

Invitation to the Oral Examination – Department CE

For the occasion of his examination for a Doctoral Degree

Matthias Gerhard Mayer

will present his dissertation entitled
Holistic Optimization of Modular Robots
on **Tuesday, 21st of April 2026 at 11:00 am** (German time)

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 00.12.019 (CIT, Boltzmannstr. 3, 85748 Garching) and online via Teams:

<https://teams.microsoft.com/meet/325271967962794?p=EV6hS04i4iXi46DGtM>

Besprechungs-ID: 325 271 967 962 794

Passcode: Zi6bm379

Examination committee:

Chair: **Prof. Daniel Cremers**

First Examiner: **Prof. Matthias Althoff**

Second Examiner: **Prof. Markus Zimmermann**

Garching, the 1st of April, 2026

Mailing list:

Members of the examination committee

Doctoral candidate

Abstract:

Modular robots enable more tailor-made automation with the robot structure being adapted to a desired task. Finding suitable module combinations remains a challenging combinatorics problem and contains subproblems such as motion planning. The core contribution is formulating this optimization problem holistically and developing practical solutions. Extensive simulations and real-world validation show that this holistic approach improves optimization over the state of the art.