

Publications

Jochen Steil

Stand: 27.11.2022

(google scholar) **h-index: 36**

(google scholar) **citations: 5443**

Journal: 64

Bookchapter/Handbook: 14

Peer-reviewed Conferences: 126

Patents: 4

Workshops, Misc: 21

Journal

[J-64] Dehio N, Smith J, Wigand D, Mohammadi P, Mistry M, Steil JJ. **2021** *Impedance-based Physical Human-Multi-Robot Collaboration*. **International Journal of Robotics Research**. 41(1), 68-84

[J-63] Rayyes R, Donat H, Steil JJ, Spranger M. **2021** *Interest-Driven Exploration with Observational Learning for Developmental Robots*. **IEEE Transactions on Cognitive and Developmental Systems**. 10.1109/TCDS.2021.3057758

[J-62] Donat H, Gu J, Steil JJ. **2020** *Real-Time Shape Estimation for Concentric Tube Continuum Robots with a Single Force/Torque-Sensor*. **Frontiers in Robotics and AI -- Soft Robotics**. 10.3389/frobt.2021.734033

[J-61] Ötting S, Masjutin L, Steil JJ, Maier GW. **2020** *Let's work together: a meta-analysis on robot design features that enable successful human-robot interaction at work*. **Human Factors**. 64(6): 1027-1050

[J-60] Donat H, Lilge S, Burgner-Kahrs J, Steil JJ. **2020** *Estimating Tip Contact Forces for Concentric Tube Continuum Robots based on Backbone Deflection*. **IEEE Trans. Medical Robotics Bionics**. 619-630

[J-59] Rayyes R, Steil JJ. **2020** *Efficient Online Interest-Driven Exploration for Developmental Robots*. **IEEE Transactions on Cognitive and Developmental Systems**. 10.1109/TCDS.2020.3001633

[J-58] Mohammadi P, Hoffmann E M, Dehio N, Malekzadeh M, Giese M, Tsagarakis N, Steil JJ. **2019** *Transparent Integration of Real-time Control, Whole-body Motion Generation and Virtual Reality for Compliant Humanoids*. **IEEE Robotics and Automation Magazin**. 26(4):83-93

[J-57] Rhode M, Narioka K, Stein L, Steil JJ, Ernst M. **2019**. *Goal-Related Feedback Guides Motor Exploration and Redundancy Resolution in Human Motor Skill Acquisition*. **PLOS Computational Biology**. 15(3)1-27

[J-56] Steil JJ, Wrede S. **2019**. *Maschinelles Lernen und lernende Assistenzsysteme - Neue Tätigkeiten, Rollen und Anforderungen für Beschäftigte*. **Berufsbildung in Wissenschaft und Praxis**. 314-318

[J-55] Malekzadeh M, Queißer J, Steil JJ. **2019**. *Multi-level control architecture for Bionic Handling Assistant robot augmented by learning from demonstration for apple-picking*. **Advanced Robotics**. 1-17

[J-54] Wojtynek M, Steil JJ, Wrede S. **2019**. *Plug, Plan and Produce as Enabler for easy Workcell Setup and Collaborative Robot Programming in Smart Factories*. **KI - Künstliche Intelligenz (Special Issue Smart Production)**. 2:151-161

[J-53] Steil JJ, Finas D, Beck S, Manzeschke A, Haux R. **2019**. *Robotic Systems in Operating Theatres: New Forms of Team-Machine Interaction in Health Care - On Challenges for Health Information Systems on Adequately Considering Hybrid Action of Humans and Machines*. **Methods of Information in Medicine**. 58:e14-e25

- [J-52] Queißer J, Steil JJ. **2018**. *Bootstrapping of Parameterized Skills Through Hybrid Optimization in Task and Policy Spaces*. **Frontiers in Robotics and AI – Humanoid Robotics**. <https://doi>
- [J-51] Rayyes R, Kubus D, Steil JJ. **2018**. *Learning Inverse Statics Models Efficiently with Symmetry-Based Exploration*. **Frontiers in Neurorobotics**. <https://doi>
- [J-50] Sprowitz A, Tuleu A, Ajaoolleian M, Vespignani M, Moeckel R, Eckert P, D'Haene M, Degraeve J, Nordmann A, Schrauwen B, Steil JJ, Ijspeert, A. **2018**. *Oncilla robot: a versatile open-source quadruped research robot with compliant pantograph legs*. **Frontiers Robotics and AI – Bionics and Biomimetics**. 5: 67
- [J-49] Reinhart F, Shareef Z, Steil JJ. **2017**. *Hybrid Analytical and Data-driven Modeling for Feed-forward Robot Control*. **Sensors**. 17(2)
- [J-48] Liu W, Chen D, Steil JJ. **2017**. *Analytical Inverse Kinematics Solver for Anthropomorphic 7-DOF Redundant Manipulators with Human-Like Configuration Constraints*. **Journal of Intelligent & Robotic Systems**. 86(1):63-79
- [J-47] Aswolinskiy W, Reinhart F, Steil JJ. **2017**. *Modelling of Parametrized Processes via Regression in the Model Space of Neural Networks*. **Neurocomputing**. 268(C):55-63
- [J-46] Aswolinskiy W, Reinhart F, Steil JJ. **2017**. *Time Series Classification in Reservoir- and Model-Space*. **Neural Processing Letters**. 48(3):789-809
- [J-45] Gopinathan S, Ötting S, Steil JJ. **2017**. *A user study on personalized stiffness control and task specificity in physical Human-Robot Interaction*. **Frontiers Robotics and AI – Humanoid Robotics**. 4:58
- [J-44] He H, Chawla N, Chen H, Choe Y, Engelbrecht A, Deva J, Long L, Minai A, Nie F, Ozertem U et al. **2016**. *Editorial IEEE Transactions on Neural Networks and Learning Systems 2016 and Beyond*. **IEEE Transactions on Neural Networks and Learning Systems**. 27:1-7
- [J-43] Wrede S, Wojtynek M, Steil JJ, Beyer O, Frobieter C, Franke V. **2016**. *Modulare Fertigungslinien für die individualisierte Produktion*. **Werkstattstechnik online**. 4:204-210
- [J-42] Reinhart F, Steil JJ. **2015**. *Efficient Policy Search in Low-dimensional Embedding Spaces by Generalizing Motion Primitives with a Parameterized Skill Memory*. **Autonomous Robots**. 38:331-348
- [J-41] Neumann K, Steil JJ. **2015**. *Learning Robot Motions with Stable Dynamical Systems under Diffeomorphic Transformations*. **Robotics and Autonomous Systems**. 70:1-15
- [J-40] Rolf M, Neumann K, Queißer J, Reinhart F, Nordmann A, Steil JJ. **2015**. *A Multi-Level Control Architecture for the Bionic Handling Assistant*. **Advanced Robotics**. 29:847-859
- [J-39] Lemme A, Meirovitch Y, Khansari-Zadeh SMohammad, Flash T, Billard A, Steil JJ. **2015**. *Open-source benchmarking for learned reaching motion generation in robotics*. **Paladyn, J of Behavioral Robotics**. 6:30-41
- [J-38] Rolf M, Steil JJ. **2014**. *Efficient exploratory learning of inverse kinematics on a bionic elephant trunk*. **IEEE Transactions Neural Networks and Learning Systems**. 25:1147-1160
- [J-37] Lemme A, Reinhart F, Neumann K, Steil JJ. **2014**. *Neural Learning of Vector Fields for Encoding Stable Dynamical Systems*. **Neurocomputing**. 141:3-14
- [J-36] Vollmer A-L, Mühlig M, Steil JJ, Pitsch K, Fritsch J, Rohlfing K, Wrede B. **2014**. *Robots show us how to teach them: Feedback from robots shapes tutoring behavior during action learning*. **PLoS ONE**. 9:e91349
- [J-35] Rolf M, Steil JJ. **2013**. *Explorative learning of right inverse functions: theoretical implications of redundancy*. **Neurocomputing**. 131:2-14

- [J-34] Neumann K, Strub C, Steil JJ. **2013.** *Intrinsic Plasticity via Natural Gradient Descent with Application to Drift Compensation.* **Neurocomputing.** 112:26-33
- [J-33] Lemme A, Freire A, Barreto G, Steil JJ. **2013.** *Kinesthetic teaching of visuomotor coordination for pointing by the humanoid robot iCub.* **Neurocomputing.** 112:179-188
- [J-32] Emmerich C, Reinhart F, Steil JJ. **2013.** *Multi-directional Continuous Association with Input-driven Neural Dynamics.* **Neurocomputing.** 112:47-57
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- [J-30] Soltoggio A, Lemme A, Reinhart F, Steil JJ. **2013.** *Rare neural correlations implement robotic conditioning with reward delays and disturbances.* **Frontiers Neurobotics.** 7:6
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- [J-27] Wrede S, Emmerich C, Grünberg R, Nordmann A, Swadzba A, Steil JJ. **2013.** *A User Study on Kinesthetic Teaching of Redundant Robots in Task and Configuration Space.* **Journal of Human-Robot Interaction.** 2:56-81
- [J-26] Soltoggio A, Steil JJ. **2012.** *How Rich Motor Skills Empower Robots at Last: Insights and Progress of the AMARSi Project.* **KI - Künstliche Intelligenz.** 26:407-410
- [J-25] Mühlig M, Steil JJ, Gienger M. **2012.** *Interactive Imitation Learning of Object Movement Skills.* **Autonomous Robots.** 32:97-114
- [J-24] Lemme A, Reinhart F, Steil JJ. **2012.** *Online learning and generalization of parts-based image representations by Non-Negative Sparse Autoencoders.* **Neural Networks.** 33:194-203
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- [J-21] Steffen JF, Pardowitz M, Steil JJ, Ritter H. **2011** *Integrating Feature Maps and Competitive Layer Architectures For Motion Segmentation.* **Neurocomputing.** 74:1372-1381
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- [J-16] Denecke A, Wersing H, Steil JJ, Körner E. **2009.** *Online figure-ground segmentation with adaptive metrics in Generalized LVQ.* **Neurocomputing.** 72:1470-1482

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- [J-10] Weng S, Wersing H, Steil JJ, Ritter H. **2006.** *Learning Lateral Interactions for Feature Binding and Sensory Segmentation from Prototypic Basis Interactions.* **IEEE Transactions Neural Networks.** 17:843-862
- [J-9] Steil JJ. **2006.** *Online stability of backpropagation-decorrelation recurrent learning.* **Neurocomputing.** 69:642-650
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- [J-6] Steil JJ, Cawley G, Villmann T. **2005.** *Trends in Neurocomputing at ESANN 2004.* **Neurocomputing.** 64:1-4
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Books/Bookchapter/Handbooks

- [B-16] O. Richter, R. Haux, S. Heuser, T. Kacprowski, Steil JJ (Hrsg.) **2023, Erweitertes Zusammenwirken von Mensch und Technik: Beurteilen – Messen – Bewerten (Arbeitstitel)** Konferenzband zum 2. SYnENZ Symposium der BWG und der TU Braunschweig, Feb. 2023
- [B-15] A. Manzeschke, Steil JJ. **2023, to appear.** *Roboter bewegen – Roboter (er-)leben.* In: B. Gransche (Hrsg.) **Technik sozialisieren? Springer Nature**
- [B-14] Jipp M, Steil JJ. **2021.** *Steuern wir oder werden wir gesteuert? Chancen und Risiken von Mensch-Technik-Interaktion.* 17-34 In: Haux R, Gahl K, Jipp M, Kruse R, Richter O. (Hrsg.) **Zusammenwirken von natürlicher und künstlicher Intelligenz Springer, Berlin, Heidelberg**

- [B-13] Steil JJ. **2019.** *Roboterlernen ohne Grenzen - Lernende Roboter und ethische Fragen.* 15-33. In: Woopen C, Jannes M (eds). **Roboter in der Gesellschaft. Technische Möglichkeiten und menschliche Verantwortung .** Studies on Health and Society, vol 2. Springer, Berlin, Heidelberg
- [B-12] Gienger M, Steil JJ. **2018.** *Humanoid Kinematics and Dynamics: Open Questions and Future Directions.* 893-902. In: Goswami A, Vadakkepat, P (eds). **Humanoid Robotics: A Reference.** Springer Reference. Springer Netherlands
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- [B-8] Steil JJ, Emmerich C, Swadzba A, Grünberg R, Nordmann A, Wrede S. **2013.** *Kinesthetic Teaching Using Assisted Gravity Compensation for Model-Free Trajectory Generation in Confined Spaces.* 107-127. In: Röhrbein F, Veiga G, Natale C (eds). **Gearing Up and Accelerating Cross-Fertilization between Academic and Industrial Robotics Research in Europe.** Springer Tracts in Advanced Robotics, vol 94. Springer
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Conferences (peer-reviewed)

ICRA – IEEE Int Conf Robotics Automation

IROS – IEEE Int Conf Intelligent Robots and Systems

ICDL-EpiRob – IEEE Int Conf Developmental Learning and Epigenetic Robotics

ESANN – European Symposium on Artificial Neural Networks

[C-126] Meyer-Veit F, Rayyes R, Gerstner A, Steil JJ. **2022**. *Hyperspectral Wavelength Analysis with U-Net for Larynx Cancer Detection*. **ESANN**. 199-204

[C-125] Meyer-Veit F, Rayyes R, Gerstner A, Steil JJ. **2022**. *Hyperspectral Endoscopy using Deep Learning for Laryngeal Cancer Segmentation*. **ICANN**. 682-694

[C-124] Wehrle T, Barut S, Klankers K, Mohammadi P, Steil JJ. **2021**. *Systematic Testing of Exoskeletons with Robots: Challenges and Opportunities*. **Int. Symposium Robotics**. 42- 49

[C-123] Aljumaili M, Steil JJ. **2021**. *Variable Stiffness Actuator Control Based on Linear Model Predictive Control in a Low Stiffness Regime*. **Int. Symposium Robotics**. 117-122

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[C-121] Barut S, Boneberger M, Mohammadi P, Steil JJ. **2021**. *Benchmarking Real-Time Capabilities of ROS2 and OROCOS for Robotics Applications*. **ICRA**. 708-714

[C-120] Lieder Y, Steil JJ. **2021**. *Constraint optimization for Echo State Networks applied to satellite image forecasting*. **ESANN**. 299-304

[C-119] Al-Hafez F, Steil JJ. **2021**. *Hierarchical Interest-Driven Associative Goal babbling for Efficient Bootstrapping of Sensorimotor skills*. **Int. Conf. Robot Learning**. <https://openreview.net/forum?id=uJi8OvaanP6>

[C-118] Rayyes R, Donat H, Steil JJ. **2020**. *Hierarchical Interest-Driven Associative Goal babbling for Efficient Bootstrapping of Sensorimotor skills*. **ICRA**. 1336-1342

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[C-114] Mohammadi P, Kubus D, Steil JJ. **2019**. *Exploiting Environment Contacts of Serial Manipulators*. **ICRA**. 197-203

[C-113] Tittel S, Malekzadeh M, Steil JJ. **2019**. *Full 6-DOF Admittance Control for the Industrial Robot Stäubli TX60*. **Int Conf Automation Science and Engineering**. 1450-1455

[C-112] Mohammadi P, Hoffmann EMingo, Muratore L, Tsgarakis N, Steil JJ. **2019**. *Reactive Walking Based on Upper-Body Manipulability: An application to Intention Detection and Reaction*. **ICRA**. 4991-4997

[C-111] Dehio N, Kubus D, Steil JJ. **2018**. *Continuously Shaping Projections and Operational Space Tasks*. **IROS**. 5995-6002

[C-110] Rolf M, Crook N, Steil JJ. **2018**. *From social interaction to ethical AI: a developmental roadmap*. **ICDL-EpiRob**. 204-211

- [C-109] Kubus D, Rayyes R, Steil JJ. **2018**. *Learning Forward and Inverse Kinematics Maps Efficiently*. **IROS**. 5133-5140
- [C-108] Dehio N, Smith J, Wigand D, Xin G, Lin H-C, Steil JJ, Mistry M. **2018**. *Modeling and Control of Multi-Arm and Multi-Leg Robots: Compensating for Object Dynamics during Grasping*. **ICRA**. 294-302
- [C-107] Wigand D, Mohammadi P, Hoffmann EMingo, Wrede S, Steil JJ, Tsagarakis N. **2018**. *An Open-Source Architecture for Simulation, Execution and Analysis of Real-Time Robotics Systems*. **Int Conf on Simulation, Modeling, and Programming for Autonomous Robots**. 93-100
- [C-106] Mohammadi P, Malekzadeh M, Kodl J, Mukovskiy A, Wigand D, Giese M, Steil JJ. **2018**. *Real-time Control of Whole-body Robot Motion and Trajectory Generation for Psychotherapeutic Juggling in VR*. **IROS**. 270-277
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- [C-104] Queißer J, Ishihara H, Hammer B, Steil JJ, Asada M. **2018**. *Skill Memories for Parameterized Dynamic Action Primitives on the Pneumatically Driven Humanoid Robot Child Affetto*. **ICDL-Epirob** . 39-45
- [C-103] Malekzadeh M, Queißer J, Steil JJ. **2017**. *Imitation learning for a continuum trunk robot*. **ESANN**. 335-340
- [C-102] Kubus D, Muxfeldt A, Kissener K, Haus JNiklas, Steil JJ. **2017**. *Robust Recognition of Tactile Gestures for Intuitive Robot Programming*. **IROS**. 1643-1650
- [C-101] Muxfeldt A, Gopinathan S, Coenders T, Steil JJ. **2017**. *A User Study on Human-Robot-Interactive Recovery for Industrial Assembly Problems*. **Int Symp Robot and Human Interactive Communication**. 824-830
- [C-100] Gopinathan S, Ötting S, Steil JJ. **2017**. *A User Study on Personalized Adaptive Stiffness Control Modes for Human-Robot Interaction*. **Int Symp Robot and Human Interactive Communication**. 831-837
- [C-99] Dehio N, Reinhart F, Steil JJ. **2016**. *Continuous Task-Priority Rearrangement during Motion Execution with a Mixture of Torque Controllers*. **IEEE-RAS Humanoid Robots**. 264-270
- [C-98] Shareef Z, Reinhart F, Steil JJ. **2016**. *Generalizing the Inverse Dynamic Model of KUKA LWR IV+ for Load Variations using Regression in the Model Space*. **IROS**. 606-611
- [C-97] Reinhart F, Steil JJ. **2016**. *Hybrid Mechanical and Data-driven Modeling Improves Inverse Kinematic Control of a Soft Robot*. **International Conference on System-integrated Intelligence: New Challenges for Product and Production Engineering**. Procedia Technology 26:12-19
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- [C-94] Aswolinskiy W, Reinhart F, Steil JJ. **2016**. *Modelling of Parameterized Processes via Regression in the Model Space*. **ESANN**. 53-58
- [C-93] Rayyes R, Steil JJ. **2016**. *Goal Babbling with direction sampling for simultaneous exploration and learning of inverse kinematics of a humanoid robot*. **Workshop on New Challenges in Neural Computation**. MLR 4 : 56-63
- [C-92] Aswolinskiy W, Steil JJ. **2016**. *Parameterized Pattern Generation via Regression in the Model Space of Echo State Networks*. **Workshop on New Challenges in Neural Computation**. MLR 4 : 32-39

- [C-91] Aswolinskiy W, Reinhart F, Steil JJ. **2016.** *Time Series Classification in Reservoir- and Model-Space: A Comparison.* **7th IAPR Workshop on Artificial Neural Networks in Pattern Recognition.** LNCS 9896: 197-208
- [C-90] Shareef Z, Steil JJ. **2016.** *Trajectory Optimization of COmpliant HuMANoid (COMAN) Robot Arm using Path Parameter based Dynamic Programming.* **IEEE-RAS Humanoid Robots.** 705-710
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- [C-85] Narioka K, Reinhart F, Steil JJ. **2015.** *Effect of exploratory perturbation on the formation of kinematic synergies in Goal Babbling.* **ICDL-EpiRob.** 86-91
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