A U S H A N G

FREIE UNIVERSITÄT BERLIN
Fachbereich Mathematik und Informatik

Promotionsbüro, Arnimallee 14, 14195 Berlin

D I S P U T A T I O N

Freitag, 15. Dezember 2023, 13:00 Uhr

Ort: Seminarraum 007/008
(Fachbereich Mathematik und Informatik, Arnimallee 6, 14195 Berlin)

Disputation über die Doktorarbeit von

René Rahn

Thema der Dissertation:
Performance-Driven Algorithm Engineering
Optimising Pairwise Sequence Alignment and Pattern Matching
Algorithms in the Era of Pangenomic Sequence Analysis

Thema der Disputation:
Sequence-to-Graph Alignment

Die Arbeit wurde unter der Betreuung von **Prof. Dr. K. Reinert** durchgeführt.

Abstract: Advances in sequencing technologies have led to an unprecedented growth of sequencing data as well as the compilation of databases that store the genetic diversity of entire populations of humans and other organisms. The typical pipeline used to identify genomic variants from a sequencing experiment involves four key steps: quality control, read error correction, read mapping and variant genotyping. The accuracy of the last step is highly dependent on the accuracy of the previous three steps, with this presentation focusing on reference-guided read mapping. In general, the choice of the reference sequence can significantly affect the accuracy of variant genotyping due to a phenomenon known as reference bias. A promising approach to solve this problem is to align reads against a panel of reference sequences, also known as pangenome, represented in form of a sequence graph. In this talk, I will introduce the general concept of aligning sequences to arbitrary sequence graphs and present computational methods developed for scaling sequence-to-graph alignments on whole-genome sequencing data.

Die Disputation besteht aus dem o. g. Vortrag, danach der Vorstellung der Dissertation einschließlich jeweils anschließenden Aussprachen.

Interessierte werden hiermit herzlich eingeladen

Der Vorsitzende der Promotionskommission
Prof. Dr. K. Reinert