

A U S H A N G

FREIE UNIVERSITÄT BERLIN

Fachbereich Mathematik und Informatik

Promotionsbüro, Arnimallee 14, 14195 Berlin

DISPUTATION

Montag, 28. März 2022, 10:00 Uhr

[WebEx](#)

Disputation über die Doktorarbeit von

Herrn Victor Mireles Chávez

Thema der Dissertation:

Finding Reusable Modules Using Sparse Matrix Decompositions

Thema der Disputation:

Advances in text-based reconstruction of biological networks

Die Arbeit wurde unter der Betreuung von **PD Dr. T. Conrad** durchgeführt.

Abstract: Networks are a useful way to represent biological processes and structures. One of the approaches to building such networks is to do automatic extraction of edges from text. This aims at capturing the human-relevant knowledge that authors state in scientific literature, and representing it in a machine readable and easy to query manner. In this talk, I will present a review of the advances in the last 10 years in the reconstructions of such networks from text. These years have seen the incursion of new technologies into the field of Natural Language Processing, most notably large neural network architectures and lexical modelling techniques. Most of these are based on statistical classifiers which take as input a vector representing a text fragment, and output the probability that said fragment is a natural language representation of a relationship between biological entities. Great effort has been invested in creating text representations such that geometrical properties correspond to the semantic relationships that biological networks aim to represent. This talk will include an overview of modern text representation methods, the different classifiers used to build networks based on them, and their successful application in the automatic discovery of, for example, genotype-phenotype relationships[1], protein-protein interactions[2] and even several of these simultaneously[3]. The success and limitations of the text-to-graph approach will be discussed, as well as the interaction with other problems in scientific and industrial research.

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. T. Conrad