

## Prof. Dr.-Ing. habil. Uwe D. Hanebeck | CV

Professor (W3)

Karlsruhe Institute of Technology (KIT)

Institute for Anthropomatics and Robotics (IAR)

Chair for Intelligent Sensor-Actuator-Systems (ISAS)

Adenauerring 2, D-76131 Karlsruhe

Date of birth: 14.06.1965, male, German, married, four kids

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### Research Focus

*Bayesian machine learning under uncertainties:* (distributed & decentralized) data & information fusion, nonlinear state estimation, system modelling & identification, model predictive control

*Applications:* localization, robotics, telepresence systems & virtual/mixed reality, aircraft surveillance, industrial sorting, predictive maintenance & anomaly detection

### University Education

1989–1990 Electrical engineering, Purdue University, West Lafayette, Indiana, USA

1986–1991 Electrical engineering, University of Bochum

### Scientific Degrees

2003 Habilitation degree in electrical engineering, University of Munich (TUM)

1997 Doctoral degree (Dr.-Ing.) in electrical engineering, University of Munich (TUM)

### Professional Experience

2008–present Re-appointment as Full Professor (W3) in Computer Science, KIT

2003–2008 Full Professor (C4) in Computer Science, University of Karlsruhe

1999–2002 Academic Counselor (tenured from 03/2002) at the Institute of Automatic Control Engineering (LSR), Department of Electrical Engineering and Information Technology (EEIT), University of Munich (TUM)

1997–1999 Postdoctoral Researcher at LSR, EEIT, TUM

1992–1997 Doctoral Researcher at LSR, EEIT, TUM

### Activities

2014–2019 Editor-in-Chief of the Journal of Advances in Information Fusion (JAIF), International Society of Information Fusion (ISIF)

2010–present Member of Board of Trustees of the Fraunhofer Institute for Communication, Information Processing and Ergonomics (FKIE), Bonn-Wachtberg, Germany

2010-2016 Technical Editor for Letters: IEEE Transactions on Aerospace and Electronic Systems (TAES)

2009-2013 Associate Editor-in-Chief JAIF

2006–present Scientific Advisor of the Fraunhofer Institute of Optronics, System Technologies and Image Exploitation (IOSB), Karlsruhe, Germany

2005–2015 Chairman of the Research Training Group RTG 1194 “Self-organizing Sensor-Actuator-Networks” financed by the German Research Foundation (DFG)

### Conference Organization

2020 **General Chair** MFI 2020, Karlsruhe, Germany

2020 **Publicity Chair** 21st IFAC World Congress, Berlin, Germany

2017 **Program Co-Chair** MFI 2017, Daegu, Korea

2016 **General Chair** MFI 2016, Baden-Baden, Germany

2016 **General Chair** 19th Intl Conf on Information Fusion (FUSION 2016), Heidelberg, Germany

2014 **Special Sessions Co-Chair** FUSION 2014, Salamanca, Spain

2013 **Technical Co-Chair** FUSION 2013, Istanbul, Turkey

2013 **Publication Co-Chair** ICRA 2013, Karlsruhe, Germany

2010 **Technical Program Co-Chair** IROS 2010, Taipei, Taiwan

2010 **Program Co-Chair** KI 2010, Karlsruhe, Germany

2008 **Program Co-Chair** MFI 2008, Seoul, Korea

2008 **Program Co-Chair** FUSION 2008, Cologne, Germany

2006 **General Chair** MFI 2006, Heidelberg, Germany

## Awards

Offers	Full professorships 2002 und 2008 University Bielefeld (rejected)
Societies	Fellow IEEE for contributions to nonlinear estimation and control
Paper Awards	Fusion 2020, OCM 2017, SDF 2014, 2 x FUSION 2014, 2 x FUSION 2013, FUSION 2011, MFI 2008, ICRA 1996, ICONIP 1994
Teaching	More than 30 teaching awards of the Department of Informatics, KIT
Dissertation	Rohde & Schwarz Award 1997
Diploma	Award of the Ruhr-Universität Bochum of the year 1992 for the outstanding diploma thesis "Investigations on the Use of Markov Processes for the Generation of Speech Model Signals"

**Doctorates:** 26 finished, 11 in progress

## Ten Most Important Publications (last five years)

*Kailai Li, Florian Pfaff, Uwe D. Hanebeck,*

**Unscented Dual Quaternion Particle Filter for SE(3) Estimation,**

IEEE Control Systems Letters, 5(2):647–652, April 2021.

*Marko Ristic, Benjamin Noack, Uwe D. Hanebeck,*

**Secure Fast Covariance Intersection Using Partially Homomorphic and Order Revealing Encryption Schemes,**

IEEE Control Systems Letters, 5(1):217–222, January 2021.

*Susanne Radtke, Benjamin Noack, Uwe D. Hanebeck,*

**Fully Decentralized Estimation Using Square-Root Decompositions,**

Proceedings of the 23rd International Conference on Information Fusion (Fusion 2020), Virtual, July 2020. **(Winner Best Paper Award)**

*Uwe D. Hanebeck,*

**Deterministic Sampling of Multivariate Densities based on Projected Cumulative Distributions,**

Proceedings of the 54th Annual Conference on Information Sciences and Systems (CISS 2020), Princeton, New Jersey, USA, March 2020.

*Eva Julia Schmitt, Benjamin Noack, Wolfgang Krippner, Uwe D. Hanebeck,*

**Gaussianity-Preserving Event-Based State Estimation with an FIR-Based Stochastic Trigger,**

IEEE Control Systems Letters, 3(3):769–774, July 2019.

*Gerhard Kurz, Florian Pfaff, Uwe D. Hanebeck,*

**Application of Discrete Recursive Bayesian Estimation on Intervals and the Unit Circle to Filtering on SE(2),**

IEEE Transactions on Industrial Informatics, 14(3):1197–1206, March 2018.

*Antonio Zea, Florian Faion, Marcus Baum, Uwe D. Hanebeck,*

**Level-Set Random Hypersurface Models for Tracking Non-Convex Extended Objects,**

IEEE Transactions on Aerospace and Electronic Systems, 2017.

*Maxim Dolgov, Uwe D. Hanebeck,*

**Static Output-Feedback Control of Markov Jump Linear Systems Without Mode Observation,**

IEEE Transactions on Automatic Control, October 2017.

*Benjamin Noack, Joris Sijs, Marc Reinhardt, Uwe D. Hanebeck,*

**Decentralized Data Fusion with Inverse Covariance Intersection,**

Automatica, 79:35–41, May 2017.

*Gerhard Kurz, Uwe D. Hanebeck,*

**Deterministic Sampling on the Torus for Bivariate Circular Estimation,**

IEEE Transactions on Aerospace and Electronic Systems, 53(1):530–534, February 2017.

**Full publication list:** see <https://isas.iar.kit.edu/Publications>