

# NICOLAS SOMMER, PhD

## Robotics and Machine Learning

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Nationality: French

Residence permit: Swiss Permis C



## EDUCATION

### PhD

*"Multi-contact tactile exploration and interaction with unknown objects"*

#### EPFL

December 2012 - May 2017

Lausanne, Switzerland

- Application of machine learning techniques to robotics, taking into account external sensing such as touch or force-torque information
- Robot control applied to haptic exploration using tactile sensors
- Experience with multiple robot platforms (iCub humanoid robot, Barrett WAM Arm, Kuka LWR 4, Kuka IIWA, Wonik AllegroHand)
- Supervision of student's master thesis
- In charge of IT administration in the lab (about 15 persons)

### Msc, Microengineering

### Robotics and Autonomous Systems

#### EPFL

2010 - 2012

Lausanne, Switzerland

- Master project: *Learning with tactile feedback on a humanoid robot*  
I applied Programming by Demonstration (PbD) methods to learn and reproduce manipulation tasks, taking into account tactile signals from the robot's fingertips
- Double-degree between EPFL (CH) and INSA (FR)

### Msc, Mechatronics

#### INSA

2006 - 2011

Strasbourg, France

- Project: Design of a quadrotor controller  
Model identification of a quadrotor, optimizing controller parameters for flight, programming of the controller on onboard microcontroller (Microchip dsPIC family)

## WORK EXPERIENCE

### Teaching assistant for graduate-level courses

#### EPFL

2011-2015

Lausanne, Switzerland

Topics: Dimensionality reduction Unsupervised learning

Clustering Classification Regression

- MICRO-570 Advanced Machine Learning (Spring 2012..2015)

PCA ICA K-means KNN GMM/GMR SVM/SVR

Neural networks HMM

- MICRO-455 Applied Machine Learning (Fall 2011..2015)

CCA Bagging/boosting Reinforcement Learning

## RESEARCH INTERESTS



### Machine Learning

Applied to robotics



### Robot control with sensors

Enable robot use in real environments

## SKILLS

C++

Python

Matlab

LaTeX

R

ROS

git

µC programming

CAD

Electronic Circuit Design

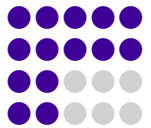
## LANGUAGES

French

English

German

Spanish



## ACHIEVEMENTS



### Tasti.ch

Winner of startup weekend Lausanne 2015



### Multi-contact haptic exploration

Featured in Science Magazine "In other journals".  
23 Sep 2016.



## INTERESTS

Volleyball



Piano



Salsa

Diving

DIY projects

Home automation

