IT systems in oncology 2025

Agenda

14:00	-	14:45	<u>Luise Modersohn</u>	TU München
14:45	-	15:30	<u>Knut Reinert</u>	FU Berlin
15:30	-	*15:45*	*Break*	
15:45	-	16:30	<u>Juliane Fluck</u>	ZB MED/ Uni Bonn
16:30	-	17:15	<u>Sven Nahnsen</u>	Uni Tübingen

Adress:

Maud-Menten-Hall
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<u>Map</u>

Luise Modersohn

Technical University of Munich

Natural language processing (NLP) in Medicine - challenges and opportunities

With the advent of large language models, the usage of natural language processing tools have become very accessible and powerful. The thought of applying those techniques in the medical domain are not far to seek. However, especially in such a sensitive field, there is more to consider than just technical or scientific issues.

In this talk we will cover the technical basics of natural language processing and transformers, review the current trends and discuss how they can be applied in the medical setting, also with respect to ethical and legal concerns.

Short bio:

- 2009-2014: Study of Bioinformatics (B.Sc. and M. Sc.) at the Friedrich Schiller University Jena
- 2014-2018: Research assistant at the Chair of Image Informatics (FSU Jena)
- 2018-2022: Research assistant at the Chair of Computational Linguistics (FSU Jena)
- since 2022: Head of junior research group "De.xt" (TU Munich)
- since 2023: Head of subproject "Annotation" in the MII Module 3 project GeMTeX
- since 2023: Member of the ethics committee at TUM Klinikum

Knut Reinert

Free University of Berlin

The Hierarchical Interleaved Bloom Filter and applications to cancer research

We present a novel data structure for searching sequences in large databases: the Hierarchical Interleaved Bloom Filter (HIBF). It is fast and space efficient, yet so general that it could serve as the underlying engine for many applications. In this talk we present latest results our group obtained for improving the search performance, computing a layout and sketch plans to dynamize it as well as the application Needle that is used to quickly quantify gene expression.

Short bio:

- 2014-present: Max-Planck-Fellow at the MPI for Molecular Genetics

  From July 2014 on I lead a research group at the Max-Planck-Institute for Molecular Genetics in Berlin.

- 2002-present: Professor for Algorithmic Bioinformatics, FU Berlin, Germany

  Since 2002 I have been a full professor (C4) at the FU Berlin. During this time, I served as twice as Dean of the computer science and math department (2008-2010 and 2021-2023). I was the vice-speaker of the International Max-Planck Research School for Computational Biology and Scientific Computing and PI in the IMPRS for Biology and Computation. I was also the head of the Bioinformatics joint commission between the department of Mathematics and Computer Science, the department of Biology, Chemistry and Pharmacy, and the Charité medical school. In conjunction with various Max-Planck institutes and departments of the Charité I devised a new MSc curriculum and secured internal funding of about 750.000 Euros to support it.

- 1999-2002: Senior researcher, Celera Genomics, Rockville, MD, USA

  At Celera Genomics I worked under the guidance of Professor Gene Myers and participated in the assembly efforts for the genomes of Drosophila Melanogaster and Human. Furthermore, I devised and developed methods for differential protein expression using HPLC/MS methods.

- 1994-1999: PhD student, MPI for Computer Science, Saarbrücken, Germany

  During my PhD studies I worked in the algorithms and complexity group of Professor Dr. Kurt Mehlhorn.

Juliane Fluck

ZB MED & University of Bonn

NFDI4Health – Services of the National Research Data Infrastructure for personal health data

The overall goal of NFDI4Health is to facilitate the sharing of health research data with the user community in a privacy preserving and ethical manner. Thus, NFDI4Health serves as a research data infrastructure for population-based personal health data, i.e., for primary data generated in epidemiological studies, clinical trials and public health surveys. Additionally, data sets from disease registries or secondary data such as claims data from health insurances can be found centrally in the German Central Health Study Hub.
In this talk, I will introduce NFDI4Health and the services we provide to researchers who want to publish their data FAIR or re-use data already available from others.

Short bio:

Juliane Fluck studied biology and completed her PhD in the field of cell biology and immunology with computer science as her minor. The bioinformatics scientist began work at the Fraunhofer Institute for Algorithms and Scientific Computing SCAI in 2000, and in 2006 she took charge of the Text Mining group. In April 2017, she was appointed as deputy head of the Bioinformatics department.
Professor Fluck specialises in the fields of text and data mining. Key topics of her research include semantic data integration and the electronic availability and interoperability of data and knowledge.

Sven Nahnsen

University of Tübingen

The power of accessible data and reproducible workflows for cancer research and care

In my talk, I will discuss the opportunities of open and FAIR data in cancer research and the needed data science technology to make the most scientific use of the plethora of data that is/can be at our disposal. I will describe the nf-core framework and its community- driven approach to collect high quality workflows. Further, I will introduce how nf-core and accessible data have been instrumental to establish data-driven routines in translational settings.

Short bio:

- Since 2021: Professor for Biomedical Data Science, University Tübingen
- Since 2018: Director of the Quantitative Biology Center (QBiC), University Tübingen
- 2012: Head of the Quantitative Biology Center (QBiC), University Tübingen
- 2011: Senior Postdoctoral Scientist at the Center for Bioinformatics, University Tübingen
- 2007-2010: Phd Student, Proteome Center / Center for Bioinformatics, University Tübingen
- 2006: Research Assistant, Center for Neuropsychiatric Research, University of Cambridge, UK
- 2003-2006: M.Sc. Biotechnology, Ecole supérieure de biotechnologie Strasbourg, France
- 2001-2003: B.Sc. Biomathematics, University of Greifswald, Germany