Dr. Andreas Orthey

Computational Robotics

Date: 13th of March, 2021

CONTACT

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EDUCATION

Doctor of Philosophy (PhD) *December 2015*
National Polytechnic Institute of Toulouse, France
Computer Science

Master of Science (MSc) *September 2012*
Technical University of Berlin, Germany (Grade: 1.2*, with Honours)
Computational Engineering

Bachelor of Science (BSc) *January 2011*
Technical University of Berlin, Germany (Grade: 2.2*)
Computational Engineering

*German Grading System: 1.0 - 1.5 / very good, 1.6 - 2.5 / good, 2.6 - 3.5 / satisfactory, 3.6 - 4.0 / sufficient

ACADEMIC EMPLOYMENT

Postdoctoral Researcher *December 2019 – present*
Max-Planck Institute for Intelligent Systems (MPI-IS)
Stuttgart, Germany

Research Fellow *December 2018 – November 2019*
Fellowship (1 year) from the Alexander von Humboldt Foundation (AvH)
University of Stuttgart
Stuttgart, Germany

Research Fellow *November 2016 – October 2018*
Fellowship (2 years) from the Japan Society for the Promotion of Science (JSPS)
National Institute of Advanced Industrial Science and Technology (AIST)
Tsukuba, Japan

Postdoctoral Researcher *October 2015 – September 2016*
Worcester Polytechnic Institute (WPI)
Worcester, MA, USA

GRANTS AND AWARDS

Feodor Lynen Return Fellowship, Alexander von Humboldt Foundation [∼47'000 EUR]	2018
Postdoctoral Fellowship, Japan Society for the Promotion of Science (JSPS) [∼92'000 EUR]	2016
Doctoral School Mobility Grant (EDSYS aide á la mobilité internationale) [∼4'000 EUR]	2014
Doctoral Grant from the French Ministry of National Education [∼60'000 EUR]	2012
Graduated Top of Class TU Berlin	2012

PUBLICATIONS (UNDER REVIEW)

[3] VN Hartmann, **A Orthey**, D Driess, OS Oguz, M Toussaint, *[Title removed due to double-blind review process]*, 2021

[2] **A Orthey**, S Akbar, M Toussaint, *Multilevel Motion Planning: A Fiber Bundle Formulation*, International Journal of Robotics Research (IJRR), 2020

[1] MT Khoury, **A Orthey**, M Toussaint, *Efficient Sampling of Transition Constraints for Motion Planning under Sliding Contacts*, Conference on Automation Science and Engineering (CASE), 2020

PUBLICATIONS (JOURNALS AND BOOK CHAPTERS)

[J.5] **A Orthey**, M Toussaint, *Section Patterns: Efficiently Solving Narrow Passage Problems in Multilevel Motion Planning*, Transactions on Robotics (TRO), 2021

[J.4] **A Orthey**, M Toussaint, *Visualizing Local Minima in Multi-Robot Motion Planning using Multi-level Morse Theory*, Algorithmic Foundations of Robotics XIV (Springer Proceedings in Advanced Robotics), 502-517, 2021

[J.3] **A Orthey**, B Frész, M Toussaint, *Motion Planning Explorer: Visualizing Local Minima using a Local-Minima Tree*, Robotics and Automation Letters (RA-L), 5(2), 346-353, April, 2020, *Selected for Presentation at ICRA 2020*

[J.2] **A Orthey**, O Roussel, O Stasse, M Taix, *Motion Planning in Irreducible Path Spaces*, Robotics and Autonomous Systems (RAS), 109, 97-108, November, 2018

[J.1] D Katz, **A Orthey**, O Brock, *Interactive perception of articulated objects*, Experimental Robotics (Springer Tracts in Advanced Robotics), 301-315, 2014

PUBLICATIONS (CONFERENCES)

[C.7] **A Orthey**, M Toussaint, *Sparse Multilevel Roadmaps on Fiber Bundles for High-Dimensional Motion Planning*, International Conference on Robotics and Automation (ICRA), 2020

[C.6] **A Orthey**, M Toussaint, *Rapidly-Exploring Quotient-Space Trees: Motion Planning using Sequential Simplifications*, International Symposium on Robotics Research (ISRR), 2019

[C.5] **A Orthey**, A Escande, E Yoshida, *Quotient-Space Motion Planning*, International Conference on Intelligent Robots and Systems (IROS), 2018

[C.4] **A Orthey**, O Stasse, F Lamiraux, *Motion Planning and Irreducible Trajectories*, International Conference on Robotics and Automation (ICRA), 2015

[C.3] O Stasse, **A Orthey**, F Morsillo, M Geisert, N Mansard, M Naveau, C Vassallo, *Airbus/future of aircraft factory HRP-2 as universal worker proof of concept*, IEEE-RAS International Conference on Humanoid Robots (Humanoids), 2014

[C.2] **A Orthey**, O Stasse, *Towards reactive whole-body motion planning in cluttered environments by precomputing feasible motion spaces*, IEEE-RAS International Conference on Humanoid Robots (Humanoids), 2013

[C.1] **A Orthey**, M Toussaint, N Jetchev, *Optimizing Motion Primitives to Make Symbolic Models More Predictive*, International Conference on Robotics and Automation (ICRA), 2013

THESES AND THESES SUPERVISED

[8] Marie-Therese Khoury, *Efficient Sampling of Transition Constraints for Motion Planning under Sliding Contacts*, B.Sc. Thesis, University of Stuttgart, 2020

[7] Alexander Harner, *Method to Optimize and Enumerate Local Minima in Probabilistic Roadmaps* (In German) , B.Sc. Thesis, University of Stuttgart, 2020

[6] Azer Messaoudi, *An Optimization Algorithm for Dynamical Systems under Non-holonomic Constraints*, B.Sc. Thesis, University of Stuttgart, 2020

[5] Sohaib Akbar, *Sparse and Optimal Planning Algorithms for Multilevel Motion Planning*, M.Sc. Thesis, University of Stuttgart, 2020

[4] Benjamin Frész, *Visualization of Holonomic and Non-Holonomic Planning Problems*, B.Sc. Thesis, University of Stuttgart, 2019

[3] **A Orthey**, *Exploiting structure in humanoid motion planning*, Ph.D Thesis, INP Toulouse, 2015

[2] **A Orthey**, *Optimizing Motion Primitives to Integrate Symbolic and Motion Planning*, M.Sc. Thesis, Berlin Institute of Technology, 2012

[1] **A Orthey**, *Three dimensional Joint Detection*, B.Sc. Thesis, Berlin Institute of Technology, 2010

INVITED TALKS AND SPOTLIGHT TALKS

[16] *Visualizing Local Minima in Multi-Robot Motion Planning* — March, 2021
WAFR Conference, Oulu, Finland (online-based)

[15] *Multilevel Motion Planning: Theory and Applications* — January, 2021
Rice University, Houston, TX, USA (online-based)

[14] *Motion Planning Explorer* — May, 2020
ICRA Conference, Paris, France (online-based)

[13] *Rapidly-Exploring Quotient-Space Trees* **[Spotlight, Poster]** — October, 2019
ISRR Symposium, Sofitel Legend Metropole Hanoi, Hanoi, Vietnam

[12] *Making Robotic Algorithms Transparent and Interactive* **[Spotlight, Poster]** — September, 2019
BRAGFOST, Hotel Schreiberhof, Munich, Germany

[11] *As a postdoc abroad - Experiences from two years Japan (in German)* — November, 2018
Networking Event (AvH), Maritim Hotel, Bonn, Germany

[10] *Simplification of High-Dimensional Spaces* — November, 2018
Humanoid Robots Lab, University of Bonn, Bonn, Germany

[9] *Quotient-Space Motion Planning* **[Spotlight, Poster]** October, 2018
IROS Conference, Madrid Municipal Conference Centre, Madrid, Spain

[8] *Life of a Robotics Researcher* July, 2018
JSPS Science Dialog, Takezono Highschool, Tsukuba, Japan

[7] *Quotient-Space Motion Planning* May, 2018
Movement Generation and Control Group, Max-Planck Institute, Tübingen, Germany

[6] *Making Ideas Stick* February, 2018
JSPS Orientation, Hotel Moterey Hanzomon, Tokyo, Japan

[5] *Robotics, Motion Planning and Topology* October, 2016
Networking Event (AvH), Albert Ludwig University of Freiburg, Freiburg, Germany

[4] *Dimensionality Reduction in Motion Planning* February, 2016
Lecture, Worcester Polytechnic Institute, Worcester, MA, USA

[3] *Motion Planning and Irreducible Trajectories* **[Spotlight, Poster]** May, 2015
ICRA Conference, Washington State Convention Center, Seattle, WA, USA

[2] *Irreducible Trajectories and Homotopy Motion Planning* February, 2015
Robot Locomotion Group, Massachusetts Institute of Technology, Cambridge, MA, USA

[1] *Towards Reactive Whole-Body Motion Planning in Cluttered Environments* October, 2013
Humanoids Conference, Historic Academy of Medicine, Atlanta, GA, USA

PROFESSIONAL SERVICE AND MERITS

Associate Editor

- IEEE International Conference on Intelligent Robots and Systems (IROS)

Manuscript Reviewer

- Robotics: Science and Systems (RSS), IEEE International Conference on Intelligent Robots and Systems (IROS), IEEE International Conference on Robotics and Automation (ICRA), IEEE International Conference on Humanoid Robots (Humanoids), IEEE Transactions on Automation Science and Engineering (TASE), IEEE Robotics and Automation Letters (RAL), Workshop on the Algorithmic Foundations of Robotics (WAFR), International Symposium on Robotics Research (ISRR), Transactions on Robotics (TRO), Electronics, Autonomous Robots (AURO)

Developer

- Open Motion Planning Library (OMPL)

Member

- German Society of Humboldtians (Deutsche Gesellschaft der Humboldtianer e.V.)
- German JSPS Alumni Association
- Institute of Electrical and Electronics Engineers (IEEE)

LANGUAGE SKILLS

German	Mother Tongue
English	C2
French	B2