

# Suhan Shetty

Lausanne, Switzerland

+41 762931120

✉ suhan.shetty@idiap.ch, suhan.shetty@epfl.ch

in SuhanShetty

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## Summary

I am a roboticist who uses machine learning and control theory to develop efficient algorithms for robot control and motion planning.

## Education

- June 2019 – **Doctor of Philosophy.**  
Now École Polytechnique Fédérale de Lausanne  
**Advisor:** Dr. Sylvain Calinon  
**Thesis:** Low-rank Approximation Techniques in Robot Learning
- June 2014– **Master of Engineering.**  
June 2016 Indian Institute of Science, Bangalore, India  
**Advisor:** Dr. Ashitava Ghosal  
**Thesis:** Trajectory Tracking and Control of Car-like Robots

## Work Experience

- June 2019 – **Idiap Research Institute, Martigny, Switzerland.**  
Now *Research Assistant at Robot Learning and Interaction Group*  
I am developing algorithms for robot exploration as used in the project [CoLLaboratE](#) for industrial assembly tasks, warm starting optimization algorithms as used in projects [Learn-Real](#) and [MEMMO](#) for robot control and motion planning. In particular, using tensor methods I exploit the low-rank structure existing these problems to develop fast and memory efficient algorithms that were previously considered to be intractable.
- Oct 2018 – **Robert Bosch Center for Cyber-Physical Systems, Bangalore, India.**  
April 2019 *Research Associate*  
Applied Reinforcement Learning algorithms to generate walking gaits for an in-house manufactured quadruped robot called Stoch.
- July 2016 – **The MathWorks Inc., Bangalore, India.**  
Mar 2018 *Engineering Development Group*  
Developed MATLAB and Simulink based models for demonstrating the applicability of MATLAB products such as Control System Toolbox, Robotics System Toolbox and Automated Driving System Toolbox in robotics applications.

## Publications

- 2022 **S Shetty**, T Lemobono, T Loew, and S Calinon, "Tensor Train for Global Optimization Problems in Robotics", arXiv preprint (under review).

- 2021 **S Shetty**, J Silverio, and S Calinon, "Ergodic Exploration Using Tensor Train: Applications in Insertion Tasks", in *IEEE Transactions on Robotics*.  
**[Awarded Idiap's Paper of the year 2021 by Idiap Research Institute, Switzerland]**
- 2021 L Bruder Müller, T Lembono, **S Shetty**, S Calinon, "Trajectory Prediction with Compressed 3D Environment Representation using Tensor Train Decomposition", in *Proc. IEEE Intl Conf. on Advanced Robotics (ICAR)*.
- 2019 S Kolathaya, A Joglekar, **S Shetty**, D Dholakiya, A Sagi, S Bhattacharya, A Singla, S Bhatnagar, A Ghosal, B Amrutur, "Trajectory based deep policy search for quadrupedal walking", in *28th IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)*.
- 2019 **S Shetty**, A Ghosal, "Trajectory Tracking and Control of Car-Like Robots", in *Machines, Mechanism and Robotics, Lecture Notes in Mechanical Engineering. Springer, Singapore*.

## Miscellaneous

- Ranked in top 100 among 200k candidates in the Mechanical Engineering Division in the year 2014 of Graduate Aptitude Test in Engineering. This is a highly competitive national level mathematics and technical aptitude test held by India's top tier universities for graduate studies.
- Ranked 12th in the Engineering Sciences in the year 2013 of National Eligibility Test for Junior Research Fellow. The test is held by the Council of Scientific and Industrial Research, India for research scholarship.

## Soft Skills

- Programming Languages: Python, MATLAB, C++
- Technical Softwares: Pytorch, Tensorflow, JAX, Mujoco, Pybullet, Gazebo, ROS
- Spoken Languages: English, Kannada, Hindi, French (A2)