Alexandre Araujo

137 rue Saint-Charles – 75 015 – Paris

+33 6 74 75 22 75 • alexandre.araujo@dauphine.eu
alexandrearaujo.com

Research Experience

INRIA **Paris, France**
Postdoctoral Researcher *2021 – Present*
- Research on Computer Vision – Focus Stacking from Handheld Raw Image Bursts
- Advisors: Jean Ponce, Julien Mairal

Université Paris-Dauphine & Wavestone **Paris, France**
Ph.D. Candidate – CIFRE contract *2017 – 2021*
- Subject: Building Compact and Robust Deep Neural Networks with Toeplitz Matrices
- Advisors: Jamal Atif, Yann Chevaleyre and Benjamin Negrevergne
- Dissertation committee: Jamal Atif, Yann Chevaleyre, Benjamin Negrevergne, Teddy Furon, Alain Rakotomamonjy, Krzysztof Choromanski, Elisa Fromont, Rémi Gribonval

Education

Université Paris-Dauphine – PSL Research University **Paris, France**
Ph.D. in Computer Science (Thesis defended in June 2021) *2017 – 2021*

SKEMA Business School **Lille, France**
MS in Economics *2013 – 2016*

University of Versailles Saint-Quentin-en-Yvelines **Versailles, France**
DEUG in Mathematics (equivalent of 2 years of bachelor's degree) *2008 – 2010*

Publications

Towards Evading the Theoretical Limitations of Randomized Smoothing
R. Ettedgui, A. Araujo*, R. Pinot, Y. Chevaleyre, J. Atif* – (Under review) (2022)

A Dynamical System Perspective for Lipschitz Neural Networks
L. Meunier, B. Delattre*, A. Araujo*, A. Allauzen* – ICML (2022)

Building Compact and Robust Deep Neural Networks with Toeplitz Matrices
A. Araujo – PhD Thesis (2021)

On Lipschitz Regularization of Convolutional Layers using Toeplitz Matrix Theory
A. Araujo, B. Negrevergne, Y. Chevaleyre, J. Atif – AAAI (2020)

Advocating for Multiple Defense Strategies against Adversarial Examples
A. Araujo, L. Meunier, R. Pinot, and B. Negrevergne – ECML – Workshop (2020)

Understanding and Training Deep Diagonal Circulant Neural Networks
A. Araujo, B. Negrevergne, Y. Chevaleyre, J. Atif – ECAI 2020 (2020)

Theoretical Evidence for Adversarial Robustness through Randomization
R. Pinot, L. Meunier, A. Araujo, H. Kashima, F. Yger, C. Gouy-Pailler, J. Atif – NeurIPS (2019)

Compact Deep Learning Models for Video Classification using Circulant Matrices
A. Araujo, B. Negrevergne, Y. Chevaleyre, J. Atif – ECCV – Workshops (2018)

Teaching

Executive Master – Université Paris Dauphine – PSL **Paris, France**
AI project & Machine Learning *2020, 2021*
Master IASD – Université Paris Dauphine-PSL **Paris, France**
Data Mining & Machine Learning *2019*
Master ID – Université Paris Dauphine-PSL **Paris, France**
Data Mining & Machine Learning *2019*
Master Data Science – École Polytechnique **Paris, France**
Data Science & Machine Learning *2016, 2017, 2018, 2019, 2020*

Industry Experience

Wavestone **Paris, France**
Data Scientist *2015 – 2017*

- Mortgage Broker – Gathered 5 years of historic data and applied Machine Learning algorithms to predict if the mortgage application will be accepted. Deployed the model into production.
- Energy Company – Gathered 3 years of historic data with Hadoop to construct a dataset with 1 billion lines. Applied Machine Learning algorithms to predict if the customer is willing to leave for the competitor (churn).
- Railway Company – Gathered 20 years of historic data for dataset creation. Applied Machine Learning algorithms to predict train breakdown.

Amazon **Luxembourg**
Data Engineer Intern *dec. 2014 – may 2015*

- Coded SQL queries on Amazon Redshift that showcase transportation and financial statistics.
- Automated data pipelines to feed BI dashboards.

Supervised Internships

Alexandre Verine: Master student, Summer 2019 (Now Ph.D. student)
A dive into Adversarial Attacks in the latent space with Invertible Networks

Invited Talks

NYU – CDS *April 2022*
INRIA/ENS Paris *July 2021*
ENS Lyon *July 2021*
INSIS – French National Center for Scientific Research *January 2021*
PFIA – French AI conference *June 2019, 2020, 2021*
International Cybersecurity Forum *January 2020*
Limits of AI – BPI Conference *June 2019*

Software

Advertorch : Contributor of open-source library for adversarial robustness research with PyTorch
Circulant Youtube-8M: Author of open-source library for training efficient & compact Deep Learning model for video classification
Adversarial Robustness Through Randomization: Author of open-source library for training randomized neural networks to be robust against adversarial attacks

Technical Skills

Programming Languages : Python, C++, SQL
HPC Job Schedulers : Slurm, IBM Spectrum LSF