

# Alexandre Ramé

PHD STUDENT IN DEEP LEARNING FOR COMPUTER VISION. INVESTIGATING HOW THE GENERALIZATION LITERATURE CAN HELP FOR ALIGNMENT,  
TO CREATE AGIS BENEFITING SOCIETY AS A WHOLE, *in all its diversity*.

Paris, France

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## Education

### PhD in Computer Science and Deep Learning for Computer Vision

Paris, France

SORBONNE UNIVERSITY (ISIR, MLIA) Advisor: Pr. Matthieu Cord

Ongoing: Mar 2020 - Dec 2023

- PhD title: *Diversity in Deep Networks and Data to Boost Out-of-Distribution Generalization for Computer Vision*.
- Topics: ensembling, robustness, domain generalization and continual learning.

### Master of Science in Operations Research GPA: 3.9 / 4.0

New York, USA

COLUMBIA UNIVERSITY

Sep 2014 - May 2015

- Majors: optimization and machine learning.
- Minors: deep learning, statistics and programming.

### Diplôme d'Ingénieur Polytechnicien GPA: 3.7 / 4.0

Palaiseau, France

ECOLE POLYTECHNIQUE

Sep 2011 - May 2014

- Major: applied mathematics. optimization, probability, statistics, stochastic finance and times series analysis.
- Minors: computer science, economics, physics, entrepreneurship and mathematics.

### MPSI - MP\* Info

Versailles, France

LYCÉE SAINTE-GENEVIÈVE

Sep 2009 - Jul 2011

Mathematics, physics and computer science.

## Main Publications

### Rewarded soups: towards Pareto-optimality by interpolating weights fine-tuned on diverse rewards

soon on arXiv

ALEXANDRE RAMÉ, GUILLAUME COUAIRON, CORENTIN DANCETTE, JEAN-BAPTISTE GAYA, MUSTAFA SHUKOR, LAURE SOULIER, MATTHIEU CORD

2023

### Model Ratatouille: Recycling Diverse Models for Out-of-Distribution Generalization

ICML

ALEXANDRE RAMÉ, KARTIK AHUJA, JIANYU ZHANG, MATTHIEU CORD, LÉON BOTTOU, DAVID LOPEZ-PAZ

2023

### Diverse Weight Averaging for Out-of-Distribution Generalization

NeurIPS

ALEXANDRE RAMÉ, MATTHIEU KIRCHMEYER, THIBAUD RAHIER, ALAIN RAKOTOMAMONJY, PATRICK GALLINARI, MATTHIEU CORD

2022

### DyTox: Transformers for Continual Learning with DYNAMIC TOKEN eXpansion

CVPR

ARTHUR DOUILLARD, ALEXANDRE RAMÉ, GUILLAUME COUAIRON, MATTHIEU CORD

2022

### Fishr: Invariant Gradient Variances for Out-of-distribution Generalization

ICML

ALEXANDRE RAMÉ, CORENTIN DANCETTE, MATTHIEU CORD

2022

### MixMo: Mixing Multiple Inputs for Multiple Outputs via Deep Subnetworks

ICCV

ALEXANDRE RAMÉ, REMY SUN, MATTHIEU CORD

2021

### DICE: Diversity in Deep Ensembles via Conditional Redundancy Adversarial Estimation

ICLR

ALEXANDRE RAMÉ, MATTHIEU CORD

2021

## OMNIA Faster R-CNN: Detection in the Wild through Dataset Merging and Soft Distillation

arXiv

ALEXANDRE RAMÉ, EMILIEN GARREAU, HEDI BEN-YOUNES, CHARLES OLLION

2018

## Leveraging Weakly Annotated Data for Fashion Image Retrieval and Label Prediction

ICCVW

CHARLES CORBIERE, HEDI BEN-YOUNES, ALEXANDRE RAMÉ, CHARLES OLLION

2017

## Experience

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### FAIR Meta AI

Paris, France

RESEARCH SCIENTIST INTERN IN THE FAIRNESS AND ROBUSTNESS TEAM

Advisor: Dr. David Lopez-Paz

Ongoing: Sep 2022 - Dec 2022

- Investigating how weight averaging strategies can improve out-of-distribution generalization.
- Exploring how the updatable machine learning paradigm can help for embarrassingly simple parallelization of large-scale trainings.

### Heuritech

Paris, France

RESEARCH SCIENTIST IN DEEP LEARNING

Advisor: Dr. Charles Ollion

Jan 2016 - Nov 2019

- Main contributor of the **computer vision** pipeline. Implementing and improving SotA classification and detection models.

### Flaminem

Paris, France

RESEARCH SCIENTIST

Sep 2015 - Dec 2015

- Big data challenges to predict long-term purchase decision.

## Teaching

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### Teacher Assistant

SORBONNE UNIVERSITÉ · Master level · DEEP LEARNING FOR COMPUTER VISION

Fall 2020 / Fall 2021

### Teacher Assistant

DATA SCIENCE L'X-PARIS SACLAY · Master level · DEEP LEARNING

Fall 2017 / Fall 2018

### Volunteer Teacher and Youth Leader

FONDATION D'AUTEUIL SANNOIS · MATHEMATICS

Nov 2011 - Mar 2012

## Skills

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- **Programming Languages:** Python · Shell · Scala · R · Latex
- **Data Science:** PyTorch · Tensorflow / Keras · Theano · Scikit-Learn · Numpy · Pandas
- **Tools & OS:** Linux · MacOS · Git · Jupyter · Vim · VSCode
- **Languages:** French (native) · English (fluent) · Spanish (beginner)
- **Reviewing:** NeurIPS · CVPR · CoLLAs · IJCV

## Main Talks

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ECML KDD, A BIAS-VARIANCE ANALYSIS OF OUT-OF-DISTRIBUTION GENERALIZATION

Grenoble, France | Sep 2022

FACEBOOK AI RESEARCH, FISHR FOR DOMAIN GENERALIZATION

Paris, France | Oct 2021

VALEO.AI, DICE FOR DIVERSITY IN DEEP ENSEMBLES

Paris, France | Mar 2021

PARIS DEEP LEARNING MEETUP #16, OMNIA FASTER R-CNN FOR SEMI-SUPERVISED OBJECT DETECTION

Paris, France | Jan 2019

PARIS DEEP LEARNING MEETUP #6, CORRELATIONAL NEURAL NETWORKS FOR MULTILINGUAL EMBEDDINGS

Paris, France | Feb 2017