Invitation to the Oral Examination – Department CS

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

Yordanka Velikova
will present her dissertation entitled on
on
Learning-Based Representations for
Ultrasound Image Understanding
on 05/05/2026 at 16-17 P.M

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 in room
00.10.011, CIT Sitzungsraum 1 (5610.EG.011).

Examination committee:

Chair: Prof. Dr.-Ing. Matthias Althoff
First Examiner: Prof. Dr. Nassir Navab
Second Examiner: Assoc. Prof. Ph.D. Stamatia Giannarou
Third Examiner: Assistant Prof. Ph.D. Ilker Hacihaliloglu, The University of British Columbia
Munich/Garching, the 5th of May 2026

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Abstract:

A central theme in machine learning is finding data representations that simplify downstream tasks while being robust and label-efficient. Effective representations disentangle semantic variables, respect geometry, and suppress irrelevant variability, leading to more generalizable and interpretable models. Over the last decade, representation learning has advanced rapidly, yet key challenges remain: reliance on labeled datasets and limited integration of acquisition physics. These challenges are most acute in medical imaging, where annotations are costly and anatomy adds complexity. Ultrasound amplifies these issues: it is safe, inexpensive, and real-time, yet highly operator-dependent and prone to modality artifacts.