

Invitation to the Oral Examination – Department CE

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.