

# ICCAI 2023

## Removing boundaries in quantitative understanding of critical illness:

Integrating Mechanism and Machine Learning

Sponsored by: [DFG Deutsche Forschungsgemeinschaft](#), [Dedalus](#), [Nihon Kohden](#),  
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Time	Day 1 Fri, 8 Sep	Day 2 Sat, 9 Sep	Day 3 Sun, 10 Sep
8:00 - 8:30		Poster Presentations	Poster Presentations
8:30 - 9:00	Opening Ceremony	Poster Presentations	Poster Presentations
9:00 - 10:00	Keynote: <b>From Principle-based Models to Translational Applications in Stroke</b> (Paul Verschure, Donders University, Netherlands)	Keynote: <b>The future role of data in the treatment of critical illness</b> (Bettina Jungwirth, Univ. Ulm)	Keynote: <b>AI at the bedside: How to make it possible</b> (Aldo Faisal, Univ. Bayreuth)
10:00 - 12:30	Session 1: <b>Mechanistic Modeling in Complex Diseases</b> (Chair: Manuela Ferrario)	Session 3: <b>Integrating Data and Mechanism</b> (Chair: Yoram Vodovotz)	Session 5: <b>Applied Artificial Intelligence</b> (Chair: Ludwig Christian Hinske)
10:00 - 10:30	<b>Translational Applications of Mechanistic Models of Critical Illness</b> (Yoram Vodovotz, Univ. of Pittsburgh)	<b>Digital Twins and their diagnostic, prognostic and therapeutic potential</b> (Robert Stevens, Johns Hopkins Univ.)	<b>Evaluation and implementation of AI technologies</b> (An-Kwok Ian Wong, Duke Univ.)
10:30 - 11:00	<b>Quantitative and Systems Pharmacology models of immune and inflammatory diseases in industry</b> (Panagiota Foteinou, Bristol-Myers Squibb)	<b>Digital Cardiovascular Twins</b> (Julia Camps, Oxford University)	<b>The data ecosystem and federated approaches</b> (Ludwig Christian Hinske, Univ. Augsburg)
11:00 - 11:30	<b>Combining mechanistic modelling and reinforcement learning for therapeutic dosing</b> (Jana de Wiljes, Univ. of Potsdam)	<b>Critical Care Digital Twins</b> (Amos Lal, Mayo Clinic)	<b>Federated Learning and Privacy Preservation for Clinical Research</b> (Gamze Gürsoy, Columbia Univ.)

11:30 - 12:00	<b>Using hybrid approaches to extract novel physiological information from sparse clinical data</b> (David Albers, Univ. of Colorado)	Panel Discussion: <b>The role of mechanistic modeling in the age of deep learning models</b>	<b>Federated Learning: Hype or Hope?</b> (Zaineb Chelly Dagdia, Versailles University)
12:00 - 12:30	Abstract Session A1	Abstract Session A3	
<b>12:30 - 14:00</b>	<b>Lunch break and poster viewing</b>		
<b>14:00 - 16:00</b>	Session 2: <b>Systems Medicine Approaches for Complex Disease</b> (Chair: Sven Zenker)	Session 4: <b>Emerging approaches in Health AI</b> (Chair: Gilles Clermont)	Session 6: <b>Practical Approaches and Initiatives in AI</b> (Chair: Prof. Dr. Eulenburg, Volker, Univ. Augsburg)
14:00 - 14:30	<b>Physiologic mechanistic models for Clinical Decision Support</b> (Stephen Rees, Aalborg Univ.)	<b>Interpretable machine learning causal models and multi-scale medical research</b> (Panayiotis Benos, University of Florida)	<b>Health Information Technology evaluation. From Meaningful Use to Meaningful Outcomes</b> (Vitaly Herasevich, Mayo Clinic)
14:30 - 15:00	<b>Medical Digital Twins: Integrating Mechanistic Simulation Models with Artificial Intelligence for Personalized Precision Prediction and Control in Critical Illness</b> (Gary An, Univ. of Vermont)	Panel Discussion (1 hour) (Intro: Gilles Clermont)  <b>Emerging AI Technologies in Critical Care</b> (Co-Chair: Vitaly Herasevich)	<b>AI initiatives in critical care: NIH Bridge2AI - the CHoRUS initiative SCCM - The Data Science Initiative European priorities - Darwin EU</b> (Thoral, Park, Clermont)
15:00 - 15:30	<b>Dynamic modeling of intracellular regulation processes and their relation to phenotypes</b> (Nicole Radde, Univ. Stuttgart)		Closing Keynote: <b>AI in medicine: A future vision</b> (Sarah Friedrich, Univ. Augsburg)
15:30 - 16:00	Abstract Session A2	Abstract Session A4	<b>Concluding Remarks and Prize Presentation</b> (Gilles Clermont)
16:00	<b>SCAI Business Meeting (all attendees)</b>		
<b>18:00 - 22:00</b>	<b>Banquet</b> Collaboration of European and American Initiatives		

