

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, 19. Dezember 2025, 13:00 Uhr

Ort: Seminarraum 006

(Fachbereich Mathematik und Informatik, Takustr. 9, 14195 Berlin)

Disputation über die Doktorarbeit von

Svenja Mehringer

Thema der Dissertation:

The Hierarchical Interleaved Bloom Filter: Algorithmic design of a novel data structure for fast approximate sequence queries

Thema der Disputation:

How close are current k-mer indexing methods to provide a ‘Google for DNA’?

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

Abstract: While we are used to googling any piece of information available in the form of text, there is, to date, no way to similarly search a large database of genetic sequence content. The first talk presents an overview of the research field of approximate sequence search using k-mers with a focus on k-mer indexing techniques. In order to outline the advantages and draw attention to current limitations of existing tools, two state-of-the-art applications, namely COBS and Metagraph, are discussed in detail. The second talk introduces a novel k-mer indexing data structure for fast approximate sequence queries: the Hierarchical Interleaved Bloom Filter (HIBF). After explaining the innovative idea, the algorithmic solution to the challenge of computing its highly flexible design is put forward and supported by selected experiments. Finally, the performance of the HIBF is compared to that of established methods.

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