Digital Health Triumphs

**next-level AI research
pushed through collaboration**

ellis UNIT HEIDELBERG

AIHealth
INNOVATION CLUSTER
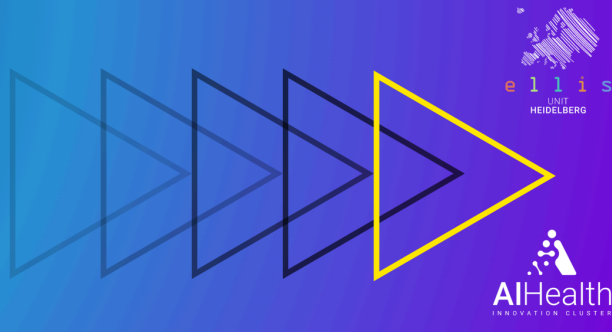
Tuesday, June 11, 2024
9:30am - 9:00pm

9:30-10:30	**Registration and Welcome Coffee**
10:30 - 10:40	**Welcome Address [Auditorium]**

The Program Committee provides an overview of the schedule as well as the key results of the event.

10:40 - 11:30

Flash Talk Session 1: Medical Imaging [ROOM 1]

This research focus lies at the interface of medical image analysis, machine learning, and computer vision. The convergence of these topics materializes through structuring and quantifying imaging information from a variety of imaging techniques, including computed tomography (CT) scans, magnetic resonance imaging (MRIs), and ultrasound. The resulting AI tools can enhance the assessment of clinical observations, effectively assisting in object detection, diagnosis, and monitoring in a clinical setting. The interdisciplinary and highly applicable nature of this work requires strong collaborative ties between medical imaging researchers and clinicians. The ultimate goal - in addition to theoretical advances - is to translate tools rooted in computer vision and biomedical imaging into the clinics.

in parallel

Flash Talk Session 2: Generative AI [ROOM 2]

The advancement of foundation models, particularly through the development of stable diffusion models in Heidelberg, signifies a leap forward in generative AI research. Stable diffusion models, adept at creating new images or texts from prompts, mirror the diffusion process in nature, effectively reducing irrelevant noise from training data to generate precise data samples. Invertible networks represent a cutting-edge evolution with a wide range of applications in life sciences and are particularly notable for their role in cancer research, where they are leveraged for complex image analysis tasks. Both stable diffusion models and invertible networks have the potential to greatly improve diagnostic methods and personalized treatment plans.

11:30 - 12:00

Flash Talk Session 3: Foundations of Life [ROOM 1]

Understanding life at its most fundamental level is an interdisciplinary endeavor anchored by physical biochemistry and molecular biology. AI plays a pivotal role in extracting meaningful insights from observational data through innovative experimental

designs, the utilization of cutting-edge data modalities, and the application of intelligent data exploration and visualization techniques.The clinical application of foundations of life research includes predicting the impact of genetics on disease risk, uncovering potential drug targets through CRISPR perturbation screens, as well as translating single-cell sequencing into a practical diagnostic tool.

in parallel	**Flash Talk Session 4: Trustworthy AI [ROOM 2]**
	Trustworthy AI is increasingly vital for a variety of focus areas. For example, advances in sequencing as well as innovative AI methods have enabled genomic profiling to become an indispensable resource in medical research. Deep learning models additionally excel at identifying predictive imaging biomarkers and estimating treatment effects, as well as in predicting survival outcomes with impressive accuracy. All of these achievements are supported by advancements in causal modeling and are firmly grounded in the principles of trustworthy AI.
12:00 - 12:30	**Breakout Rooms with Presenters [ROOM 1-4]**
	Questions and further conversations with Flash Talk presenters will take place in designated areas, by theme.
12:30 - 13:30	**Lunch [Foyer]**
13:30 - 14:30	**Poster Session [Helix]**
	AIH Post Doctoral PIs, Staff Scientists, Clinician Scientist fellows present their on-going and cumulative results.
14:30 - 15:30	**Regional Initiatives (30 min talks by PIs) [Auditorium]**
	The Heidelberg - Mannheim region is home to countless initiatives that promote the transfer of AI technologies in the life sciences and healthcare. In this session, speakers of initiatives will summarize their accomplishments and share their next targets.
15:30 - 16:00	**Coffee Break**
16:00 - 17:30	**Reflection and Future Directions [Auditorium]**
	In the past 3 years, AIH has brought together stakeholders, created a brand for AI research in the region, and forged synergies between different institutions and disciplines. We reflect: how can we continue to give AI researchers a home in the HD-MA region? In this session, a new strategy for AI research will be revealed.
17:30 - night	**Conference Dinner [EMBL Cantine]**