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

Montag, 20. Juli 2015, 15.00 Uhr

Ort: Seminarraum 2
Max Planck Institut für Molekulare Genetik,
Ihnestraße 63-73, 14195 Berlin

Disputation über die Doktorarbeit von

Frau Mahsa Ghanbari

Thema der Dissertation:
Association measures and prior information in the reconstruction of gene networks

Thema der Disputation:
Probabilistic graphical models for network inference

Die Arbeit wurde unter der Betreuung von **Prof. Dr. M. Vingron** durchgeführt.

Abstract: Reconstruction of the structure of interactions between variables, which is known as network inference, is a pervasive problem in many fields including biology. Graphical models have gained much attention in the context of network inference. When pairs of variables are processed at a time, one speaks of relevance networks. In general, probabilistic graphical models are representations of multivariate probability distributions, where the conditional (in)dependencies between the random variables are expressed via a graph. There are two major classes of graphical models: undirected graphical models, also known as Markov networks and directed graphical models, also known as Bayesian networks.
In this presentation, I briefly introduce relevance networks, Gaussian graphical models, and Bayesian networks and explain how to infer them from available data. I also describe challenges when dealing with real data. Especially, I will talk about the case when the number of samples is much smaller than the number of variables.
In the second section of the presentation, I will present my PhD work on gene regulatory networks reconstruction using prior knowledge and on (partial) distance correlation.

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. M. Vingron