

## Master 2015

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Development of Automated Pose Measurement Procedures for Calibrating Industrial Robots.

## ABSTRACT - Masterthesis

Using standard industrial robots in aerospace automated manufacturing requires a high level of accuracy. Therefore, standard industrial robots should be calibrated. Full pose measurements (position and orientation) of the robot end-effectors are required for the identification of the robot kinematic errors during the calibration process.

This thesis details the development of using the measurements of three points for deriving the pose in respect to a reference frame. The developed method is compared with a commercial camera based method for measuring poses. A practical application of using the pose measurements in robot calibration is presented in this thesis. The design, analysis, calibration results and measurement results are also presented in this thesis.

The developed measurement methods are evaluated and tested on a standard industrial robot (KUKA KR 270 R2700 ultra). All measurements for the pose determination are done using a laser tracker (Leica AT901LR).