

# A U S H A N G

---

## FREIE UNIVERSITÄT BERLIN

Fachbereich Mathematik und Informatik

Promotionsbüro, Arnimallee 14, 14195 Berlin

## DISPUTATION

**Montag, 27. Juni 2022, 10:30 Uhr**

[WebEx](#)

**Disputation über die Doktorarbeit von**

**Frau Martyna Katarzyna Gajos**

**Thema der Dissertation:**

**Analysis of the determinants of Pol II pausing**

**Thema der Disputation:**

**Interpretable machine learning approaches in genome regulation research**

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

**Abstract:** High-throughput technologies such as next-generation sequencing allow researchers to observe biological systems at molecular resolution. However, the resulting datasets are too large and complicated to be intelligible to humans without the help of advanced statistical methods. Machine learning algorithms are well suited for capturing the dependencies in large quantities of data. Trained machine learning models are indeed able to make accurate predictions, but because of their complexity, it can be hard to understand why certain predictions have been made. This is a major drawback, especially in genome regulation studies, where researchers are not only interested in accurately predicting the behaviour of a biological system, but where the main goal is to uncover the mechanisms that led to a certain outcome. Therefore, interpretable machine learning, a discipline devoted to making the predictions of machine learning models more intelligible to end-users, is receiving an increasing amount of attention.

In my talk, I will briefly motivate the use of interpretable machine learning approaches. I will introduce the classification of existing approaches and prerequisites for making machine learning models interpretable. Finally, I will present selected studies applying interpretable machine learning approaches to gain a better understanding of genome regulation.

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