



# LARA BRUDERMÜLLER

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## EDUCATION

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**University of Oxford, Oxford Robotics Institute** 2021 – 2024 (expected)

*Doctor of Philosophy (Robotics, Artificial Intelligence, Machine Learning, Optimization)*

Advised by Prof. Nick Hawes, Goal-Oriented Long-Lived Systems (GOALS) Group

Thesis: “Towards Safe and Efficient Physical Human-Robot Interaction”

**Technical University Munich &** 2018-2020

**Ecole Polytechnique Fédérale de Lausanne**

*Master of Science in Robotics, Cognition, Intelligence*

Master Thesis: “People Detection in Close-Proximity for Robot Navigation in Crowds based on 3D LiDAR Data”,

advised by Prof. Aude Billard, Learning Algorithms & Systems Lab (LASA)

**Technical University Munich** 2015-2018

*Bachelor of Science in Management & Technology*

Specialization in Electrical Engineering and Information Technology

Bachelor Thesis: “Development of a Pipeline for Object Surface Classification Using Multimodal Feature”, advised by Prof. Eckehard Steinbach, Chair of Media Technology.

## PROFESSIONAL EXPERIENCE

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**Robot Learning & Interaction Group, Idiap Research Institute** Mar. 2021 – Jul. 2021

*Research Scientist Intern*

*Martigny, Switzerland*

Worked in the “Memory of Motion” project within the H2020 program. Goal: real-time computation of complex movements for robots in multi-contact scenarios in unstructured environments. Supervised by Dr. Sylvain Calinon.

**Magazino GmbH** Sept. 2017 – Jul. 2019

*Software Engineer*

*Munich, Germany*

Worked on the team for „Software Architecture Data“ besides studies. Responsibilities included the design and implementation of a new library allowing to efficiently query 3D and semantic representations of the logistic environment the robots operate in, database optimization and modelling as well as simulation and data analytics.

## PUBLICATIONS

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*VP-STO: Via-point-based Stochastic Trajectory Optimization for Reactive Robot Behavior.*

arXiv preprint arXiv:2210.04067, 2022

J. Jankowski\*, **L. Brudermüller\***, N. Hawes, S. Calinon (\* authors contributed equally)

*Trajectory Prediction with Compressed 3D Environment Representation using Tensor Train Decomposition.*

International Conference on Advanced Robotics (ICAR), 2021

**L. Brudermüller**, T. Lembono, S. Shetty, S. Calinon

*Haptic material analysis and classification inspired by human exploratory procedures.*

IEEE Transactions on Haptics, 2019

M. Strese, **L. Brudermüller**, J. Kirsch, E. Steinbach

## SKILLS

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**Areas of expertise:** Task and Motion Planning, Control, Markov Decision Processes

**Programming languages:** Python, C++, C, Matlab

**Other computer skills:** PyTorch, Tensorflow, NumPy, Git, Linux, ROS, L<sup>A</sup>T<sub>E</sub>X

**Languages:** German (Native), English (Fluent), French (Fluent)