

Short CV

Prof. Dr. **Jochen J. Steil**
Institute for Robotics and Process Control
Technische Universität Braunschweig
38106 Braunschweig, Germany
Phone: +49 (531) 391-7451
E-Mail: j.steil@tu-braunschweig.de
www.robotics-bs.de



Position Professor of Robotics, Head of Institute

Career

since 09/16 full professor at Technische Universität Braunschweig
02/15 - 01/19 Coordinator H2020 CogIMon: Cognitive Compliant Interaction in Motion
since 03/15 visiting Professor in Computer Science, Brookes University, Oxford, UK
04/07 - 09/16 Managing Director Research Institute for Cognition and Robotics – CoR-Lab
09/13 - 12/13 temporary full Professor of Computer Science, Brookes University, Oxford UK
03/10 - 02/14 Coordinator FP7-IP AMARSi: Adaptive Modular Architectures for Rich Motor Skills
05/08 - 09/16 Professor for Neuroinformatics at Faculty of Technology, Bielefeld University
11/07 - 05/08 Managing Director of DFG Cluster for Cognitive Interaction Technology, CITEC
03/06 - 07/06 Principal Scientist at Honda Research Institute Europe, Offenbach
since 06/02 Akademischer Rat (promoted to Oberrat 06/05, to Akad. Direktor 01/08) at Bielefeld University, Neuroinformatics Group, Faculty of Technology
09/96 - 06/02 Researcher at Bielefeld University
09/95 - 09/96 DAAD Scholarship at Electrotechnical University, St. Petersburg, Russia
10/93 - 09/95 Researcher at Bielefeld University

Education

July 2006 Habilitation “Stability, Learning, and Recurrency: from Neural Networks to Robot Architectures”, *venia legendi* in Neuroinformatics
June 1999 Dr. rer. nat., Faculty of Technology, Bielefeld University with dissertation on “Input-Output Stability of Recurrent Neural Networks”, graded “*summa cum laude*”
1987 - 1993 Diploma study program “Mathematics (2cnd: Slawistics)”, Bielefeld University

Research interests

cognitive and humanoid robotics, assistive systems, developmental and autonomous motor learning, visual online learning, visual attention, learning, neural and recurrent networks, nonlinear dynamics

EU-H2020/FP7 project coordinator

H2020 644272 CogIMon: Cognitive Compliant Interaction in Motion
(7 partners from 4 countries, 02/2015-01/2019, 4 years, 7 Mill EUR funding)
FP7-ICT IP no. 248311 AMARSi: Adaptive Modular Architectures for Rich Motor Skills
(10 partners from 6 countries, since 03/2010, 4 years, 7 Mill EUR funding), www.amarsi-project.eu
FP7-ICT IP ECHORD, MoFTaG (Model free trajectory generation), 11/2011-04/2013
FP7-IRSES, CODEFOR, German-Japanese staff exchange program, 01/2014-12/2018
FP7-ECHORD++: CoHRoS - Cooperate programming for highly redundant robot systems, with Carl Cloos Schweissttechnik GmbH, 01/2015-06/2016

Participation in large scale research projects

Project leader in NRW Fortschrittsskolleg „Gestaltung flexibler Arbeitswelten“ (2014-2018),
Coordinator for Human-Machine Interaction in BMBF leading edge cluster: Intelligent Technical Systems (regional industry-academia innovation cluster, funding 40 Mio EUR, 2012-2017),
scientific board of DFG Excellence Center in Cognitive Interaction Technology – CITEC (2012-2016), project leader in DFG special research units „Alignment in Communication“, „Situating Artificial Communicators“, project leader in DFG Graduate Programs 231 “Structure Formation”, 518 “Strategies and Optimization of Behavior”, 256 “Task Oriented Communication“

Selected funded industrial collaboration projects

- 07/2012- 09/2016 “Flexibles Montagekonzept durch autonome mechatronische Fertigungs-
komponenten”, BMBF funded project with HARTING Technology Group
07/2012 - 03/16 “Force Skill Learning”, R&D project with Honda Research Institute GmbH
07/2010 - 10/13 “Interaktive Bedienungshilfe in der ZSVA”, R&D project with Miele Professional

Patents

- EP 1 801 731 „Adaptive scene dependent filters in online learning environments“, co-inventor
EP 2 224 303 „Task Space Selection for Robot Imitation“, co-inventor
EP 10153641.5 „Robot control with bootstrapping inverse kinematics“, co-inventor
DE 10201310042 „Verfahren zur Bestückung und zum Ausräumen einer Spülmaschine“, co-inventor

Selected activities, talks, workshops

associate editor: Frontiers in Humanoid Robotics, IEEE Trans. Neural Networks & Learning Systems, IEEE Trans. Cognitive and Developmental Systems

guest-editor, session or workshop organizer: Cognitive Processing 2010, Neurocomputing 2004/05
PC member of >40 conferences, sessions at ESANN, IROS, ICRA, IEEE Humanoids, EU-ICT

ad-hoc reviewer: for IEEE: Neural Networks, Cognitive and Developmental Systems, Systems Man and Cybernetics A and B, AMD Circuits Systems I+II; Neural Computation, Neural Networks, Neurocomputing, Neural Processing Letters, Int. J. Systems Science, Int. J. Neural Systems, Robotics & Autonomous Systems, Int. J. Robotics Research, Autonomous Robots, J. Adv. Robotic Systems

selected talks: CBIC 2011 (keynote), NCWP 2010 (keynote), ProRisc 2006 (keynote), Padua, Univ.; TU Munich; TU Berlin; Univ. Groningen, NL; Birmingham University, UK; Santa Lucia Foundation, Rome; EPFL, Lausanne; Italian Institute of Technology (IIT); Riken Institute, ATR, Osaka Univ., all Japan; Indiana Univ., Bloomington, US; Edinburgh Uni., GB; Univ. Gent; Univ. Southern California

fair exhibitions: Hannover Messe 2009-16, Forum Maschinenbau 2009-2014, Automatica 2010, 2012

teutolab-robotik: workshop program for school students, www.teutolab-robotik.de

Selected Publications (of more than 160 peer-reviewed)

Robots in the digitalized workplace. J. Steil and G. Maier. In: The Wiley Blackwell Handbook of the Psychology of the Internet at Work, 2017, Hertel G, et al. (Eds), 2017, in press

Modulare Fertigungslinien für die individualisierte Produktion.

S Wrede, M Wojtynek, JJ Steil, O Beyer, C Frobieter, V Franke, Werkstattstechnik online, 2016

Learning Robot Motions with Stable Dynamical Systems under Diffeomorphic Transformations.

K. Neumann and Jochen J. Steil, Robotics and Autonomous Systems, 70, pp 1-15, 2015

Robots show us how to teach them: Feedback from robots shapes tutoring behavior during action learning. A.-L. Vollmer, M. Mühlig, Jochen J. Steil et al., PloS One, 2014

Efficient exploratory learning of inverse kinematics on a bionic elephant trunk.

M. Rolf, J.J. Steil, IEEE Trans. Neural Networks and Learning Systems, 25(6), pp. 1147-1160, 2014

A User Study on Kinesthetic Teaching of Redundant Robots in Task and Configuration Space.

S. Wrede, C. Emmerich, R. Grünberg, A. Nordmann, A. Swadzba, and J.J. Steil, Journal of Human-Robot Interaction, vol. 2, Special Issue: HRI System Studies, pp. 56-81, 2013

Solving the distal reward problem with rare correlations.

A. Soltoggio, J.J. Steil, Neural Computation, vol. 25(4), pp. 940-978, 2013

Online learning and generalization of parts-based image representations by Non-Negative

Sparse Autoencoders. A. Lemme, F. Reinhart, J.J. Steil, Neural Networks, vol. 33, pp. 194-203, 2012

Interactive Imitation Learning of Object Movement Skills.

Mühlig, M., J.J. Steil, and M. Gienger, Autonomous Robots, vol. 32(2), pp. 97–114, 2012

Goal Babbling permits direct Learning of Inverse Kinematics,

M. Rolf, J.J. Steil, M. Gienger, IEEE Trans. Autonomous Mental Development 2(3), 216 -229, 2010

Where to Look Next? Combining Static and Dynamic Proto-objects in a TVA-based Model of

Visual Attention, M. Wischniewski, A. Belardinelli, W. X. Schneider, J.J. Steil, Cognitive Computation, vol 2(4), pp. 326 – 343, 2010

Online Learning of Objects in a Biologically Motivated Visual Architecture.

H. Wersing, et al., Int. Journal of Neural Systems, vol. 17, pp. 219-230, 2007