MEDICAL IMAGING SYMPOSIUM FOR PHDS AND POSTDOCS

MISP^2 2025

schedule
keynote speakers
oral presentations
poster presentations

15 January 2025 | University of Twente | TechMed Centre, Hallenweg 5, 7522 NH Enschede

SCHEDULE

9:30 - 10:30	Registration	*Atrium*
10:30 - 11:30	Opening + Session I	*TL1133*
11:30 - 12:30	Academic keynote	*TL1133*
12:30 - 13:45	Lunch (provided) + Networking	*Atrium*
13:45 - 14:30	Industrial keynote	*TL1133*
14:30 - 15:30	Session II	*TL1133*
15:30 - 16:00	Coffee break	*Atrium*
16:00 - 17:00	Poster session	*Atrium*
17:00 - 17:30	Closing + ✨Awards✨	*Atrium*
17:30 - 18:30	Drinks + Networking	*Technobar*

KEYNOTE SPEAKERS

Ivo Vellekoop | University of Twente

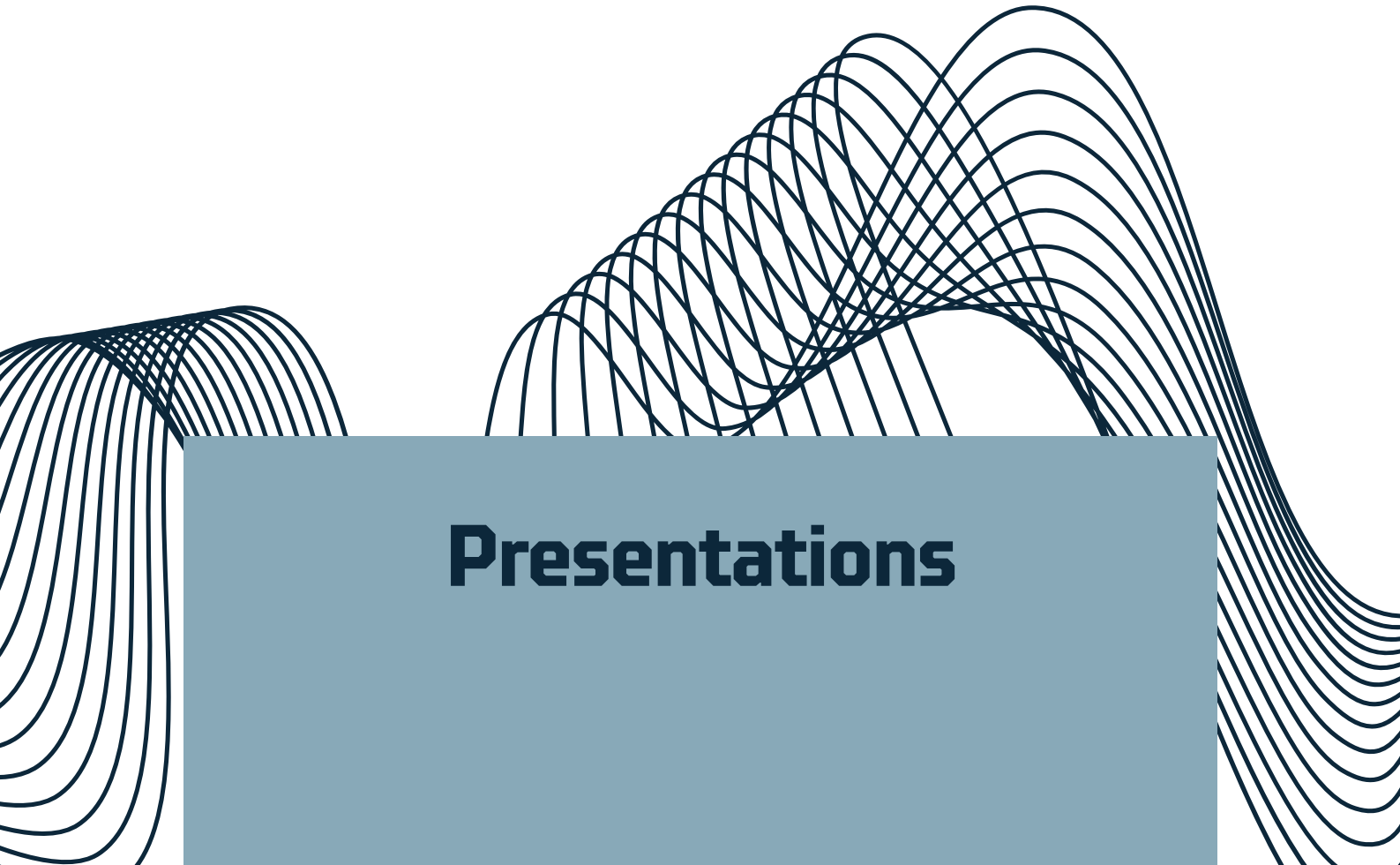
Model-based Wavefront Shaping Microscopy

Prof. dr. ir. Ivo Vellekoop's research focuses on developing microscopy techniques that can image cells deep within biological tissue. Unlike traditional microscopes, these techniques can focus light through non-transparent materials. His work combines physics, optics, information theory, quantum mechanics, mathematics, and engineering, and involves close collaboration with life scientists to optimize microscope performance.

Marijn Stollenga | ImFusion

Research @ ImFusion: From Ideas to Real Applications

Dr. Marijn Stollenga graduated in Artificial Intelligence at the University of Groningen and pursued his PhD on Humanoid Perception and Control at the Swiss AI Lab IDSIA in the group of Prof. Jürgen Schmidhuber. He authored several papers in conferences like NeurIPS, IROS and MICCAI, applying deep learning in varying domains, ranging from automatic medical segmentation to robotic control. Marijn joined ImFusion in 2018 where he applies ML algorithms to medical challenges, with a focus on Spinal applications.



Presentations

SESSION I

10:30 – 11:30

1. Artificial Intelligence based detection of electrosurgical device induced bleedings in laparoscopic videos
V.J. Ribbens, S.C. Baltus, C.O. Tan, I.A.M.J. Broeders
Meander Medical Centre

2. **Detecting dopaminergic degeneration in clinically uncertain parkinsonian syndrome patients using fast MR-STAT relaxometry**
M.B. Schilder, E.D. Wallert, S. Mandija, O. van der Heide, H. Liu, M. Fuderer, J. Booij, R.M.A. de Bie, M. Beudel, H.W. Berendse , T. van Mierlo, J. Blankevoort, C.A.T. van den Berg, E.M. van der Giessen, A. Sbrizzi
UMC Utrecht, Amsterdam UMC, Spaarne Gasthuis, Flevoziekenhuis

3. **AI-accelerated prediction of optimal implant alignment in total knee arthroplasty**
L.R. Ten Klooster, P. Tzanetis, J.M. Wolterink, M. Verdonschot
University of Twente

4. Trying to see the reason: correlation between vision improvement and DTI measurements of optical tracts
A. Zhylka, C. Ramschütz, L. Grundl, J. S. Kirschke, C. Zimmer, M. T. Berndt-Mück, B. Meyer, V. M. Butenschoen, N. Sollmann
UMC Utrecht, TUM University Hospital

5. Bilateral breast gradient insert prototype for strong diffusion encoding
G.C. Arends, E. Versteeg, D.J.W. Klomp, F. Jia, M. Zaitsev, S. Littin, C.M.W. Tax
UMC Utrecht

SESSION II

14:30 – 15:30

1. Towards AI algorithms for kidney cancer diagnosis on computed tomography scans
S. de Boer
Radboud UMC

2. Estimating Quantitative MRI Parameters from Diverse Acquisition Protocols using Neural Controlled Differential Equations
D. Kuppens, S. Barbieri, M. Wennen, O.J. Gurney-Champion
Amsterdam UMC, Erasmus Medical Center, Cancer Center Amsterdam

3. Phantom Studies for Photoacoustic Imaging for Thyroid Nodule Diagnosis
N. S. Lubbers, J. Veltman, S. Manohar
University of Twente, Ziekenhuisgroep Twente

4. Manual vs. AI-Assisted: Interactive Refinement of Automated Tumor Contours on head-and-neck CT/PET scans
P. Mody
Leiden UMC, TU Delft

5. World of Forms: Deformable Geometric Templates for One-Shot Surface Meshing in Coronary CT Angiograph
R.L.M. Van Herten
Amsterdam UMC

POSTERS

16:00 – 17:00

1. Robust detection and quantification of beating cells in microscopic 2D videos of cardiomyocites
A. Dönmez, O. Nosov, S. Galanjuk, J. Tigges, E. Zühr, A. Mosig, E. Fritsche, K. Koch
Leibniz Research Institute for Environmental Medicine (IUF)

2. 5DoF pose estimation of Intracardiac Echocardiography in 2D X-Ray images during tricuspid valve repair
A. Severens, M. Meijs, V.P. Raikar, R. Lopata
Eindhoven University of Technology

3. A new standard for creating and unifying large-scale diagnostic imaging datasets
B. Klaudel
Polish-Japanese Academy of Information Technology

4. Scientific explanations for deep learning models in computational pathology
Y. Schirris
The Netherlands Cancer Institute

5. Zero-shot capability of 2D SAM-family models for bone segmentation in CT scans
C. Magg, H. Kervadec, C.I. Sanchez
Amsterdam UMC & UvA

6. An Extended Reality Interface for Interventional MRI
E. Ilia, I. Kramers, R. Damgrave, W. Brink
University of Twente

7. Multi-modal Imaging of Stentgraft Deformation and Blood Flow in Aortic Aneurysm Phantoms
M.E. Krommendijk, H. Mirgolbabaee, E. Hestermann, P.T.Rygiel, D. Alblas, J.M. Wolterink, E. Groot Jebbink, M.M.P.J. Reijnen, R.H. Geelkerken
University of Twente

8. Single EHT cell segmentation with 2D U-Net and Focal loss
M. Szymkowski
Bialystok University of Technology

9. Dynamic FDG PET/CT in Fracture-Related Infections: Differentiating Infection from Sterile Inflammation
N.D. van Rijsewijk, F.F.A. IJpma, M. Wouthuyzen-Bakker, R.H.J.A. Slart, J.H. van Snick, J. van Sluis, A.W.J.M Glaudemans
UMCG

10. Data-tailored fiber optics shape sensing
R. Pavelkin, L A. Zavala-Mondragon, A. Ekin, F. van der Sommen
Eindhoven University of Technology

11. Leveraging Network Uncertainty to Identify Regions in Rectal Cancer CTV Auto-segmentations Likely Requiring Manual Edits
F. C. Maruccio, R. Simões, J.E. van Aalst, C.L. Brouwer, J.J. Sonke, P. van Ooijen, T.M. Janssen
NKI

12. A protocol for free breathing 3D-CINE MRI with black blood contrast and fat suppression
W. Stehling, O. Gurney-Champion, K.K. Yeung, A. Nederveen, P. van Ooij, E. Schrauben
Amsterdam UMC

13. MR-based real-time bowel tracking for radiotherapy
S.L.C. Damen, A.L.H.M.W. van Lier, C. Zachiu, and B.W. Raaymakers
UMC Utrecht

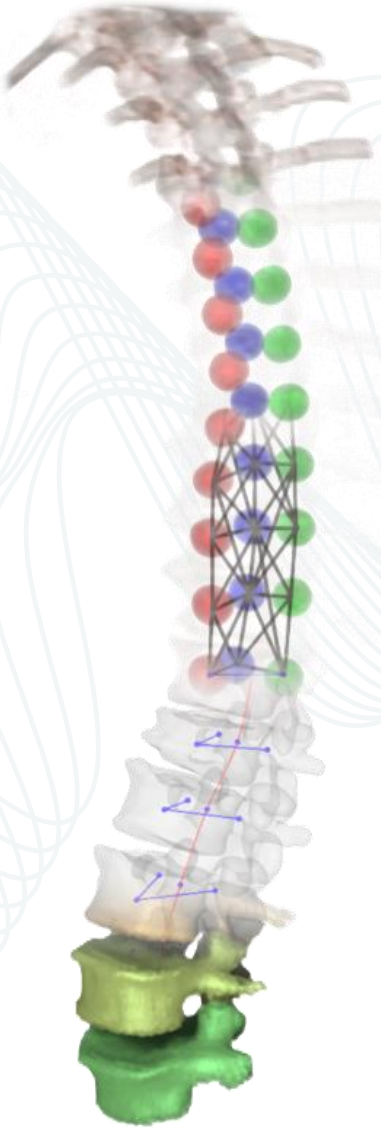
Sponsors

ImFusion - Enabling rapid innovation in medical imaging

ImFusion GmbH, based in Munich, Germany, specializes in developing advanced software solutions for medical imaging, computer vision and robotics. With a focus on innovation and versatility, the company provides tools that support researchers and clinicians in addressing challenges in medical imaging and therapy.

The **ImFusion Suite** is a comprehensive software framework designed for medical image visualization, segmentation, and multimodal image fusion. Widely used in research settings, it enables users to process complex imaging data and create custom workflows. Its compatibility with multiple imaging modalities, such as ultrasound, MRI, and CT, allows researchers to explore a variety of applications in medical imaging. ImFusion Suite offers a modular architecture that can be enhanced with specialized plugins for Deep Learning, 3D Live Ultrasound, Computer Vision, interventional X-ray and CT, Robotics, as well as anatomy-focused modules.

ImFusion Labels, the company's advanced annotation tool, provides a dedicated environment for creating and refining training datasets for machine learning. It supports smart algorithms for annotating images, volumes, and sequences, as well as fast multi-label segmentation and post-processing tools to optimize workflows. Users can import and refine existing annotations or write their own interactive algorithms in C++ or Python. Customization is also a key strength, allowing users to extend functionalities with specialized functionalities.



For those developing custom solutions, the ImFusion SDK offers a powerful development environment for creating tailored imaging and AI-driven tools. With features like real-time processing, machine learning integration, and support for robotic and surgical systems, it provides researchers with the flexibility to innovate and adapt to specific project needs.

ImFusion collaborates with academic institutions, research organizations, and hospitals worldwide. This collaborative approach offers opportunities for researchers, including PhD candidates, to work on interdisciplinary projects. These partnerships provide access to technical expertise, robust software infrastructure, and a network of professionals working on cutting-edge medical technologies.

ImFusion's tools and resources are designed to support impactful research and innovation in healthcare, providing a robust foundation of high-end capabilities to drive innovation and exploration.

4TU.Health is a collaboration of the four Dutch Universities of Technology. The 4TU.Health Centre contributes to connecting health-related research, innovation and education at the 4TU's, with needs in clinical practice. In addition to mutual collaboration, the technical universities work intensively with clinical partners and industry, to accelerate the valorisation and implementation of innovations in the healthcare sector and contribute to the transformation of healthcare. Read more about 4TU.Health Centre.

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For 75 years, the University Fund has supported innovative projects in research and education for which there would otherwise be no financial scope. This is made possible thanks to the contributions of alumni of the University of Twente and other stakeholders. Together we make the difference. Read more about the University Fund.