# AI HORIZONS 2025

International Conference of Artificial Intelligence and Emerging Technologies


**3 and 4 November 2025**

**Pommersches Landesmuseum and Alfried Krupp Wissenschaftskolleg Greifswald**

Organized by

**Zentrum für Forschungsförderung und Transfer (ZFF) Greifswald**

in cooperation with

**Greifswald University Club (GUC)**

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# AI HORIZONS 2025

## Welcome

### Artificial intelligence is already shaping the future – in Greifswald, we are exploring what lies ahead.

With the double conference AI HORIZONS, Greifswald presents itself as a center of research and expertise in artificial intelligence in the life sciences and medicine.

The focus lies on research findings, application examples, and future perspectives for the use of AI, presented by the Greifswald AI for Life network together with its regional and international partners.

Day 1 – the AI for Life Day highlights the broad range of expertise within the AI for Life network, with a particular emphasis on the successful translation from science into practice.

Day 2 – the Health.AI Day is dedicated to the application of AI solutions for improving cross-border medical healthcare in the Euroregion Pomerania.

## Scientific Committee

### Prof. Dr. Dr. h.c. Uwe T. Bornscheuer

Institute of Biochemistry
Head of Department of Biotechnology & Enzyme Catalysis
University of Greifswald

### PD Dr. Katharina Hoff

Statistics and Data Science
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### Prof. Dr. Lars Kaderali

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Institute of Pharmacy
Department of Biopharmaceutics and Pharmaceutical Technology
University of Greifswald

### Prof. Dr. med. Mark Oliver Wielpütz MHBA

Diagnostic Radiology and Neuroradiology
Greifswald University Medicine

### Prof. Dr.-Ing. Kristina Yordanova

Data Science
University of Greifswald

## AI for Life Network

Greifswald is a centre of science with a strong focus on researching life in its many forms. Life science research here ranges from medicine, microbiology, pharmacy and biochemistry to ecology and agricultural research. What these fields of research have in common is the generation of large, complex data sets, the integrated evaluation of which is enriched in many ways by artificial intelligence algorithms. The AI for Life network is an initiative of the Greifswald University Club and provides structured access to this research, connects the players and strengthens the dynamic as a platform for cooperation, information and communication.  With the AI HORIZONS conference, the network is expanding its activities across the entire Pomerania Euroregion by joining forces with the partners Interreg project HEALTH.AI Pomerania to achieve this.

## Interreg Project HEALTH.AI Pomerania

The project HEALTH.AI Pomerania aims to establish artificial intelligence in the Pomerania Euroregion as a forward-looking tool for improving healthcare. To this end, medical project partners from Eberswalde, Greifswald and Szczecin on both sides of the German-Polish border are testing AI solutions in practice. Their experiences are being used to develop guidelines for the use of AI that can be used by other clinics and medical institutions. The University of Greifswald is leading the project and is also responsible for providing scientific expertise in assessing the legal and health economic framework conditions for the use of AI in everyday medical practice. Project partners are West Pomeranian Oncology Centre Szczecin and GLG Werner Forßmann Hospital Eberswalde. The associated partner is University Medicine Greifswald. HEALTH.AI Pomerania is co-financed by funds from the European Union (European Regional Development Fund) under the funding programme Interreg VIA Mecklenburg-Western Pomerania / Brandenburg / Poland.

# Programme

## Day 1: AI for Life. The Future of Life Sciences and Medicine

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| **10.00 – 10.15** | **Welcome AI HORIZONS 2025, Day 1**<br>Prof. Dr. Lars Kaderali, Prof Werner Weitschies, Dr. Friedrich Hagemeyer |
| **10.15 – 11.30** | **AI in Life Sciences** \| Chair: Bornscheuer&Hoff<br>• **In silico Enzyme Design** Prof. Dr. Dr. h. c. Uwe Bornscheuer<br>• **Modern Enzyme Based Therapeutics** – Dr. Ingmar Schuster (CEO Provolut)<br>• **AI for Genome Analysis** PD Dr. Katharina Hoff & Prof. Dr. Mario Stanke<br>• **AI in Farming** Prof. Dr.-Ing. Mark Vehse |
| **11.30 – 11.45** | **Coffee** |
| **11.45 – 12.45** | **AI in Assistance** \| Chair: Yordanova&Thomas<br>• **Large Language Models in Healthcare** Prof. Dr.-Ing. Kristina Yordanova<br>• **Intelligent Monitoring and Assistance Systems** Prof. Dr.-Ing. Thomas Kirste<br>• **Sensor-based Patient Monitoring** Tobias Gebhardt (CEO Hypros)<br>• **Allegro AI Diagnostic & Therapeutics Deutschland** Daniel Schönfelder |
| **12.45 - 13.30** | **Lunch** |
| **13.30 – 15.45** | **AI in Medicine: Imaging** \| Chair: Schnell & Wielpütz<br>• **AI in MRI** Prof. Dr. Susanne Schnell<br>• **Digital Image Analysis and Modeling** Prof. Dr.-Ing. Anja Hennemuth<br>• **AI Transforming Cardiac MRI Scanning and Analysis** Dr. Teodora Chitiboi (Siemens Healthineers Deutschland)<br>• **Skin cancer screening with AI** Dr. med. Andreas Arnold<br>• **Ophthalmology** Prof. Dr. med. Andreas Stahl |
| **15.45 – 16.15** | **Coffee** |

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| **16.15 – 17.15** | **AI in Medicine: Robotics & Surgery** \| Chair: Wielpütz & Schnell<br>• **AI and Robotics in the Operating Room** Univ.-Prof. Dr. med. Stephan Kersting<br>• **AI for Medical Imaging -** Prof. Dr. Hristina Uzunova |
| **17.15 – 18.00** | **Panel Discussion "When algorithms decide on health matters – who can we trust?"** \| Moderation: Dr. Stefan Seiberling<br>• **Univ.-Prof. Dr. phil. habil. Giovanni Rubeis** (Medical Ethics and History)<br>• **PD Dr. Katharina Hoff** (Bioinformatics, Greifswald University)<br>• **Prof. Dr. Lars Kaderali** (Bioinformatics, University Medicine Greifswald)<br>• **Tobias Gebhardt** (CEO Hypros)<br>• **Daniel Schönfelder** (BioConValley GmbH,Verbund Gesundheitswirtschaft MV) |
| **18.00 – 18.15** | **Closing Day 1** |

## Day 2: Health.AI Pomerania. AI in Cross-Border Healthcare

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| **9.00 – 9.15** | **Welcome AI HORIZONS 2025, Day 2**<br>Prof. Dr. Werner Weitschies & Zuzanna Papierz |
| **9.15 – 10.15** | **Key Note : "Healing with Data: AI as a System Transformer in Clinics, Research, and Hospital Operations"** Prof. Dr. med. Alexander Meyer, Head of Clinical Intelligence Charité Berlin |
| **10.15 – 10.45** | **Coffee & Networking** |
| **10.45 – 12.45** | **Added Value of AI in Healthcare**<br>• **AI-based 3D body composition analysis** Dr. med. Verena Wagner<br>• **AI-derived imaging features in CT-guided Lung Biopsy** Christian Roller<br>• **Real-time Magnetic Resonance Imaging and AI** Dipl. Pharm. Lydia Neubauer<br>• **Artificial Intelligence in Radiology** Dr. med. Bartłomiej Masojć<br>• **AI solutions in Diagnosing Breast and Prostate Cancer** lek. Szymon Śmietana<br>• Cross-Border Cooperations in Healthcare: **CAIDX** Dr. Martin Dyrba |

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| **12.45 - 13.30** | **Lunch** |
| **13.30 – 14.45** | **Legal Aspects and Economics of AI in Cross-Border Healthcare**<br>• **Symbolic AI Methods for Legal Reasoning** Prof. Alexander Steen<br>• **AI Act Implementation** Dr. Britta Rosenberg<br>• **Data Protection and AI Tools** Magdalena Krzak |
| **14.45 – 15.10** | **Coffee & Networking** |
| **15.10 – 16.00** | **Legal Aspects and Economics of AI in Cross-Border Healthcare**<br>• **Economic Evaluation of Process Innovation** Dr. Markus Krohn<br>• Cross-Border Cooperations in Healthcare: **TEMICARE 2.0 – Challenges –** Tabea Troschke & Michał Abkowicz |
| **16.00-16.15** | **Closing Day 2** |

# Day 1 AI for Life — The Future of Life Sciences and Medicine

3 November 2025 — Pommersches Landesmuseum Greifswald

# AI in Life Sciences

## Designing Enzymes *in silico* and Through Machine Learning Tools


### Uwe T. Bornscheuer

Institute of Biochemistry, Dept. of Biotechnology & Enzyme Catalysis, Greifswald University,

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This lecture will cover achievements in the protein engineering of enzymes using bioinformatic tools ranging from in silico design to recent examples where methods of machine learning were used to improve biocatalysts [1]. This will include structure prediction tools like AlphaFold as well as computational protein design using Rosetta and more recently developed tools [2]. Further examples will cover the machine-learning guided improvement of transaminases the asymmetric synthesis of chiral amines to make building blocks for pharmaceuticals [3].


References

[1] Buller, R. et al., Science, 382, eadh8615 (2023); Yi., D. et al., Chem. Soc. Rev., 50, 8003-8049 (2021); Wu, S. et al. Angew. Chem. Int. Ed., 60, 88-119 (2021); Badenhorst C.P.S., Bornscheuer, U.T., Trends Biochem. Sci., (2018), 43, 180-198; Bornscheuer, U.T. et al., Nature, 485, 185-194 (2012).

[2] Buller, R., Damborsky, Hilvert, D. Bornscheuer, U.T., Angew. Chem. Int. Ed., 64, e202421686 (2025).

[3] Weigmann, K.F.G., Heijl, S., Vroling, B., Michels, N., Menke, M.J., Doerr, M., Schulig, L., Joosten, H.J., Bornscheuer, U.T., ACS Catal., accepted; Menke, M.J., Ao, Y.F., Bornscheuer, U.T., ACS Catal., 14, 6462-6469 (2024); Pavlidis, I. et al., Nature Chem., 8, 1076-1082 (2016).


## Modern enzyme based therapeutics


### Ingmar Schuster (CEO Provolut)

CEO Provulut

Contact: info@provolut.bio

Classically used mostly in Enzyme Replacement Therapy, there are new and exciting uses of enzymes in therapy. The talk will touch on a new generation of enzymes for gene therapy as well as prodrug activation.

Website: www.provolut.bio

## Custom Machine-Learning Models for Genomes and Evolution


### Katharina Hoff and Mario Stanke

Bioinformatics, Department of Mathematics and Computer Science, Greifswald University

Contact: mario.stanke@uni-greifswald.de


Biological sequences such as genomes and proteins can be thought of as texts written in a language that was not invented by humans. While methods from so-called natural language processing have brought powerful new tools to biology, the most accurate approaches often are tailored to the specific rules of life's code. In this talk, we will present machine-learning methods to uncover the locations of genes and their exon–intron structures in genomes, and to reconstruct where insertions and deletions have occurred during evolution, as well as distinguishing the underlying mutational processes that shape genetic variation.

## AI in Farming


### Mark Vehse

Engineering Design, University of Applied Sciences Stralsund

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Agricultural technology and processes are highly technical. In addition, extensive data is collected in agriculture. This makes it an ideal field for the application of artificial intelligence, for example to increase efficiency, improve animal welfare, contribute to environmental protection, or simply stabilize the food supply. And all this must be achieved within the constraints of regulations, political and economic constraints, and a growing world population. The presentation will highlight a few examples from Mecklenburg-Western Pomerania, where AI is being used to conduct research on agricultural topics.

# AI in Assistance

## Leveraging Large Language Models for Healthcare: Methods, Applications and Challenges


### Kristina Yordanova

Institut of Data Science, Greifswald University

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The advance of deep learning models and especially large language models (LLMs) in the last few years has reshaped the landscape of nearly all research fields. In this talk we look at large language models and their applications in healthcare. We discuss the methodological advances of LLMs such as prompt engineering, retrieval augmented generation (RAG) and GraphRAG approaches and their practical application on selected examples from the fields of medicine, gerontology, and nursing. Finally, we look at the challenges that LLMs pose and some potential mitigations that increase the reliability and validity of the models.

## Intelligent Monitoring and Assistance in Health Care


### Thomas Kirste

Chair for Hybrid Methods in Artificial Intelligence and Machine Learning, Institute for Visual and Analytic Computing, University of Rostock

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Human behavior creates complex dynamic systems that are fundamentally hard to track. Making sense of ambiguous and noisy sensor data thus becomes a core challenge in providing reliable intelligent assistance and monitoring for health care applications in Smart Home and Smart Hospital environments. We discuss the underlying causes for this complexity and we look at recent approaches using hybrid AI methods that aim to solve this, combining symbolic, probabilistic, and neural reasoning. Finally, we show how these hybrid AI methods can be translated to further important application areas in Life Science and Medicine, broadening their impact.

## Senior-based Patient Monitoring

### Tobias Gebhardt

CEO Hypros GmbH

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Demographic change poses significant challenges to healthcare systems. In the future, fewer staff will have to care for an increasing number of patients, creating risks for patient safety. Supportive technologies are therefore essential. Hypros has developed a sensor-based patient monitoring solution that continuously observes events around the patient's bed and analyzes potential risk situations. These include incidents such as a patient falling out of bed or environmental disturbances affecting the sleep–wake cycle, which may lead to delirium. Artificial intelligence is used to analyze diverse sensor data and identify these critical situations.

Website: www.hypros.de

## allergoGPT & allergoSMARTDoc – The next generation of AI assistance in allergology

### Daniel Schönfelder

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Allergology care in Germany faces considerable challenges: high prevalence rates, a shortage of specialists, and short consultation times prevent accurate diagnosis and personalized therapy. AllergoGPT addresses these shortcomings with a novel AI-supported assistance system that uses a federal knowledge graph architecture to efficiently link complex medical data sources and provide evidence-based recommendations. The system will integrate five semantically linked graph databases: a comprehensive allergen ontology, a therapy graph with standardized and individualized immunotherapy preparations, a symptom network with ICD-10-coded manifestations, a literature corpus with publications from the last 10–20 years, and a longitudinal patient database with digital allergy twins. Advanced AI agents and team agents orchestrate multi-graph query processing, link the data deterministically, and deliver auditable, source-based therapy recommendations.

**Website**: www.allergosmart.care/allergosmart-projekt2

Website: www.myallegro.care

# AI in Medicine: Imaging

## AI in MRI: Hemodynamic Assessment in patients and healthy controls using enhanced 4D Flow MRI and automated image analysis

Susanne Schnell

Institute of Physics, Dept. of Medical Physics, Greifwald University
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This lecture will explain how hemodynamics in the healthy human body as well as in patients with vascular disease can be measured with MRI [1]. We will learn how to overcome constraints of lengthy scan time, low spatial resolution [2, 3, 4], and cumbersome manual image analysis [5, 6] by employing machine learning methods.

*References*

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[2] El Ahmar A, Schnell S, Ansari SA, Abdalla RN, Vali A, Aristova M, Markl M, Winter P, Marlevi D. Non-invasive quantification of pressure drops in stenotic intracranial vessels: using deep learning-enhanced 4D flow MRI to characterize the regional haemodynamics of the pulsing brain. Interface Focus. 2025 Apr 4;15(1):20240040. doi: 10.1098/rsfs.2024.0040.

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[4] Ericsson L, Hjalmarsson A, Akbar MU, Ferdian E, Bonini M, Hardy B, Schollenberger J, Aristova M, Winter P, Burris N, Fyrdahl A, Sigfridsson A, Schnell S, Figueroa CA, Nordsletten D, Young AA, Marlevi D. Generalized Super-Resolution 4D Flow MRI - Using Ensemble Learning to Extend Across the Cardiovascular System. IEEE J Biomed Health Inform. 2024 Dec;28(12):7239-7250. doi: 10.1109/JBHI.2024.3429291.

[5] Bisbal J, Winter P, Jofree S, Ponced A, Welin Odeback O, Uribe S, Tejosb C, Sotelo J, Schnell S, and Marlevi D. Automated Labeling of Intracranial Arteries with Uncertainty Quantification Using Deep Learning, 2025 *manuscript in preperation*

[6] Winter P, Berhane H, Moore JE, Aristova M, Reichl T, Wollenberg J, Richter A, Jarvis KB, Patel A, Caprio FZ, Abdalla RN, Ansari SA, Markl M, Schnell S. Automated intracranial vessel segmentation of 4D flow MRI data in patients with atherosclerotic stenosis using a convolutional neural network. Front Radiol. 2024 Jun 4;4:1385424. doi: 10.3389/fradi.2024.1385424.

# Combining Modeling,Simulation and AI for Sparse Data Learning


## Anja Hennemuth

Institute for Computer-Assisted Cardiovascular Medicine, Charité University Medicine Berlin
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This talk will present concepts for the integration of knowledge about anatomical structures, imaging physics or spatiotemporal relations into AI models [1-4] Exemplary approaches include geometrical reconstruction and deep learning methods [5] as well as training with uncertain labels [3] and the generation of synthetic training data[6,7].


References

[1] J. Brosig et al., "Learning three-dimensional aortic root assessment based on sparse annotations," J Med Imaging (Bellingham), vol. 11, no. 4, p. 044504, Jul 2024, doi: 10.1117/1.JMI.11.4.044504.

[2] M. Ivantsits et al., "MV-GNN: Generation of continuous geometric representations of mitral valve motion from 3D+t echocardiography," Comput Biol Med, vol. 182, p. 109154, Nov 2024, doi: 10.1016/j.compbiomed.2024.109154.

[3] H. Rahlfs, M. Hullebrand, S. Schmitter, C. Strecker, A. Harloff, and A. Hennemuth, "Learning carotid vessel wall segmentation in black-blood MRI using sparsely sampled cross-sections from 3D data," J Med Imaging (Bellingham), vol. 11, no. 4, p. 044503, Jul 2024, doi: 10.1117/1.JMI.11.4.044503.

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[7] H. Bustin et al., "Multifrequency Neural Network-based Wave Inversion in MR Elastography," in Proceedings of Medical Image Computing and Computer Assisted Intervention -- MICCAI 2025, Daejeon, 2025, vol. LNCS 15962: Springer Nature Switzerland, pp. 418 -- 427.


# How AI is Transforming Cardiac MRI Scanning and Analysis


## Teodora Chitiboi

Siemens Healthineers Deutschland
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Cardiac magnetic resonance imaging (CMR) plays a crucial role in cardiovascular diagnostics, but performing these exams is a complex task and requires highly trained technologists. Quantitative analysis is also labor-intensive, often depending on specialized software. By applying artificial intelligence (AI) to automate imaging protocols and workflows, the process becomes more standardized, exam complexity and operator reliance are reduced, and both efficiency and image quality can potentially be improved. AI-driven

quantification algorithms can deliver essential information on cardiac function, strain, and tissue characteristics inline, directly during image acquisition, without the need for manual intervention.

## “Man against machine”- Skin cancer screening with AI

### Andreas Arnold

Clinic and Polyclinic for Dermatology, University Medicine Greifswald
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Due to rising incidence rates for skin cancer, dermatological screening examinations appear to be useful. Artificial intelligence can provide useful support for clinical examinations in dermatology, including performing preliminary assessments of lesions in the absence of specialist expertise, so that patients can be referred to the few available specialists in a more targeted manner. AI can already be used in the examination of numerous lesions or in the assessment of individual findings.

## Ophthalmology

### Andreas Stahl

Clinic for Ophthalmology, Greifswald University Medicine
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This presentation will provide a brief overview of areas where AI is currently under development or is already used in clinical practice in Ophthalmology. Examples include age-related macular degeneration (AMD), the most prevalent blinidng eye diease in developed countries, where AI is being used to classify and quantify disease activity and provide projections about expected disease developments, diabetic retinopathy (DR), where AI is increasingly being used to streamline retinopathy screening programs and last but not least retinopathy of prematurity (ROP), where AI algorithms are being developed to help docotors evaluate disease severity and predict the risk for disease reactivation after treatment.

# AI in Medicine: Robotics & Surgery

## Intelligent Surgery: How AI and Robotics Are Redefining Precision and Decision-Making in the Operating Room

### Stephan Kersting

Clinic for General, Visceral, Thoracic and Vascular Surgery, University Medicine Greifswald
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Artificial intelligence and robotic systems are transforming surgical practice from craftsmanship to data-driven precision. This talk explores how machine learning enhances intraoperative decision-making, enables autonomous assistance, and integrates imaging, navigation, and tele-mentoring into surgical workflows. Drawing on real-world experience, we discuss opportunities and limits of AI-guided robotic surgery, from abdominal and thoracic procedures to future vision-based automation. Beyond technology, ethical, training, and safety aspects are addressed—highlighting how AI can augment, not replace, the surgeon's expertise.

## Explainability and Reliability of AI for Medical Imaging


### Hristina Uzunova

Chair of Artificial Intelligence in Medical Imaging and Surgical Assistance Systems, University Medicine Greifswald
**Contact:** hristina.uzunova@med.uni-greifswald.de


Artificial intelligence (AI) is playing an increasingly important role in robot-assisted interventions, particularly in medical imaging for precise surgical planning, intraoperative navigation, and postoperative assessment. Explainability and uncertainty analysis are often cited as key enablers of trustworthy AI. Explainable AI promises to make algorithmic decisions more transparent, yet many current methods risk producing oversimplified or even misleading insights that may not translate into genuine clinical understanding. Similarly, uncertainty analysis offers valuable information about prediction reliability, but methods remain computationally demanding and their interpretation is not always intuitive for end-users. This talk explores both the opportunities and the limitations of explainability and uncertainty analysis for AI in medical imaging.

# Panel Discussion

## When algorithms decide on health matters – who can we trust?

Artificial intelligence promises enormous opportunities for medicine and healthcare—but data quality, ethics, and responsibility raise critical questions. Is AI a real advance or overhyped hype? In our panel discussion, experts from research, clinical practice, and industry will discuss the risks, potential, and conditions under which AI can truly serve health.

**Moderator:** - Dr. Stefan Seiberling (Research Support Centre, Greifswald University)

**Panelists:** - Univ.-Prof. Dr. phil. habil. Giovanni Rubeis (Medical Ethics and History)
- PD Dr. Katharina Hoff (Bioinformatics, Greifswald University)
- Prof. Dr. Lars Kaderali (Bioinformatics, University Medicine Greifswald)
- Daniel Schönfelder (BioConValley GmbH, Verbund Gesundheitswirtschaft MV)
- Tobias Gebhardt (CEO Hypros)

# Day 2 Health.AI Pomerania — AI in Cross-Border Healthcare

4 November 2025 — Alfried Krupp Wissenschaftskolleg Greifswald

# Keynote

## Healing with Data: AI as a System Transformer in Clinics, Research and Hospital Operations


### Alexander Meyer

Section Clinical Intelligence, Charité University Medicine Berlin


The lecture demystifies artificial intelligence (AI): it is not magic, but rather extremely scaled statistical learning. It puts expectations into perspective and clearly shows how machine learning and deep learning work. The central driver of recent advances is scaling—more data, longer computing time, and larger models lead to more powerful pattern recognition and capabilities that seem almost unbelievable at first glance but can be logically explained by training. This provides a clear, accessible view of what AI can really do today—and what it cannot (yet) do.

In a second step, the presentation draws a line to transformation: from individual applications to systemic change in clinics, research, and administration. Large-scale language models (LLMs) and agentic systems—i.e., AI that uses tools—automate knowledge-based processes and integrate into existing IT landscapes. Four building blocks are needed to ensure that the benefits are widely and securely realized: (1) resilient data foundations, (2) inference and training compute, (3) a platform for foundation models and agents, and (4) clear governance with compliance, roles, process and lifecycle management, qualification, and adoption.

The core message: AI has long been a reality and has a systemic impact. Those who build scalable infrastructure, responsible processes, and sustainable partnerships now will retain design sovereignty.

# Added Value of AI in Healthcare

## AI-based 3D Body Composition Analysis using CT: Translating AI into Clinical Radiology

Verena Maria Wagner

Institute of Diagnostic Radiology and Neuroradiology, University Medicine Greifswald

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**Purpose:** Body composition is an established imaging biomarker associated with frailty, metabolic status, and treatment outcomes. However, most previous studies rely on manual or single-slice measurements, which are time-consuming and fail to represent true body proportions and tissue distribution. Computed tomography (CT) is the imaging modality of choice for comprehensive body composition analysis, as it provides high-resolution volumetric data routinely acquired in clinical care. This study aims to evaluate and implement an AI-based 3D body composition analysis (BCA) algorithm within clinical research workflows and to explore its potential as a quantitative imaging biomarker for outcome prediction and patient stratification.
**Methods:** Using the Body Composition Analysis (BCA) algorithm developed at the Institute for Artificial Intelligence in Medicine (IKIM, Essen), we apply AI-based 3D body composition analysis within clinical research workflows. The tool allows reproducible quantification of muscle, bone, and adipose tissue compartments from routine CT data. In our studies, BCA-derived parameters are correlated with clinical, metabolic, and outcome data across different disease entities to identify imaging-derived biomarkers.
**Results:** The AI-based BCA provides fast, reproducible volumetric quantification of muscle and fat tissue. It enables detection of sarcopenia and sarcopenic obesity even in patients with normal BMI, offering additional value for metabolic and oncologic imaging research.
**Conclusion:** Integrating AI-based body composition analysis into clinical research provides a robust framework for quantitative imaging biomarkers. While currently limited to research applications, it lays the foundation for future clinical use, with potential to guide individualized therapy selection and predict outcomes.

## Hitting the Bull's AI: Artificial Intelligence-derived imaging features and their association with outcomes in CT-guided Lung Biopsy

Authors: Christian Roller, Till Ittermann, Annika Syperek, Matthias Mühler, Mark O Wielpütz, Jens-Peter Kühn, Sophia FU Blum, Felix Schön, Patrick Winter, Susanne Schnell, Marie-Luise Kromrey

### Presenter: Chistian Roller

Department of Diagnostic and Interventional Radiology - Evangelisches Waldkrankenhaus Spandau
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This retrospective study evaluated an artificial intelligence (AI) tool for predicting outcomes of CT-guided lung biopsies. Data from 120 procedures were analyzed for associations between AI-derived parameters (lesion volume, malignancy probability, emphysema ratio) and biopsy outcomes, including technical success, histopathological results, and complications. Logistic regression revealed significant associations between lesion volume and technical success (OR=1.30, CI 1.01; 1.69), AI malignancy probability and histopathologically confirmed malignancy (OR=1.18, CI 1.08; 1.29), as well as AI emphysema ratio with pneumothorax requiring drainage (OR=1.29, CI 1.12; 1.49) and high-grade hemorrhage (OR=0.90, CI 0.80; 0.99). Thus, AI-based imaging parameters demonstrated potential to support pre-procedural risk assessment and to predict biopsy success and histopathological yield.

## Real-time Magnetic Resonance Imaging and Artificial Intelligence for the Evaluation of Motility in the Human Gastrointestinal Tract

### Lydia Neubauer

Center of Drug Absorption & Transport (C_DAT), Department of Biopharmaceutics & Pharmaceutical Technology Institute of Pharmacy, Greifswald University
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Real-time magnetic resonance imaging enables, for the first time, the visualization of dynamic processes within the human body without requiring external intervention. This advancement opens new possibilities for functional diagnostics and the analysis of pathological changes that may result from diseases or pharmaceuticals. Currently, this imaging technique is used for the precise assessment and quantification of gastrointestinal tract motility, which critically influences the transport of fluids, food, and medications throughout the organism. The integration of artificial intelligence and advanced image recognition can significantly reduce evaluation time, thereby facilitating the efficient application of innovative, data-intensive technologies and their possible use in routine clinical practice.

## Artificial Intelligence in Radiotherapy: Modern Models Supporting Radiation Oncologists in the Treatment of Malignant Tumors

Authors: Bartłomiej Masojć, Michał Falco

Presenter: Bartłomiej Masojć

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Oncological radiotherapy is one of the medical fields where artificial intelligence (AI) algorithms are already supporting doctors in the treatment planning process. One of the main tasks assisted by AI is the automated process of contouring (defining) healthy organs based on computed tomography. Recent studies indicate that AI algorithms provide comparable results to manual contouring, reducing the time required to prepare contours and decreasing variability in contouring between observers. One limitation of auto-contouring is the unpredictability of the algorithm in cases of atypical anatomy, such as following surgical interventions or extensive tumor infiltration. Due to this, AI-generated contours always require verification and corrections by the radiation oncologist.

## AI solutions that support doctors in diagnosing breast and prostate cancer – analysis and conclusions (less than a year after implementation)

Szymon Śmietana

Department of Diagnostic Imaging and Nuclear Medicine, West Pomeranian Oncology Centre in Szczecin

In 2025, Westpomeranian Oncology Center purchased two AImodels to support radiologists in describing MR prostate examinations (Siemens, AI Prostate Lesion) and MMG breast examinations (Transpara). To date, since implementation, approximately 80 patients who underwent prostate MR examinations have been analysed, and the reliability and effectiveness of this module on this group of patients has been verified and analysed. The Transpara AI system (for MMG analysis) was used in the analysis of approximately 250 examinations, and its reliability and effectiveness were also verified and analysed. During the presentation, you will learn about the preliminary conclusions and initial opinions of physicians on the above-mentioned systems.

## Cross-Border Healthcare Projects: CAIDX – Support for the development and integration of AI solutions in healthcare

Authors: Thomas Karopka & Martin Dyrba,

### Presenter: Martin Dyrba,

German Centre for Neurodegenerative Diseases (DZNE), Centre for Neurology Rostock
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The CAIDX (Clinical AI-based Diagnostics) project aims to bring together the various stakeholders involved in the development and integration of AI applications. The international project partners from the Baltic Sea region contributed to the project with their different perspectives and country-specific conditions. Various guidelines and training materials were developed as part of the project. These are intended to support small and medium-sized enterprises (SMEs) as well as healthcare providers and hospitals in the introduction of AI. These tools are available on the project website https://clinicalai.eu. CAIDX thus sustainably strengthens the innovative capacity of regional SMEs and stakeholders in the healthcare sector.

Website: www.clinicalai.eu

# Legal Aspects and Economics of AI in Cross-Border Healthcare

## Symbolic AI Methods for Legal Reasoning

### Alexander Steen

Chair of Computer Science, Institute of Mathematics and Computer Science, Greifswald University
**Contact:** alexander.steen@uni-greifswald.de

The presentation introduces symbolic AI methods for normative reasoning, which can be used, for example, for (semi-)automatic compliance checks or legal considerations within AI systems. In contrast to data-driven learning methods (e.g., machine learning), norms can be explicitly represented and checked for correctness. This allows for greater transparency and quality assurance, particularly for safety-critical components.

## AI-Act implementation: Initial experiences in the cross-border Health. AI POMERANIA project

### Britta Rosenberg

Project HEALTH.AI Pomerania, Greifswald University
**Contact:** britta.rosenberg@uni-greifswald.de

Following the project presentation, an overview on key legal aspects of regulation (EU) 2024/1689 of 13 June 2024, establishing harmonized rules for artificial intelligence (so-called AI-Act) will be provided. Also the current state of legislative activities for implementing the AI-Act at national levels in the context with the project will be presented. The lecture aims to support institutions that install or operate AI-systems in implementation and practice to meet requirements of the AI-Act in accordance with the intention of the EU legislator in practice.

## Data Protection and the Use of AI Tools Based on Algorithms


### Magdalena Krzak

Data Protection Officer, University Clinical Hospital No. 2 of the Pomeranian Medical University in Szczecin
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The presentation refers to the basic provisions of European and Polish law concerning issues related to the use of AI-based tools in healthcare entities, provides brief definitions of basic concepts related to the issues discussed, and indicates the most important conditions for the safe processing of personal data, including personal data and special categories of personal data, using AI algorithms from the perspective of a doctor and a medical entity, while discussing the basic technical and organisational safeguards that can be applied.

## Economic evaluation of process innovations


### Markus Krohn

Chair of General Business Administration and Health Care Management, Greifswald University
**Contact:** markus.krohn@uni-greifswald.de


Service providers are often only aware of the revenue generated by a service. How this revenue is calculated and what systematic disadvantages the current cost accounting methodology entails is often unknown. The presentation will outline the classic cost accounting methodology in the inpatient sector of the German healthcare system. It will also show how a targeted cost calculation for process innovation can be structured. The initial process flows collected in the project and the initial results of a process time measurement will be presented.

# Cross-Border Cooperations in Healthcare:

# Temicare 2.0 — Challenges


## Tabea Troschke & Michał Abkowicz

Project Temicare 2.0, University Medicine Greifswald
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The TEMICARE 2.0 project is a German-Polish initiative aimed at enhancing pediatric oncology care within the Pomerania Euroregion. Coordinated by universities and clinical institutions in Greifswald, Szczecin, Kraków, and Gdańsk, the project develops innovative telemedical approaches integrating VR technologies, a digital slide database, an AI-based family support tool, and an educational application to advance diagnostics, therapy, and professional training. Funded by the Interreg VIa programme until March 2027 with a total budget of 2.6 million euros, TEMICARE 2.0 fosters cross-border cooperation, facilitates knowledge exchange, and promotes comprehensive support for affected children and their families.

Website: www.temicare2.de

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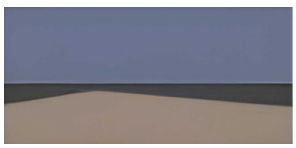
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# Imprint

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## Conference Booklet

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