

# Astrid Merckling

## Machine Learning Expert

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## Work Experience

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Jan-Apr 2022,  
3 months,  
Paris

**InstaDeep**, Software Company

*Research Engineer in Reinforcement Learning*

Implementation of Deep Reinforcement Learning algorithms for the industry: an agent that sequentially optimizes decisions, an agent optimizing decisions scalable to computational resources

*Technologies:* Python (TensorFlow, Jax), Git

Dec 2017-Sep 2021,  
3 years, 10 months  
Paris

**Sorbonne Université**, Research

*PhD Candidate in the Research Laboratory ISIR – UMR 7222 CNRS*

- Advisors: Pr. Stéphane Doncieux, Dr. Nicolas Perrin-Gilbert and Dr. Alex Coninx

- Subject: Unsupervised Pretraining of State Representations in a Rewardless Environment

- Main contributions: two new state-of-the-art representation learning algorithms (SRLfD, XSRL), applied to Reinforcement Learning with images; published respectively in a conference<sup>1</sup> and a journal<sup>2</sup>

*Technologies:* Python (TensorFlow, PyTorch, Scikit-learn), Git

<sup>1</sup> <https://arxiv.org/pdf/1910.01738.pdf>

<sup>2</sup> <https://www.frontiersin.org/articles/10.3389/frobt.2022.762051/full>

Mar-Jul 2017,  
5 months,  
Paris

**Université Paris Descartes**, Research

*Intern in the Research Laboratory MAP5 – UMR 8145 CNRS*

- Implementation of neural networks for classification and super-resolution with images

- Conception of a new convolutional neural network (InterpSRN) applied to image super-resolution, achieving state-of-the-art results to zoom subsampled images

*Technologies:* Python (TensorFlow, Scikit-learn), Matlab

Jun-Aug 2016,  
3 months,  
Paris

**BioAxial**, Nanotechnologies

*Intern in Research and Development*

Design of a calibration algorithm for a microscope in Matlab

Jun-Jul 2015,  
2 months,  
Montrouge

**Crédit Agricole**, Bank

*Intern in Financial Management at the headquarters*

Conception of an algorithm for the deposit quality score with VBA Excel Macros

## Education

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2017-2021, 3 years, 10 months Paris	<b>ISIR – Sorbonne Université</b> <i>PhD in Machine Learning</i> <i>Publicly defended on September 22, 2021 and available online</i> <sup>3</sup> Deep Learning, Unsupervised Learning, Exploration, Reinforcement Learning <sup>3</sup> <a href="https://youtu.be/bv01X2peShU">https://youtu.be/bv01X2peShU</a>
2014-2017, 3 years, Paris	<b>Université Paris Descartes</b> <i>Master 2 in Applied Mathematics</i> Mathematics, Image Processing

## Skills

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Languages:	French (native), English (professional)
Technologies:	Python (Scikit-learn, PyTorch, TensorFlow, Jax), Matlab, VBA, Git, Linux, dynamic simulation of robots (MuJoCo and PyBullet), Latex, graphic design (Inkscape), video editing (Kdenlive), audio editing (Audacity)

## Leisures

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Arts:	Playing the piano
Sports:	Ju-jitsu (Japanese martial art)