

J. Petersen, et al., "Continuous-Time Deep Glioma Growth Models"
MICCAI 2021, accepted

J. Petersen, G. Köhler, D.Zimmerer, F. Isensee, P. F. Jäger, K. H. Maier-Hein, "GP-ConvCNP: Better Generalization for Conditional Convolutional Neural Processes on Time Series Data"
Uncertainty in Artificial Intelligence (UAI) 2021, accepted

F. Isensee, P. F. Jäger, S. A. A. Kohl, **J. Petersen**, K. H. Maier-Hein, "nnU-Net: A Self-configuring Method for Deep Learning-based Biomedical Image Segmentation"
Nature Methods 2020

J. Petersen, et al., "Deep Probabilistic Modeling of Glioma Growth"
MICCAI 2019

D. Zimmerer, S. A. A. Kohl, **J. Petersen**, F. Isensee, K. H. Maier-Hein, "Context-encoding Variational Autoencoder for Unsupervised Anomaly Detection"
MIDL 2019

J. Petersen, et al., "Leveraging Open Source Software to Close Translational Gaps in Medical Image Computing"
Bildverarbeitung für die Medizin 2018

D. Zimmerer, **J. Petersen**, S. A. A. Kohl, K. H. Maier-Hein, "A Case for the Score: Identifying Image Anomalies using Variational Autoencoder Gradients"
NeurIPS Medical Imaging Workshop 2018

J. Petersen, M. Bendszus, J. Debus, S. Heiland, K. H. Maier-Hein, "Effective User Interaction in Online Interactive Semantic Segmentation of Glioblastoma Magnetic Resonance Imaging"
Journal of Medical Imaging 2017

J. Petersen, M. Bendszus, J. Debus, S. Heiland, K. H. Maier-Hein, "Effective User Guidance in Online Interactive Semantic Segmentation"
SPIE Medical Imaging 2017

J. Kleesiek, **J. Petersen,** et al., "Virtual Raters for Reproducible and Objective Assessments in Radiology"
Nature Scientific Reports 2016