AI in Biomedicine (EK2)
May 1-3, 2024 | Virtual at Your Computer (*US Mountain Time*)
Thomas Hartung, Weida Tong and Yvonne Will

| Abstract Deadline: Mar. 20, 2024

This meeting will feature a **Career Roundtable** *where trainees and early-career investigators will have the opportunity to interact with field leaders from across academic and industry sectors for essential career development advice and networking opportunities.*

WEDNESDAY, MAY 1, 2024

Welcome and Keynote Address (8:00–9:00 AM)

Thomas Hartung, Johns Hopkins University
AI is the End of Biomedicine as we Know it (and I Feel Fine)

Ethical Implementation of AI in Biomedicine & Panel Discussion (9:00–10:30 AM)

* Thomas Hartung, Johns Hopkins University
Session Chair

Ute Schmid, University of Bamberg
ML and AI Safety, Effectiveness and Explainability in Healthcare

Lomax Boyd, John Hopkins Berman Institute of Bioethics
The Emergence of Organoid Intelligence: Ethical Implications of Integrating Brain Organoids with Artificial Intelligence

Career Roundtable (11:30–12:30 PM)

AI in Drug Development (1:00–4:00 PM)

* Thomas Hartung, Johns Hopkins University
Session Chair

Vivek Natarajan, Google Health AI
How LLMs Might Help Scale World Class Healthcare to Everyone

Djork-Arné Clevert, Pfizer
AI Relating to Drug Discovery and Safety

Mohan Rao, Neurocrine Biosciences
AI/ML Models for Predicting Drug-Induced Liver Injury (DILI) in Small Molecules

Weida Tong, US Food and Drug Administration
The FDA Artificial Intelligence (AI) Program for Toxicology

Norbert Furtmann, Sanofi
Short Talk: Towards Biologics by Design: AI-driven Optimization of Next Generation Protein Therapeutics

James Shoemaker, Lena Biosciences, Inc.
Short Talk: Path Forward for the AI-guided Mitochondrial Toxicity Predictions for Predictive Toxicology

Sadasivan Shankar, Material Alchemy LLC
Short Talk: Hybrid Machine Learning Methodology for Guiding In Silico Toxicity Assessment

THURSDAY, MAY 2, 2024

AI in Medical Treatment & Precision Medicine (8:00–11:00 AM)

* Thomas Hartung, Johns Hopkins University
Session Chair

Subhendu Kumar Pani, Krupajal Engineering College
Internet of Medical Things and Computational Intelligence in Healthcare 4.0

Frank Emmert-Streib, Tampere University
Digital Twins in Medicine: Opportunities and Challenges

Jun Deng, Yale University School of Medicine
Cancer Patient Digital Twins for Predictive Oncology: The State of the Art

Rui Zhang, University of Minnesota
Explainable Artificial Intelligence for Critical Healthcare Applications

Jimeng Sun, University of Illinois Urbana-Champaign
AI for Mining Electronic Health Records to Enable Precision Medicine

Tong Wang, Brigham and Women's Hospital; Harvard Medical School
Short Talk: Predicting Metabolic Response to Dietary Intervention using Deep Learning

Adriana Tomic, Boston University
Short Talk: PANDORA: AI Platform Accelerating the Discovery of Human Immune Memory Responses to Viruses and Vaccines

Panel Discussion: AI in Medical Treatment and Prevention (11:00–12:00 PM)

AI in Medical Imaging and Diagnostics (1:00–3:00 PM)

* Weida Tong, US Food and Drug Administration
Session Chair

Tuan Pham, Queen Mary University of London
Emerging Methods and Algorithms in Pathology Computer Vision

Yuan Wang, UCB
Short Talk: Computational Evaluation of Human Relevant in vitro Models Enables Cardiomyocyte Phenotype Differentiation

Mohan Kumar Gajendran, University of Missouri School of Medicine
Short Talk: A New Frontier in Early-Stage Glaucoma Detection: Machine Learning and Wavelet-Based ERG Signal Analysis

Poster Session (3:00–4:30 PM)

FRIDAY, MAY 3, 2024

Future of AI in Biomedicine (8:00–11:00 AM)

* Weida Tong, US Food and Drug Administration
Session Chair

Katrina M. Waters, Pacific Northwest National Laboratory
AI in Infectious Disease (infection)

Alexandra Maertens, Johns Hopkins University
Green Toxicology – Anticipating Hazards by Chemicals (Toxicology)

Jesper Nils Tegner, King Abdullah University of Science and Technology and Karolinska Institutet
Foundational Machine Learning and AI Toward Causality

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Martin Hofmann-Apitius, Fraunhofer Institute for Algorithms and Scientific Computing (SCAI)
Using AI to understand the Co-Morbidity between COVID and Neurodegeneration

Antonella Prisco, Institute of Genetics and Biophysics, National Research Council (Italy)
Short Talk: Modeling Variations in Antibody Response Longevity Among Individuals

Dogus Dogru, Boston College
Short Talk: A Machine Learning-guided Approach to Uncover Microbiome-derived Autoantigen Mimics in Type 1 Diabetes

Networking Session (12:00–1:00 PM)

AI in Cancer Research and Therapeutics (1:00–2:30 PM)

* Weida Tong, US Food and Drug Administration
Session Chair

Channing Paller, Johns Hopkins University
The Risks and Rewards of AI Image Data in Oncology

Jin Choul Chai, SML Labtree
Short Talk: Analyzing the Knowledge Graph of Chronic Disease and Cancer in a Korean Cohort Using Graph Neural Networks

Baharan Meghdadi, University of Michigan
Short Talk: Machine Learning-based Method to Analyze Metabolic Fluxes of Patient Tumors

Joseph DeBartolo, Auron Therapeutics
Short Talk: AURIGIN: A comprehensive single-cell OMICs atlas of human development and an AI/ML framework to classify and identify the drivers of tumor plasticity and altered cellular state

Argenis Arriojas, University of Massachusetts Boston
Short Talk: AI-Enabled Automated Analysis of Chemotherapy Impact on Mitochondrial Morphology in triple negative breast cancer from transmission electron micrographs

Future of AI in Biomedicine II & Panel Discussion (3:00–5:00 PM)

* Weida Tong, US Food and Drug Administration
Session Chair

Nicole Kleinstreuer, NIEHS, National Institutes of Health
Augmented Intelligence Along the CompTox Continuum

Pedro Gomez Vilda, Las Rozas de Madrid
Impact of Data Science on Clinical Applicability of Neurolinguistics

You Wu, City University of New York
Short Talk: Harnessing AI for Systems Medicine of Incurable Diseases