

Invitation to the Oral Examination – Department CE

For the occasion of his examination for a Doctoral Degree,

Arne Peters

will present his dissertation entitled

Autonomous Robot Calibration Using Actuated 3D Sensors

on **19th of December 2024 at 13:00 h / 1PM**

Attendance to the presentation is open to the public.

The presentation will be in German.

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://tum-conf.zoom.us/j/2176944321?pwd=bDhURGJDVfHMDhtdC9vMk1HWEZYdz09>

Meeting ID: 217-694-4321

Password: 738086

Examination committee:

Chair: **Prof. Dr. Michael Gerndt**

First Examiner: **Prof. Dr. Christian Knoll**

Second Examiner: **Prof. Dr. Wolfram Burgard**

Garching, the **10th of December 2024**

Mailing list:

Members of the examination committee

Doctoral candidate

Abstract:

This thesis demonstrates that a robotic eye-in-hand system composed of any arbitrary manipulator and 3D sensor can be entirely self-calibrated without requiring any external tools. Instead of using a dedicated reference object, it treats calibration as a 3D reconstruction problem. It adopts the iterative closest point (ICP) algorithm to estimate a complex kinematic model and reaches a precision on par with a traditional approach using a high-end external tracking system.