

## **Invitation to the Oral Examination – Department CS**

For the occasion of his/her examination for a Doctoral Degree,

**Mr. Alexander Karollus**

will present his/her dissertation entitled/on

**Decoding the Regulatory Genome with Supervised and Self-Supervised Models**  
on **11th May 2026** at **2:30 p.m. CEST**

Attendance to the presentation is open to the public. The presentation will be in English.

The candidate, all members of the Examination Committee, and authorized examiners of the TUM School of CIT are invited to the presentation and subsequent oral examination.

The presentation and subsequent examination will take place online via Zoom:

<https://zoom.us/j/99075286925?pwd=5T6bRmhpWk760blrJR0omclcCF6xBV.1>

Meeting-ID: 990 7528 6925

Passcode: 085277

### **Examination committee:**

Chair: **Prof. Dr. Burkhard Rost, TUM**

First Examiner: **Prof. Dr. Julien Gagneur, TUM**

Second Examiner: **Prof. Ph.D. Stein Aerts, KU Leuven**

Second Examiner: **Adjunct Prof. Ph.D. Alexander Stark, University of Vienna**

Garching, the **17th** of **April 2026**

### **Mailing list:**

Members of the examination committee

Doctoral candidate

**Abstract:**

Deep learning methodologies have emerged as pivotal tools in deciphering the intricate regulatory code embedded within non-coding genomic regions. We show that while supervised deep learning models effectively capture proximal gene regulatory mechanisms, they are currently limited in their ability to model distal enhancer effects. To supplement supervised approaches, we establish self-supervised, species-aware DNA language models as a robust complementary approach that learn conserved regulatory elements from unannotated genomes and offers novel avenues for interpretation.