

6th CONFERENCE ON IMAGE-GUIDED INTERVENTIONS

October 19-20, 2023

CUBEX ONE | Franz-Volhard-Str. 5 | 68167 Mannheim

Cutting Edge: Image-Guided Interventions and
Data Analytics



PANEL DISCUSSION: AI USE IN MEDICINE
LUNCH TALK: KEY UPDATES IN MDR

medical image analysis & computer-aided diagnosis
+++ data analytics & radiomics +++ applications of
photon counting CT +++ new developments in image-
guided interventions +++ VR & AR in medical imaging

PROGRAM

Version 12/10/2023

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technology to
STIMULATE
medicine

RESEARCH
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Day 1

19th OCTOBER 2023

8:00 Registration

9:30 Welcome and opening

Plenary talk

9:45 Pioneering new approaches in IR. Robert Krieg

10:20 Coffee break

Session: Medical image analysis and computer-aided diagnosis

Chair: Georg Hille, Sebastian Schäfer

10:40 Robust Deep Learning for Computer-Assisted Spinal Surgery. Lisa Kausch

Contributions

11:00 Tracking Algorithm for the Robotic System μ RIGS in Interventional MRI. Gina Thieße

11:10 Lightweight Visual Transformers Outperform Convolutional Neural Networks for Gram-Stained Image Classification: An Empirical Study. Hee Kim

11:20 Image-based multimodal hemodynamic investigation of patient-specific intracranial arteriovenous malformations. Janneck Stahl

11:30 A multistage registration of CT and biopsy CT images of lung tumors. Anika Strittmatter

11:40 Comparison of Deconvolution and Maximum Slope Method in Dynamic CBCT Liver Perfusion Imaging for Evaluation of Performed Embolization. Hana Haseljic

11:50 Detection of Needle Instruments in Flat Panel CT using Support Vector Machines and Hu Moments. Julius W. Kley

12:00 Pitch-poster presentations

12:20 Lunch, poster session & industry exhibition

Panel discussion: AI use in Medicine

13:30 Sylvia Saalfeld, Daniel Dux, Frank Giordano, Katharina Breininger

15:00 Coffee break

Session: Data analytics and radiomics

Chair: Matthias Frölich, Ivo Wolf

15:30 Grading and Response in Sarcomas: Opportunities for Data Analytics & Image-Guided Interventions. Wolfgang Kunz

15:50 From Pixels to Insights: The Synergy of Photon Counting CT and AI for Personalized Treatment in Oncology. Matthias Frölich

Contributions

16:10 Addressing Electromagnetic Interference during MR-guided Ablations. Simon Schröer

16:20 Radiomics enhanced targeted Biopsy in lung cancer. Alexander Hertel

16:30 Preliminary results on performance boost in model-based iterative dual-energy CBCT reconstruction via non-uniform relaxation. Richard Bismark

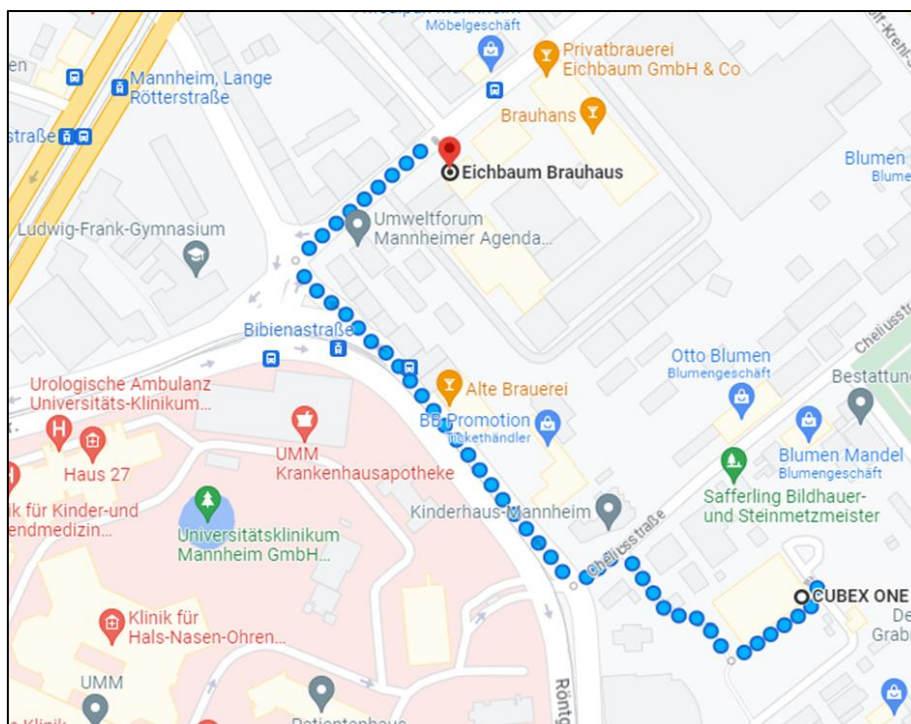
Evening event

19:00 Restaurant Eichbaum Brauhaus
Käfertaler Str. 168, 68167 Mannheim



Getting there from CUBEX ONE:

From CUBEX ONE, please walk onto the main street "Röntgenstraße" and turn right. After 300 m turn into the first street on the right "Käfertaler Straße". The Eichbaum Brauhaus is located on the right side.



Day 2

20th OCTOBER 2023

8:00 Registration

Session: Applications of Photon Counting CT

Chair: Isabelle Ayx, Oliver Großer

9:00 **Photon-counting CT: Technical fundamentals and clinical potential.**
Stefan Ulzheimer

9:20 **Special Aspects of Photon-counting CT.** Marc Kachelrieß

Contributions

9:40 **Performance Evaluation of Image Segmentation Algorithms on Photon Counting CT Scanner Images.** Abhinay Krishna Vellala

9:50 **Spectral Reconstructions in Photon Counting Computed Tomography: A Promising Approach to Diminish Beam-Hardening Artifacts in Chest Imaging.** Florian Haag

10:00 **Multiple Contrast Agents in Photon-Counting CT: Single or Multiple Scans?**
Marc Kachelrieß

10:10 **Dose Reduction in Photon-Counting CT via the Small Pixel Effect.** Stefan Sawall

10:20 Coffee break

Session: New developments in image-guided Interventions (MRI, CT, angiography, and robotics)

Chair: Thomas Gerlach, Johann Rink

10:50 **AI-assisted scenario tracing and radiation dose prediction in the interventional suite.** Johann Rink

11:10 **MR-guided thermoablation in clinical routine.** Rüdiger Hoffmann

Contributions

11:30 **Towards automatically suggested head positions to optimize biplane C-arm projections for intracranial aneurysm treatment.** Roland Schwab

11:40 **MetaGate Wireless Resonator for MR-guided Percutaneous Interventions.**
Robert Kowal

11:50 **Automated registration for interventional robotic systems.** Javier Hernán Moviglia

12:00 **Curvature adapted Wireless Metasurface Resonators for MR-guided Interventions.**
Lucas Knull

12:10 **MR-Thermometry on Moving Organs by a Reproducible Respiration Simulation.**
Othmar A. Belker

12:20 **Analytical estimation of artifact radius for an MR-compatible aspiration biopsy needle.** Jonas Frederik Faust

12:30 **Treatment planning for transrectal robotic seed brachytherapy.** Philipp Aumüller

12:40 **3D Bio-Phantom for Evaluating Irreversible Electroporation (IRE) on Tumor Cells in Imaged Guided Interventions.** Noah Müller

12:50 **Pitch-poster presentations**

13:10 **Lunch, poster session & industry exhibition**

13:30 **Realizing Innovation in Medical Devices: An introduction to the MDR.**
Thorsten Stumpf

Session: Virtual and augmented reality in medical imaging

Chair: Florian Heinrich, Armin Schäfer

14:30 **Meaningful AR/XR through AI perception.** Jason Rambach

Contributions

14:50 **First German experience using augmented reality for neuroanatomy education in undergraduate medical students: a feasibility and questionnaire-based study.**
Thomas Kinfe

15:00 **Towards Liver Detection in Laparoscopic Images using U-Net Training and Verification.** Joshua Sleeman

15:10 Closing remarks

15:20 Coffee and departure

The IGIC 2023 is supported by

MANNHEIM²
Medical Technology Cluster



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Local Organizers:

M²OLIE Research Campus Administration Office

Prof. Dr. Patrick Maier, Dr. Simone Eichner, M.A. Laura Winter



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