SUMMER SCHOOL 2026

14 – 16 July, Reisensburg Castle

About

The KEMAI research training group brings together computer science, medicine, ethics and philosophy of science to combine knowledge-based and learning-based systems for accurate, transparent, and ethically sound medical diagnoses.

This 3rd edition of the **KEMAI Summer School from 14-16 July**, again brings together the RTG's doctoral researchers, associated members, our student helpers, KEMAI early career scientists, principal investigators, and invited experts from the fields of computer science, medicine, and ethics to join us for three insightful days at Reisensburg Castle. Our aim is to advance cooperation within the research training group and, even more important, to provide a multidisciplinary forum for exchange.

Pre-meeting - Equal Voices Event: Bias awareness

KEMAI is committed to supporting early career scientists of all genders and backgrounds in medical AI. We aim to raise awareness of structural and mindset-related issues concerning gender and ethnic or social background.
To reflect this, the event's first morning traditionally addresses equality-specific challenges in academia. The day also offers space for exchange between junior and senior diverse researchers to encourage mentoring and dialogue across career stages. Please find more information below.

Funded by DFG Deutsche Forschungsgemeinschaft German Research Foundation

SUMMER SCHOOL 2026

14 – 16 July 2026, Reisensburg Castle

KEMAI

Program - Tuesday, 14 July 2026

From 08:30		**Registration & coffee**
09:00		**Diverse voices event** **Bias awareness 1** Dr. Cornelia Altenburg, golin wissenschaftsmanagement, Berlin
10:30		**Coffee break**
10:45		**Equal voices event** **Bias awareness 2**
12:15		**Lunch (75 min.)**
13:30		**Lecture** **Introduction to Medical Imaging: Technology and Clinical Applications – Part II, Metabolic / Nuclear Imaging** Prof. Ambros Beer, in cooperation with Prof. Meinrad Beer, Dr. Ina Vernikouskaya. (Part of KEMAI Module 2 "Foundations of Medical Imaging")
15:00		**Coffee break**
15:15		**KEMAI science communication** **Demonstrator brainstorming and conceptualisation**
16:45		**Break**
16:55		**KEMAI science communication** **Demonstrator brainstorming and conceptualisation**
18:20		**Break**
18:30		**Dinner**

SUMMER SCHOOL 2026

14 – 16 July 2026, Reisensburg Castle

KEMAI

Program - Wednesday, 15 July 2026

08:30 **Registration & coffee**

09:00 **Welcome & invited talk** Info

Using LLMs for Structured Clinical Annotations: The New Reproducibility Crisis and Its Mitigation

Janna Hastings, Human-Centered Health AI Group, Idiap Research Institute, Martigny, Switzerland

10:10  **Coffee break (15 min.)**

10:25 **KEMAI doctoral researchers 1**

Publication strategies

10:25	**Alexander Lodemann**	Institute of Artificial Intelligence
10:40	**Nahla Taha**	Institute of Medical Systems Biology
10:55	**Yiheng Xiong**	University Hospital of Ulm, Section of Experimental Radiology

MD project presentation

11:10	**Jonas Plathow**	Clinic for Diagnostic and Interventional Radiology

11:15 **Break**

11:20 **Invited talk** Info

Title: Crossing the Gap? Investigating Foundation Models in Computational Pathology

Katharina Breininger, Pattern Recognition Lab, Julius-Maximilians-Universität Würzburg

12:20  **Lunch (75 min.)**

SUMMER SCHOOL 2026

14 – 16 July 2026, Reisensburg Castle

KEMAI

Program - Wednesday, 15 July 2026

13:35 **KEMAI doctoral researchers 2**
Publication strategies

13:35	**Jacob Costantino**	Humboldt Centre
13:50	**Nina Parchmann**	Institute of the History, Philosophy and Ethics of Medicine
14:05	**Uliana Vedenina**	Institute of Media Informatics

MD project presentations

14:20	**Henriette Czech**	Nuclear Medicine
14:25	**Hanna Krekler**	Nuclear Medicine

14:30 **Break**

14:35 **Invited talk** Info Info
From John Snow to Nightingale AI
Aldo Faisal, AI & Neuroscience, Imperial College London, Digital Health, University of Bayreuth

15:35  **Coffee Break (15 min.)**

15:50 **KEMAI doctoral researchers 3**
Publication strategies

15:50	**Atif Khurshid**	Institute of Neural Information Processing
16:05	**Maximilian Otte**	Institute of Neural Information Processing
16:20	**Michael Glöckler**	Institute of Media Informatics

MD project presentation

16:35	**Christina Zellner**	Nuclear Medicine

16:40 **Break**

16:45  **Poster session & Poster awards (Dr. med. & Dr. rer. nat./PhD)**

17:45 **Break (15 min.)**

18:00  **BBQ**

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KEMAI

Program - Thursday, 16 July 2026

09:00		**Invited Talk** **Digitalization and Data Governance in AI-Driven Healthcare: Between Innovation Incentives, Risk Regulation and Fundamental Rights Protection** Prof. Dr. iur. Claudia Seitz, Head of the Institute for European and International Law (IEVR), Private University in the Principality of Liechtenstein (UFL)	Info
10:00		**Coffee Break (15 min)**	
10:15		**KEMAI Talk** **Towards Explainable Control: Concept-Based Explainability for Verification and Integration of Symbolic Knowledge in Neural Networks** Dr. Gesina Schwalbe, Juniorprofessor for Explainable Artificial Intelligence, Ulm University	Info
10:45		**Break**	
10:50		Parallel sessions: **Progress report** (doctoral researchers & associated doctoral researchers) **Board meeting** (KEMAI PIs, doctoral spokesperson, EO advisor)	
12:05		**Elections** Doctoral spokesperson, Equal opportunities advisor	
12:20		**Lunch (75 min.)**	
13:35		**Closing**	

SUMMER SCHOOL 2026

Diverse voices event - 14 July 2026, Reisensburg Castle

KEMAI

Research Topics

Alexander Lodemann Institute of Artificial Intelligence	Planning the Unplannable: Leveraging Automated Planning to Guide Medical Procedures
Atif Khurshid Institute of Neural Information Processing	Learning Search and Decision Mechanisms in Medical Diagnoses
Jacob Costantino Humboldt Centre	Explainability, Understanding, and Acceptance Requirements
Maximilian Otte Institute of Neural Information Processing	Neuro-Symbolic Integration with Information Constraints
Michael Glöckler Institute of Media Informatics	Explainable 3D Medical Image Understanding with Vision-Language Models
Nahla Taha Institute of Medical Systems Biology	Semantic Design Patterns for High-Dimensional Diagnostics
Nina Parchmann Institute of the History, Philosophy and Ethics of Medicine	Accountability of AI-based Medical Diagnoses
Uliana Vedenina Institute of Media Informatics	Multimodal Representation Learning for Reliable Medical AI
Yiheng Xiong University Hospital of Ulm, Section of Experimental Radiology	Stability Improved Learning with External Knowledge through Contrastive Pre-training

Research Topics - Doctoral Researchers in Medicine

Christina Zellner Nuclear Medicine	Kombinierte bildgebungsbasierte und klinische Multi-Omics-Charakterisierung der intraindividuellenTumorheterogenität beim metastasierten NSCLC - Analyse von Primärtumor und Fernmetastasen
Hanna Krekler Nuclear Medicine	Frühes Therapieansprechen beim NSCLC: Vorhersage mittels Delta-Radiomics, Machine Learning und integrativer Multi-Omics-Analyse.
Henriette Czech Nuclear Medicine	Multimodal, radiomics- and AI-based characterization of the vitality and heterogeneity of Echinococcus lesions, with a particular focus on predictive markers of therapeutic response
Jonas Plathow Diagnostic and Interventional Radiology	Predicting the clinical trajectory and hospitalization in COVID-19 pneumonia using artificial intelligence – an experimental study as a model for future pneumonia prediction based on imaging biomarkers and clinical parameters

Diverse voices event

A central goal of KEMAI is to actively support and empower diverse early career scientists in the field of medical AI. To reflect this commitment, the first day of our event is dedicated to addressing the challenges concerning equal opportunities.

Bias awareness - Strategies to change thought patterns

The academic area is a place of qualification, performance, and the best argument. Age, gender, origin, and appearance are not supposed to matter. But is this really possible? Our brain tends to have certain preferences. And we are often not aware of it.
Wouldn't it be nice to increase your awareness of unconscious bias and its impact, e.g. in regard to a language sensitive to discrimination? On this basis you are able manage your biases
and develop personal strategies to change your own thought patterns, and track the progress.
During the workshop the current state of research will be discussed. The participants will familiarise with different techniques to handle their biases and try the tools out, individually as
well as in groups.

The following topics are covered:

>> The basics:
Unconscious bias and its impact
>> Evolving awareness:
Our brain and biases in the academic context
>> What helps:
Theory and strategies
>> Finding a personal strategy
Overcoming mental blocks and barriers
>> Bias awareness:
My next steps

In cooperation with **Dr. Cornelia Altenburg,**
Golin Wissenschftsmanagement Berlin

July 14, 09:00 – 12:15

Dr. Janna Hastings,
Human-Centered Health AI Group,
Idiap Research Institute, Martigny, Switzerland

Using LLMs for Structured Clinical Annotations: The New Reproducibility Crisis and Its Mitigation

Abstract. Large language models (LLMs) are increasingly used to automate structured annotations of clinical data grounded in biomedical ontologies. However, such models perform stochastically, are sensitive to context and prompt formulation, and may evolve without accessible version archives. As a result, they are rapidly introducing a reproducibility crisis. This presentation will examine how this problem can be at least partially mitigated, with concrete examples taken from biochemistry, clinical notes, and evidence synthesis in mental health, concluding with highlighting some persistently open research challenges in this area.

Speaker Bio. Janna Hastings was born in Cape Town, South Africa where she completed her undergraduate studies in Mathematics and Computer Science. Thereafter, she moved to Cambridge, UK to join the Cheminformatics and Metabolism group at the European Bioinformatics Institute (2006-2015) where she led the development of the ChEBI molecular ontology and metabolism knowledgebase. She completed part-time Master's degrees in Computer Science (University of South Africa, 2011) and Philosophy (Open University, 2012) before obtaining her PhD in Computational Biology from the University of Cambridge (2015-2019), where she studied the role of metabolism in healthy aging using multi-omics data and a time-series modelling approach. She completed postdoctoral studies at the Otto-von-Guericke University Magdeburg (2019-2022), at the EPFL (2020-2022), and with the Human Behaviour-Change Project at University College London (2017-2022). Between 2022 and 2025 she was an Assistant Professor in the Medical Faculty of the University of Zurich, and since January 2026 she has taken up the position of Senior Research Scientist at the Idiap Research Institute where she leads the Human-Centered Health AI group focused on advancing AI methods for health-related applications, particularly hybrid approaches that combine knowledge with large-scale data.

Place & Time.

Schloss Reisensburg, Roter Saal
Wednesday, July 15, 2026
9:10 – 10:10

Katharina Breininger - Pattern Recognition Lab, Julius-Maximilians-Universität Würzburg

Crossing the Gap? Investigating Foundation Models in Computational Pathology

Abstract. Foundation models have become an important ingredient in medical image analysis, especially in computational pathology. They hold the promise of reducing the need for annotated training data, increasing robustness, and broadening applicability. Still, their real-world value depends on robust adaptation across scanners, clinical sites, and application domains. This talk will examine recent research on domain shifts, benchmarks, and data-efficient model adaptation in medical imaging, with a focus on histopathology. It will explore typical adaptation strategies such as linear probing, end-to-end training, self-supervised approaches, and parameter-efficient methods, showing that foundation models are powerful starting points but are not automatically superior without careful adaptation. Particular focus will be placed on their potential in limited-label settings, while highlighting open challenges in generalization, validation, and domain-aware evaluation.

Speaker Bio.
Katharina Breininger is Professor of Pattern Recognition at the Center for Artificial Intelligence and Data Science (CAIDAS) and the Institute of Computer Science at Julius-Maximilians-Universität Würzburg. Her research focuses on robust and generalizable machine learning for interdisciplinary applications, with a particular emphasis on medicine and medical imaging. Her group investigates representation learning, generalization under domain shifts, annotation and labeling strategies, human factors, and human-AI collaboration, while also developing open-source tools and datasets for semi-automatic and collaborative annotation. Application areas include intraoperative and multimodal imaging, interventional imaging, microscopy, and digital pathology. She studied computer science in Marburg and Erlangen and completed her PhD in 2020 at FAU Erlangen-Nürnberg on image fusion for minimally invasive interventions in collaboration with Siemens Healthineers. Before joining Würzburg in 2024, she was W1 Professor of Artificial Intelligence in Medical Imaging at FAU, where she led the AI in Medical Imaging lab.

Place & Time.

Schloss Reisensburg, Roter Saal
Wednesday, July 15, 2026
11:20 – 12:20

Prof. Dr. Aldo Faisal

AI & Neuroscience, Imperial College London / Digital Health, University of Bayreuth

From John Snow to Nightingale AI

Abstract. My talk traces the intellectual arc from the birth of data driven medical science or modern foundation models in healthcare, using John Snow as a conceptual starting point and extending to our development of Nightingale AI. It examines how the core logic of data-driven inference—linking observations to actionable interventions—has evolved from statistics and causal reasoning to large-scale, multimodal machine learning. We will discuss how contemporary ML systems move beyond static prediction toward continuous patient modelling, integrating heterogeneous data streams (EHR, imaging, biosignals, behaviour) into unified latent representations. The talk will highlight the role of foundation models, reinforcement learning, and approaches in enabling this transition, as well as the constraints imposed by clinical validation, regulatory frameworks, and real-world deployment. The objective is to provide a principled view of how modern AI systems can be understood as a natural extension of data driven reasoning—while also identifying where fundamentally new methodological and conceptual challenges emerge.

Speaker Bio. Aldo Faisal is a Professor of AI & Neuroscience jointly at the Dept. of Bioengineering and the Dept. of Computing at Imperial College London, where he leads the Brain & Behaviour Lab. Aldo is also Director of the Behaviour Analytics Lab at the Data Science Institute. He is also Associate Investigator at the MRC London Institute of Medical Sciences and is affiliated faculty at the Gatsby Computational Neuroscience Unit (University College London). Aldo serves as an Associate editor for Nature Scientific Data and PLOS Computational Biology and has acted as conference chair, area chair, program chair in key conferences in the field (e.g. Neurotechnix, KDD, NIPS, IEEE BSN), in 2016 he was elected into the Global Futures Council of the World Economic Forum. Aldo received a number of awards and distinctions, including being scholar of the German National Merit Foundation (Studienstiftung des Deutsche Volkes; Undergraduate PhD), a Fellow of the Böhringer-Ingelheim Foundation for Basic Biomedical Research, elected as a Junior Research Fellow at the University of Cambridge (Wolfson College), and research prizes such as the Toyota Mobility Foundation award in 2018 ($50,000). Aldo's lab featured regularly across global media (such as BBC, CNN, WIRED, TED, TEDx, New Scientist, Guardian, Times of India, etc.) and Scientific American voted his research on gaze-based control as 1st of 10 most transformative ideas for 2016.

Place & Time.

Schloss Reisensburg, Roter Saal
Wednesday, July 15, 2026
14:35 – 15:35

Prof. Dr. iur. Claudia Seitz,
Head of the Institute for European and International Law (IEVR)
Private University in the Principality of Liechtenstein (UFL)

Digitalization and Data Governance in AI-Driven Healthcare: Between Innovation Incentives, Risk Regulation and Fundamental Rights Protection

Abstract. Artificial intelligence is increasingly transforming healthcare, ranging from clinical decision-support systems and AI-assisted diagnostics to personalised medicine and the secondary use of health data for research and innovation. At the same time, the growing reliance on data-driven technologies raises fundamental legal and ethical questions concerning data governance, accountability, transparency, patient autonomy and the protection of fundamental rights. The presentation explores the evolving European regulatory framework for AI-driven healthcare, including the interplay between data protection law, health law and AI regulation under the EU AI Act. Particular attention will be paid to the challenges of balancing innovation incentives and technological progress with the need to ensure patient safety, trustworthy AI and effective protection of individual rights, including ongoing debates on the assessment, governance, transparency and regulation of risks associated with AI-enabled healthcare. Against the background of the ongoing digital transformation of healthcare, the presentation will discuss how legal and regulatory frameworks can contribute to responsible innovation and sustainable governance of AI-enabled health technologies in Europe.

Speaker Bio. Prof. Dr. Claudia Seitz is Professor of Public Law, European Law, International Law and Life Sciences Law and Head of the Institute of European and International Law (IEIL) at the Faculty of Law of the Private University in the Principality of Liechtenstein (UFL). She also holds academic appointments as Visiting Professor at Ghent University (Belgium) and as Senior Lecturer at the Universities of Basel (Switzerland) and Bonn (Germany).

Her research focuses on European Union and international law, health law, digital health regulation and the legal governance of emerging technologies, in particular artificial intelligence. She holds i.a. an Executive Master in Law and AI from the Brussels School of Competition Law.

Prof. Seitz has been affiliated with several international research initiatives in the fields of biotechnology and life sciences law. She is co-editor of the European Health and Pharmaceutical Law Review (EHPL) and the Europäische Zeitschrift für Wirtschaftsrecht (EuZW). In addition, she serves as advisor to international organisations, including the World Health Organization (WHO), the World Intellectual Property Organization (WIPO) and the EU AI Office of the European Commission.

Place & Time.

Schloss Reisensburg, Roter Saal
Thursday, July 16, 2026
9:00 – 10:00

Gesina Schwalbe,
Explainable Artificial Intelligence, Ulm University

Towards Explainable Control: Concept-Based Explainability for Verification and Integration of Symbolic Knowledge in Neural Networks

Abstract. Deep neural networks (DNNs) achieve unbeaten performance in automated processing of non-symbolic sensory inputs like images. This includes safety-critical application areas such as automated driving or diagnosis assistant systems in healthcare. Such domains come along with a rich set of prior, human-defined symbolic (expert) knowledge, like known object relations (e.g., a head typically indicates a pedestrian) or medical expert knowledge (e.g., a skin cancer region is usually colored different from its surroundings). System safety certification now demands strict compliance to these prior rules, making it a compelling goal to use available knowledge directly during DNN training, peak inside the DNN to check whether the knowledge was learned correctly, and potentially correct errors.

These aims face the opacity and distributed representations of DNNs as major difficulty: One cannot directly read off which knowledge was learned about human-interpretable concepts and their relations, hindering integration, extraction, (formal) verification, and correction of DNNs against symbolic knowledge. The field of concept-based explainable AI (C-XAI) poses a promising pathway to bridge this gap, associating human-readable specifications with latent encodings in DNNs. In this talk I introduce the basics and pitfalls of concept-based explainability, and give a peak into my research on novel C-XAI methods explanation techniques as well as their application to verification and correction of computer vision DNNs.

Speaker Bio. Gesina Schwalbe started her tenure track juniorprofessorship for Explainable Artificial Intelligence in April 2026 at the Institute of Artificial Intelligence, Ulm University. Here she continues her lead of the junior research group Correctable Hybrid Artificial Intelligence, for which she acquired funding starting in Sep 2024 during her postdoctoral time at University of Lübeck (2024-2026). Her groups investigates explainable AI techniques for the verification, correction, and integration of symbolic knowledge into deep neural networks, with applications in automated driving, chemistry, and medical AI.

This directly builds upon her research on explainability for safe and trustworthy AI which she conducted as project lead (2021-2023) and doctoral researcher (2018-2022, supervised by Prof. Ute Schmid, Otto-Friedrich-Universität Bamberg) at the Continental AG automotive supplier.

Place & Time

Schloss Reisensburg, Roter Saal
Thursday, July 16, 2026
10:15 – 10:45

Venue

Reisensburg Castle, situated near river Danube, some 25 km downstream from Ulm, is a Conference Centre of Ulm University. It's part of the town Günzburg and located in the "Schwäbischer Barockwinkel" (Swabian Baroque Corner), a region known for its baroque churches, monasteries and castles.

Address

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Travel to Reisensburg

By Train to Günzburg
Train station Günzburg Hbf is served by ICE and IC trains from Airports Stuttgart, and Munich. (www.bahn.de)

From Günzburg main station to Reisensburg – walking or taxi
Walking distance to Reisensburg Castle: 2,2 km/ 25 min:
When leaving the station building, turn left into Siemensstraße. Go on to Dillinger Straße (B10, B16) - a broad highway. Then, after 250 m turn left to the Reisensburger Straße. Also proceed on Günzburger Straße. Then turn left to Weihergasse. You will then see Reisenburg Castle.

By Car
Please take a look at the description (in German) provided by Wissenschaftszentrum Schloss Reisensburg.