Curriculum Vitae

Name:	Sabine Thürauf (maiden name: Küng)
Address:	Rudelsweiherstr. 15 91054 Erlangen
Phone:	+491706689806
E-Mail:	sabine.thuerauf@gmail.com
ORCID:	0000-0002-5215-6635
Date of birth:	8th October 1989
Place of birth:	Erlangen (Germany)
Nationality:	German, Austrian

Education:

3rd April 2017- 30th of June 2017	Visiting Graduate Student at Johns Hopkins University (Baltimore), Laboratory for Computational Sensing & Robotics (Supervisor: Nassir Navab): Robotic Guidance for Pelvis Fracture Surgery
15th October 2014	Ph. D. Student at TU Munich, Chair: Robotics and Embedded Systems (Supervisor: Alois Knoll) Estimation of a Highly Accurate Robot Model Based on X-Ray Observation (in co-operation with Siemens Healthcare GmbH)
Winter Term 2012/2013 – 27th June 2014	M. Sc., Informatics at TU Munich Specialization: AI and Robotics, Computer Graphics and Vision, Algorithms and Scientific Computing Master's Thesis (together with Siemens AG): Robotic System for Torque-Based Motion Compensation in Minimally Invasive Surgery
Winter Term 2009/2010 – Summer Term 2012	B. Sc., Informatics at TU Munich Bachelor's Thesis: Depth-based Object Recognition for Robot Grasp Planning
2000 – 2009	Ehrenbürg-Gymnasium Forchheim (Mathematical and Natural Science)
Summer Term 2007	Early Study at FAU Erlangen-Nürnberg Computer Science: Algorithms and Data Structures I Computer Science: Basics in Computer Science I
Winter Term 2006/2007	Early Study at FAU Erlangen-Nürnberg Computer Science: Multilingual Hybrid Language Parsing

Professional Experience:

11th September 2022 - now	FAU Erlangen-Nürnberg, Department AI in Biomedical Engineering Assistive and Intelligent Robotics Lab PostDoc: Development of Systems for Assistive Robotics & Rehabilitation Robotics, Wearables, Teleimpedance, Prosthetics, Contact for Collaborations with Industry Partners and Clinics
15th December 2018 – 31st May 2022	Schaeffler Technologies AG & Co. KG, Herzogenaurach Specialist Process Control in Research Area Sensors: Development and Implementation of an IIoT Device, Development and Implementation of New Optimization Strategies and Algorithms for Production Machines, Implementation of GUI and Development of Network Communication Processes
15th October 2014 – 30th November 2017	fortiss GmbH, Munich (in cooperation with Siemens Healthcare, Forchheim) Research Division Cyber-Physical-Systems Researcher in the Project RoboterRöntgen: Project Management, Planning and Execution of High Precision Measurements, Generation of Simulations, Physical Modelling, Supervision of Students, Collaborating between University, Research Institute and Industry Partner
1st October 2012 – 31st March 2013	TU Munich, Garching Chair of Scientific Computing Student Researcher: Installation and Execution of SPEC and NAS Benchmarks for Many-Core-Processors, Embedding of C in Fortran-Benchmark, Literature Research
1st February 2012 – 30th September 2012	TU Munich, Garching CoTeSys, Cluster of Excellence at the Intelligent Autonomous Systems Group Student Researcher: Generation of PHP Questionnaires, Carrying out Human-Robot-Interaction Studies, Assistance at Supervision of Bachelor Students and „Girlsday“, Assistance at Modifications of Robots
14th October 2011 – 31st March 2012	TU Munich, Garching Chair of Scientific Computing Tutor for Numerical Programming
1st October 2010 – 6th March 2011	TU Munich, Garching Chair of Efficient Algorithms Tutor for Discrete Structures
1st June 2010 – 30th September 2010	Siemens AG, Munich Working Student: Rating and Classification of Security Vulnerabilities

Publications:

Jingyu Ouyang, Fabio Egle, Claudia Igney, Thomas Mutzke, Chiheb Dahmani, Claudio Castellini, **Sabine Thürauf**: C-Arm Unleashed: Intuitive Inter-Operative Positioning of C-Arms Using Wearable Gesture Detection, IEEE RAS/EMBS BioRob 2024

Sabine Thürauf: Accurate and Efficient Calibration of a Robotic C-Arm System Based on X-Ray Observations. Dissertation, TU Munich, 2018

Sabine Thürauf, Oliver Hornung, Mario Körner, Florian Vogt, M. Ali Nasseri and Alois Knoll: Model-based Calibration of a Robotic C-Arm System using X-Ray Imaging, Journal of Medical Robotics Research Vol. 03, No. 03n04, 2018

Sabine Thürauf, Mario Körner, Florian Vogt, Oliver Hornung, M. Ali Nasseri and Alois Knoll: Environment Effects at Phantom-Based X-Ray Pose Measurements, IEEE EMBC 2017

Sabine Thürauf, Oliver Hornung, Mario Körner, Florian Vogt, M. Ali Nasseri and Alois Knoll: Absolute Accurate Calibration of a Robotic C-Arm System based on X-Ray Observations using a Kinematic Model. IEEE ICRA 2017 Workshop on Surgical Robots: Compliant, Continuum, Cognitive, and Collaborative

Sabine Thürauf, Florian Vogt, Oliver Hornung, Mario Körner, M. Ali Nasseri and Alois Knoll: Experimental Evaluation of the Accuracy at the C-Arm Pose Estimation with X-Ray Images. IEEE EMBC 2016

Sabine Thürauf, Markus Wolf, Mario Körner, Florian Vogt, Oliver Hornung, M. Ali Nasseri, Alois Knoll: A Realistic X-Ray Simulation for C-Arm Geometry Calibration. IEEE RAS/EMBS BioRob 2016

Sabine Thürauf, Oliver Hornung, Mario Körner, Florian Vogt, M. Ali Nasseri and Alois Knoll: *Evaluation of a 9D-Position Measurement Method of a C-Arm Based on X-Ray Projections.* MICCAI 2015 Workshop on Interventional Microscopy.

Sabine Thürauf, Florian Vogt, Oliver Hornung, Mario Körner, M. Ali Nasseri and Alois Knoll: *Tuning of X-Ray Parameters for Noise Reduction of an Image-Based Focus Position Measurement of a C-Arm X-Ray Syste*m. IEEE/RSJ IROS 2015 Workshop on Alternative Sensing for Robot Perception: Beyond Laser and Vision.

Patents:

Abhinav Gulhar, Philip Mewes, Holger Mönnich, **Sabine Thürauf**: Robotic Devices and Methods of Operating Robotic Devices; Publication Number: US10322508B2, CN105643621A & DE102014224123B4

Abhinav Gulhar, Philip Mewes, **Sabine Thürauf**: Method for Operating a Robotic Devices and Robotic Devices; Publication Number: US10065315B2 & DE102014224122B4

Talks & Panel:

KinderUni Erlangen WS 2024/2025: KI ist so divers wie wir!

ICRA Workshop, Assistive Systems 2024: Lab to Patient Care, Invited Speaker: “Human-Robot-Co-Adaption for Assistive Systems”

ICRA Workshop 2024, A-HUMAN – Advanced human-robot interfaces based on physiological signals and sensory stimulations, Invited Speaker: “Wearables for (tele-)manipulation of different robotic systems”

KinderUni Nürnberg SS 2024: Crashkurs Roboter: Muskelsteuerung und Tracking

PeopleInScience@TF Networking Event at FAU 2024, Panel Member: „Keep Sane in Science – How to Manage Mental Load?“

KinderUni Nürnberg WS 2023/2024: Crashkurs Roboter: Schatzsuche

ENHands Forum 2023, Invited Speaker & Panel Member: “Prosthesis Control for All: Low-Cost Wearable Sensor Solutions”

Wissenschaftstag der Metropolregion Nürnberg, Invited Speaker & Panel Member: „Menschliches und maschinelles Lernen treffen sich: Datenqualität führt zu Ko-Adaption führt zu Akzeptanz“

Joint workshop FAU/DLR, 2023: “Assistive Intelligent Robots and Wearable User Interfaces”

KinderUni Nürnberg SS 2023: Crash-Kurs Roboter: Wie steuere ich einen Roboter?

Awards:

Sabine Thürauf: Scholarship holder of Christiane Nüsslein-Vollhard-Foundation 2024

Sabine Thürauf: Travel award for Women in Robotics Workshop (WiRW) at the 2018 Robotics: Science and Systems in Pittsburgh

Sabine Thürauf: Finalist at Best Poster Award at IEEE RAS/EMBS BioRob 2016

Sabine Thürauf, Andrea Stefke, Kristina Sawinsky, Martin Leipert: 1. Prize for “Most Innovative Project” at Innovation Research Lab Exhibition of Friedrich-Alexander University Erlangen-Nürnberg, 2016

Grants:

Industry

Project RoboterRöntgen (August 2014-December 2017; approx. 250.000€)

PhD project in cooperation between fortiss and Siemens Healthcare about the calibration of a robotic C-arm system.

Comment: The communication between Siemens Healthcare, TU Munich and fortiss was initiated by myself. After the initial planning, the project was managed by myself regarding finances, project re-planning, contract extension, etc. .

DFG

Research Scholarship (1 year at Johns Hopkins University, AMIRO Lab, Supervisior Iulian Iordachita; approx. 55.000€)

Postdoc project about the calibration of an ophthalmic tool with dynamics model using force and vision measurements.

Comment: This project was accepted but not performed

Leopoldina

Leopoldina-Postdoc-Scholarship (1 year at Johns Hopkins University, AMIRO Lab, Supervisior Iulian Iordachita; approx. 55.000€)

Postdoc project about the calibration of an ophthalmic tool with dynamics model using force and vision measurements.

Comment: This project was accepted not performed

Teaching & Supervision:

Supervised students:

Gongbo Yan: Catheter Insertion Tracking via EMG (Master's Thesis 2024)

Nithin Nagaraja Vaidya Sujatha: Literature Review on Initiative Robot Control (Research Lab 2024)

Teena Nandwadi: Design and Implementation of a Vibrotactile Bracelet for Navigation (Research Lab 2023/2024)

Aksheen Malhotra: Measuring Muscle Stiffness via Electrical Stimulation (Research Lab 2024)

Florian Mehrkens: Cartesian Stiffness Measurements of Humans (February 2024 – June 2024, Master's Thesis)

Lam Tran: A Virtual Reality Setup for Measuring Human Stiffness (January 2024 – June 2024, Bachelor's Thesis)

Rebecca Glas: Design and Implementation of a Variable Stiffness Exosuit (February 2024 – July 2024, Master's Thesis)

Fanlin Meng: A Vibrotactile Navigation System for Scatter Radiation Avoidance (October 2023 – April 2024, Master's Thesis)

Jingyu Ouyang: Intuitive Control for Industrial Setups (July 2023 – January 2024, Master's Thesis)

Markus Wolf: Evaluation of the Influences of Detector Malpositioning / Misalignment and Tube Malpositioning at the Absolute Calibration of a Robotic C-Arm System (June 2015 - February 2016, Master's Thesis)

Kristina Sawinsky: Optimal Measurement Poses for an Absolute Calibration of a Robotic C-arm System (April

2016 – October 2016, Master's Thesis)

Stefan Freitag: Improving the Absolute Accuracy of a Robotic C-Arm System with Machine Learning Techniques (November 2016 – July 2017, Master's Thesis)

Working students & Interns:

Michael Dietz: Design and Assistance of Experiments & Implementation of Plug-Ins for C-Arm Simulation (May 2015 – December 2015)

Alireza Bahram: Assistance of Experiments & Implementation of Filtering Tool for Laser Tracker Calibration Measurements (October 2015 – February 2016)

Andrea Stefke: Design, Assistance and Evaluation of Experiments & Implementation of X-Ray Simulation for Measurement Accuracy Evaluations (January 2016 – March 2017)

Martin Leipert: Implementation of Plug-Ins for C-Arm Simulations, Implementation for Extracting Information from X-Ray Images, Implementation of Multiply Tools for Experimental Evaluation (April 2016 – November 2017)

Luisa Weyers: Literature Research about C-Arm Calibration and Absolute Accurate Robot Calibration (June 2016 – July 2016 & September 2016 – October 2016)

Kristina Sawinsky: Implementation of an Optimizer for Searching Optimal Measurement Poses using the Inverse Fisher Matrix (September 2016 – October 2016)

Exercises:

Summer Term, 2024:	Intent Detection and Somatosensory Feedback
Summer Term, 2024:	Rehabilitation and Assistive Robotics
Winter Term, 2023/2024:	Human-Robot Co-Adaption
Winter Term, 2023/2024:	Upper Limb Prosthetics
Summer Term, 2023:	Rehabilitation and Assistive Robotics
Winter Term, 2022/2023:	Human-Robot Co-Adaption
Winter Term, 2022/2023:	Upper Limb Prosthetics
Winter Term, 2010/2011:	Discrete Structures
Winter Term, 2011/2012:	Numerical Programming

Seminars:

Summer Term, 2023/2024:	History of Medical Engineering (Seminar in the Museum)
Winter Term, 2023/2024:	History of Medical Engineering (Seminar in the Museum)
Winter Term 2016/2017:	Robot-Assisted Surgery in Clinics
Summer Term 2017:	Robot-Assisted Surgery in Clinics

Committee Work:

since 2023: Member of Profile Center Medical Engineering at FAU Erlangen Nuremberg

2024: Organizer ICNR Workshop, “Human Kinematics Monitoring” (accepted, takes place in Nov 2024)

2023-2025: Member of Academic Commission for the B. Sc. Artificial Intelligence at FAU Erlangen Nuremberg

2023-2025: Elected Deputy Representative of Scientific Staff at the Managing board of the AIBE Department at FAU Erlangen-Nuremberg

2023: Co-Organizer of AIBE Conference (Internal Conference of Department, approx. 200 participants)

2016-2019: Secretary (elected Board Member) of IEEE Student Chapter Munich

2013: Student Member of Appointment Committee for “Tenure Track: Games Engineering” (TU Munich)

2011: Student Member of Appointment Committee for “Tenured Professorship of Logics and Verification” (TU Munich)

2011: Elected Student Representative (TU Munich)

2009-2013: Elected Board Member for Fresher’s Event Organization Team at Student Body of Faculty (TU Munich)

Attended Courses:

Summer / Winter Schools:

2017: GSB Summer School on Precision Medicine (TUM, Aschau am Inn)
2016: Summer Screws - Screw Theory Based Methods in Robotics (ETS, Montreal)
2016: GMSI-GSDM Summer Camp (University of Tokyo, Tokyo)
2016: 1st Italian Multibody Summer School (University Parma, Parma)
2015: International Summer School on Metrology (PTB, Braunschweig)
2014: Hamlyn Winter School on Surgical Imaging and Vision (Imperal College, London)

Soft Skill Courses (since beginning of PhD):

2023: Recognize, Avoid, and Prevent Sexual Harassment

2023: Conduct Diversity-Competent Assessments

2016: Visibility and Impact of Research: Bibliometry, Scientific Communication and Publication Strategies

2016: Should I Stay or Should I Go? (Academic & Industrial Career Planning)

2016: Impro Theater Training

2016: Good Scientific Practice

2015: Individual Change Management

2015: Efficiency Skills for Doctoral Candidates

2015: Successful Collaboration in Interdisciplinary Teams

2015: Leadership and Personality

Miscellaneous:

Languages:	German (native) English (fluent) Spanish (basics) French (basics)
Stays Abroad:	2017 3 Months: USA (Baltimore) 2001 2 Months: Malaysia (Kuala Lumpur) 1991 6 Months: Spain (Tarragona)
Family Status:	married, 4 children
Parental Leave:	22.12.2017 - 14.12.2018 29.03.2019 - 18.10.2020 01.08.2021 - 29.05.2022 17.01.2023 - 11.09.2023 (part-time with baby)