Alexandre Araujo

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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 — *2011 – 2016*

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

Research Experience

New York University — **New York, US**
Postdoctoral Researcher — *2023 – Present*
- Research on Trustworthy Machine Learning
- Advisors: Siddharth Garg, Farshad Khorrami

INRIA / École Normale Supérieure — **Paris, France**
Postdoctoral Researcher — *2021 – 2022*
- Research on Computer Vision – Focus Stacking from Handheld Raw Image Bursts
- Advisors: Jean Ponce, Julien Mairal

Université Paris-Dauphine — **Paris, France**
Ph.D. Candidate — *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

Conference Papers

* *first author contribution*

Certification of Deep Learning Models for Medical Image Segmentation
O. Laousy. A. Araujo, G. Chassagnon, M. Revel, M. Vakalopoulou – MICCAI (2023)

Towards Better Certified Segmentation via Diffusion Models
O. Laousy. A. Araujo, G. Chassagnon, M. Revel, S. Garg, F. Khorrami, M. Vakalopoulou – UAI (2023)

Efficient Bound of Lipschitz Constant for Convolutional Layers by Gram Iteration
B. Delattre, Q. Barthélemy, A. Araujo, A. Allauzen – ICML (2023)

A Unified Algebraic Perspective on Lipschitz Neural Networks
A. Araujo, A. Havens*, B. Delattre, A. Allauzen, B. Hu* – ICLR – Spotlight (2023)

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

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

Workshop Papers

R-LPIPS: An Adversarially Robust Perceptual Similarity Metric
S. Ghazanfari, S. Garg, P. Krishnamurthy, F. Khorrami, A. Araujo – ICML – Workshop (2023)

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

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 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 Students

S. Ghazanfari: Ph.D. student, 2023 - Present
Blaise Delattre: Master student, Summer 2021 (Now Ph.D. student)
Alexandre Verine: Master student, Summer 2019 (Now Ph.D. student)

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*

Technical Skills

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