

Data Management for Digital Health: Guest Lecturers on Tools and Applications

Thu Feb 02, 2023 at 11:00 am in Lecture Hall 2 on
HPI Campus I, Prof.-Dr.-Helmert-Str. 2-3, 14482 Potsdam

Using Multiple Data Modalities for Brain Tumor Diagnostics and Treatment

Dr. Sören Lukassen – Berlin Institute of Health (BIH) at Charité

Abstract: In modern medicine, diagnostics and treatment rely on input from a multitude of data sources. This is especially true for precision oncology, where imaging, clinical chemistry, and genomics need to be incorporated. In this talk, we will explore how data science can improve diagnosis and treatment using the specific medical use case of brain tumors. For example, machine learning can help clinicians to a) identify whether a patient is suffering from a tumor, b) where a tumor is located, and c) what type of tumor it is. These data can form the basis for an informed decision about which treatment options to pursue and how to apply them. Furthermore, we will cover the unique challenges present in clinical applications of machine learning, e.g. poorly curated and incomplete data, requirements in terms of speed and reliability of predictions as well as data security and potential ethical concerns.



Short Bio: Sören Lukassen studied molecular medicine and received a PhD in human genetics from the FAU Erlangen-Nürnberg, where he specialized in (single-cell) sequencing data analysis and deep learning. He joined Christian Conrad's lab at the DKFZ in Heidelberg in 2018 and moved to Berlin the same year, continuing his postdoc position at the Charité. Since 2021, he leads the junior research group "Medical Omics" at the Berlin Institute of Health, which focuses on integrating data from multiple sources for diagnosis and treatment of diseases.

Anonymization of HLA Genotypes for Exchange with Untrusted Parties

Matthias Niemann – PIRCHE AG

Abstract: The given talk considers risks of sharing specific genomic information with third parties and what means should be applied to mitigate the risk of leaking sensitive information. Specifically, a real-world example of a digital diagnostic product in the field of organ transplantation will be discussed.



Short Bio: Matthias Niemann serves as VP Technology at PIRCHE AG focusing on implementing the PIRCHE web service and translating the PIRCHE algorithm from a pure research prototype to a commercial tool suite. He supports research teams all around the globe, has authored several publications on molecular matching and regularly presents scientific abstracts at international histocompatibility conferences. Matthias holds a Masters degree in Computer Science from Berlin University (Freie Universität). While working at Charité University Hospital in Berlin, his research focused on epitope matching models and machine learning in sparse clinical data sets. Now at

PIRCHE, he is committed to artificial intelligence in bioinformatic modelling of tissue compatibility and organ allocation simulation.