Nils Rottmann

Curriculum Vitae

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Research Interests

Robotic Dynamics and Control	Robot Dynamics, Trajectory Generation, Motion Planning, Nonlinear and Intelligent Control, Real-Time Planning and Control, SLAM, Pose Graph Optimization
Machine Learning	Gaussian Processes, Transfer Learning, Bayesian Optimization, Probabilistic Inference, Face and Speech Recognition, Supervised and Unsupervised Learning
Robot Learning	Reinforcement Learning, Imitation Learning, Grasping, Stochastic Optimal Control

Education

since 2018 **Ph.D. candidate in Robotics**, *University of Luebeck*, Germany.
Learning Optimal Control and Planning Strategies in Mobile and Humanoid Robots

2019 **Summer School**, *Frankfurt Institute for Advanced Studies*, Germany.
Intrinsically Motivated Open-Ended Learning

2015–2017 **M.Sc., Theor. Mech. Eng.**, *University of Technology Hamburg*, Germany, *summa cum laude*.
Focus on Intelligent and Autonomous Systems

2015–2016 **Exchange Semester**, *Instituto Superior Tecnico Lisbon*, Portugal.
Intelligent and Autonomous Systems, six months

2011–2015 **B.Sc., Mech. Eng.**, *University of Technology Hamburg*, Germany, *magna cum laude*.
Focus on Theoretical Mechanical Engineering

2003–2010 **High school**, *Hoya*, Germany, *magna cum laude*.
Completion with the general university entrance, magna cum laude.

Experience

Vocational

since 2018 **Research Scientist for Robotics**, *University of Luebeck*, Germany.
Dynamics & Control, Path & Motion Planning, Machine Learning

since 2018 **Teaching Assistant**, *University of Luebeck*, Germany.
Humanoid Robotics and Probabilistic Machine Learning

2012–2017 **Teaching Assistant**, *University of Luebeck*, Germany.
Humanoid Robotics and Probabilistic Machine Learning

2015–2016 **Internship**, *Drägerwerk AG & Co. KGaA, Luebeck*, Germany.
Advanced Engineering Solutions, 4.5 months

2015–2012 **Internship**, *UNESP, Ilha Solteira*, Brazil.
Finite Element Methods, 2 months

Miscellaneous

2016–2017 **Local CFO**, *bonding student initiative, Hamburg*, Germany.
Administration of the finances of the association

Publications

Conference Papers Under Review

2020 **Nils Rottmann**, Ralf Bruder, Achim Schweikard and Elmar Rueckert. Optimal Loop Closure Detection and Pose Graph Optimization in Closed Environments. *Submitted for publication at the International Conf. on Intelligent Robots and Systems (IROS).*

Conference Publications

2019 **Nils Rottmann**, Ralf Bruder, Achim Schweikard and Elmar Rueckert. Loop Closure Detection in Closed Environments. *European Conference on Mobile Robots (ECMR), 2019, Prague, Czech Republic*. `https://ieeexplore.ieee.org/abstract/document/8870938`

2019 **Nils Rottmann**, Ralf Bruder, Achim Schweikard and Elmar Rueckert. Cataglyphis Ant Navigation Strategies Solve the Global Localization Problem in Robots with Binary Sensors. *Proceedings of the 12th International Joint Conference on Biomedical Engineering Systems and Technologies - Volume 5: BIOSIGNALS, 2019, Prague, Czech Republic*. `http://www.scitepress.org/DigitalLibrary/Link.aspx?doi=10.5220/0007556102140223`

Theses

2017 **Nils Rottmann**. Geometric Control and Stochastic Trajectory Planning for Underwater Robotic Systems. *Master Thesis*, Technische Universität Hamburg–Harburg

2014 **Nils Rottmann**. Development of a diving cell for experimental detection of orbital motion of water particles under the influence of gravity waves. *Bachelor Thesis*, Technische Universität Hamburg–Harburg

Teaching Experience

2019 **Lecturer**, *WS2019/20, Probabilistic Machine Learning (RO5101 T), 4 ECTS*, University of Lübeck, graduate course.

2019 **Lecturer**, *WS2019/20, Advanced Topics in Robotics (RO5801), 4 ECTS*, University of Lübeck, graduate course.

2019 **Lecturer**, *SS2018, SS2019, SS2020, Humanoid Robotics (RO5300), 6 ECTS*, University of Lübeck, undergraduate course.

Student Supervision

M.Sc. Theses Supervision

2019/12 HIBO: Hierarchical Acquisition Functions for Bayesian Optimization, University of Luebeck

2018/09 Simultaneous Localization and Mapping for Autonomous Lawn Mowers, University of Luebeck

2018/10 Optimization of a Chlorophyll-Sensor for Mowing-Area-Detection for Autonomous Lawn Mowers, University of Luebeck

B.Sc. Theses Supervision

2019/11 Simultaneous Localization and Mapping with Room Labeling, University of Luebeck

2019/11 Complete Coverage Path Planning for Low Cost Robots, University of Luebeck

2019/06 Machine Learning for Plant Classifi
cation based on Chlorophyll Detection, University of Luebeck

2018/11 Trajectory Planning for Mobile Robots for Working Area Complete Coverage under High Uncertainty, University of Luebeck

2018/09 Development of an electromagnetic Tracking System for use in Medical Interventions, University of Luebeck

2018/09 Localizsation and Control for Trajectory Tracking for Autonomous Lawn Mowers, University of Luebeck

B.Sc. Project Supervision

2019/03 Simultaneous Localization and Mapping for Service Robots, University of Luebeck

2019/03 Speech Recognition and Keyword Detection for Service Robots, University of Luebeck

Talks

2019/11 MIRANA: A Mobile Intelligent Robotic Agent for Navigation and Assistance. **Invited Talk**. *At the Nook 2019, Luebeck, Germany*.

2018/07 Künstliche Intelligenz – Wie Roboter lernen können. **Invited Talk**. *At the Informatik Summer Camp 2018, Luebeck, Germany*.

Reviewing Experience

2019 International Conference on Machine Learning (ICML).

2019 European Conference on Mobile Robots (ECMR).

2018,2019 Computer Assisted Radiology and Surgery (CARS).

2018 Conference on Robot Learning (CoRL).

Outreach Activities

2019/10 **Co-Organizer**, *1st LEGO Robotic Workshop: Autonome Elektrofahrzeuge als urbane Lieferanten*.

One week LEGO Robotic workshop where students learn to implement adavanced robotic topics like Kalman Filters and Sensor Fusion using LEGO Mindstorms robots and MATLAB. `http://future.ai-lab.science`

2019/02 **Co-Organizer**, *Schülerprojekt: Our Common Future*.

Interactive robot demonstrations of joint and task space control of industrial robot arms, the mobile segway Loomo and the automation principles in ultrasound monitoring.