

# Raphaël Attias

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## Education

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| 09/2022 – 03/2023<br>Boston, USA           | <b>Harvard University, Master Thesis</b> <ul style="list-style-type: none"><li>• Develop advanced Machine Learning methods to analyze slide pathology images.</li><li>• Extend the existing framework by implementing and testing Convolutional Nets, Vision Transformers, and other state-of-the-art models using Pytorch.</li></ul> |
| 09/2020 – 03/2023<br>Lausanne, Switzerland | <b>Swiss Federal Institute of Technology (EPFL), Master Degree in Data Science</b><br>Focus on Machine Learning, Data Science, and Computer Vision. Grade: 5.31/6   |
| 09/2017 – 09/2020<br>Lausanne, Switzerland | <b>Swiss Federal Institute of Technology (EPFL), Bachelor Degree in Mathematics</b><br>Focus on Numerical Analysis, Statistics, and Numerical Optimization. Grade: 5.02/6   |

## Professional Experience

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| 02/2022 – 08/2022<br>Princeton, USA        | <b>Software &amp; Research Intern, NEC Laboratories America</b> <a href="#">🔗</a> <ul style="list-style-type: none"><li>• Tested data augmentation techniques in order to improve model generalization for detecting cancer cells in whole-slide pathology images.</li><li>• Contributed to the existing framework by implementing PosteriorNet, an uncertainty estimator.</li></ul> |
| 09/2021 – 02/2022<br>Lausanne, Switzerland | <b>Teacher Assistant in Machine Learning CS-433, Swiss Federal Institute of Technology (EPFL)</b> <a href="#">🔗</a><br>Graded projects, wrote part of the exam, and maintained weekly TA sessions.   |
| 07/2021 – 09/2021<br>Lausanne, Switzerland | <b>Machine Learning Intern, Arcanite</b> <a href="#">🔗</a> <ul style="list-style-type: none"><li>• Implemented a Generative Adversarial Network (GAN) to produce images of handwritten text.</li><li>• Wrote a Python library using Pytorch Lightning using the original work of GANWriting (2021).</li></ul>  |
| 12/2020 – 02/2021                          | <b>Freelancer Consultant in Machine Learning, EnergyByte</b><br>Provided tools to efficiently segment satellite images and detect houses using Machine Learning.   |

## Publications

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| 09/08/2021 | <b>Quantification of the suitable rooftop area for solar panel installation from overhead imagery using Convolutional Neural Networks, Journal of Physics</b> <a href="#">🔗</a> |
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## Projects

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| 2022 | <b>Decentralized Federated Learning using D-Cliques topology, Grade: 90/100</b> <a href="#">🔗</a><br>Contributed and experimented on a Distributed Federated Learning framework using Pytorch.              |
| 2021 | <b>Movie Recommendation System in Spark for Big Data, Grade: 90/100</b> <a href="#">🔗</a><br>Reached SOTA performance on a recommender system on the MovieLens dataset using Spark in Scala.                |
| 2021 | <b>Robust Journey Planning for CFF Zurich, Grade: 100/100</b> <a href="#">🔗</a><br>Built in group a journey planner using Swiss transportation dataset with PySpark, BeHive, and Kafka.                     |
| 2021 | <b>Robust Deep Learning Diagnosis of Pneumonia from Chest X-ray Data, Grade: 90/100</b> <a href="#">🔗</a><br>Implemented and tested a self-supervised learning model to detect pneumonia from chest X-rays. |
| 2021 | <b>Reinforcement Learning for moon landing in OpenGym, Grade: 90/100</b> <a href="#">🔗</a><br>Implemented in Tensorflow an agent to perform moon landing using Q-Learning.                                  |

## Languages and Technologies

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**Python, Scala, SQL, Matlab, R, C++**

Pytorch, Tensorflow, Docker, Flask, REST, Transformers, Scikit, Pandas, Spark, Wandb, Tensorboard, Pytorch Lightning

## References

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**Prof. Martin Jaggi**, *Professor of Machine Learning*, EPFL

**Dr. Eric Cosatto**, *Senior Researcher*, NEC Labs America

**Prof. Kun-Hsing Yu**, *Professor of Biomedical Informatics*, Harvard Medical School