

FREIE UNIVERSITÄT BERLIN Fachbereich Mathematik und Informatik

Promotionsbüro, Arnimallee 14, 14195 Berlin

DISPUTATION

Mittwoch, 15. Oktober 2014, 14.00 Uhr

Ort: SR 108/109, Arnimallee 6, 14195 Berlin

Disputation über die Doktorarbeit von

Herrn Martin Michael Serenus Lindner

Thema der Dissertation:

**Computational methods for the identification and quantification
of microbial organisms in metagenomes**

Thema der Disputation:

Fast k-mer based methods for the analysis of metagenomic data

Die Arbeit wurde unter der Betreuung von **PD Dr. B. Renard** durchgeführt.

Abstract: A k-mer is defined as a sequence of exactly k characters over a fixed alphabet. In bioinformatics, k-mers are a powerful tool for the analysis of nucleic acid or amino acid sequences. In particular, genomics methods utilize k-mers to speed up and improve fundamental tasks, such as read mapping or genome assembly.

This talk provides an overview of k-mer strategies for the analysis of metagenomic data with particular focus on taxonomic binning, i.e. the process of assigning sequencing reads to their taxonomic origin. The method Kraken [1] is presented in detail as a representative of the class of reference-based taxonomic profiling methods. In contrast to other reference-based binning methods, Kraken dispenses a read mapping step and compares the k-mer composition of every read to a precomputed taxonomic database. With this strategy, Kraken is orders of magnitude faster than competing approaches while providing comparable accuracy.

[1] D.E. Wood and S.L. Salzberg. Genome Biology 2014, 15:R46.

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
PD Dr. B. Renard