

Invitation to the Oral Examination – Department CS

For the occasion of his examination for a Doctoral Degree,

Mr. Björn Häfner

will present his dissertation entitled

Physically-Based Inverse Problems for High-Quality 3D Reconstruction

on Thursday, **9th of January 2025 at 10:30 am (C.E.T.)**

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 hybrid:

Online via BBB:

<https://bbb.cit.tum.de/rue-vp2-zfv-ive>

Access code: 047359

In person:

Room **00.12.019**

(CIT Sitzungsraum 2), CIT-Building, Boltzmannstraße 3, 85748 Garching

Examination committee:

Chair: **Prof. Rüdiger Westermann – TUM CIT, I 15**

First Examiner: **Prof. Daniel Cremers – TUM CIT, I 9**

Second Examiner: **Prof. Bastian Goldlücke, University of Konstanz**

Third Examiner: **Prof. Ronen Basri - Weizmann Institute of Science, Rehovot**

Garching, the 11th. of **December 2024**

Abstract:

This thesis explores physically-based 3D reconstruction through four papers. They address critical challenges in depth super-resolution, Shape-from-Shading, uncalibrated photometric stereo, joint photometric stereo and segmentation, and bidirectional reflectance distribution function parameter estimation. The proposed approaches outperform existing methods, offering improved performance, efficiency, and robustness. These findings open doors for further advancements and applications in the field.