Alexandre **Ramé**

PhD Student in deep learning. Looking for an academic postdoc.

INVESTIGATING HOW THE OUT-OF-DISTRIBUTION GENERALIZATION LITERATURE CAN HELP TO ALIGN MULTIMODAL AIs WITH THE WORLD *in all its diversity*.

Paris, France

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Education

PhD in Computer Science and Deep Learning   *Paris, France*

SORBONNE UNIVERSITY (ISIR, MLIA)   *Advisor: Pr. Matthieu Cord*   *Mar 2020 - Oct 2023*

- PhD title: *Diverse and Efficient Ensembling of Deep Networks*.
- Topics: ensembling, robustness, out-of-distribution generalization, continual learning, weight averaging, and alignment.

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 in 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.

Selected Publications

Beyond task performance: Evaluating and reducing the limitations of large multimodal models with in-context-learning?   *soon*

MUSTAFA SHUKOR, <u>ALEXANDRE RAMÉ</u>, CORENTIN DANCETTE, MATTHIEU CORD   *2023*

UniVAL: Unified Model for Image, Video, Audio and Language Tasks   *arXiv*

MUSTAFA SHUKOR, CORENTIN DANCETTE, <u>ALEXANDRE RAMÉ</u>, MATTHIEU CORD   *2023*

Rewarded Soups: Towards Pareto-Optimal Alignment by Interpolating Weights Fine-tuned on Diverse Rewards   *NeurIPS*

<u>ALEXANDRE RAMÉ</u>, 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*

<u>ALEXANDRE RAMÉ</u>, KARTIK AHUJA, JIANYU ZHANG, MATTHIEU CORD, LÉON BOTTOU, DAVID LOPEZ-PAZ   *2023*

Diverse Weight Averaging for Out-of-Distribution Generalization   *NeurIPS*

<u>ALEXANDRE RAMÉ</u>, MATTHIEU KIRCHMEYER, THIBAUD RAHIER, ALAIN RAKOTOMAMONJY, PATRICK GALLINARI, MATTHIEU CORD   *2022*

DyTox: Transformers for Continual Learning with DYnamic TOken eXpansion   *CVPR*

ARTHUR DOUILLARD, <u>ALEXANDRE RAMÉ</u>, GUILLAUME COUAIRON, MATTHIEU CORD   *2022*

Fishr: Invariant Gradient Variances for Out-of-distribution Generalization   *ICML*

<u>ALEXANDRE RAMÉ</u>, CORENTIN DANCETTE, MATTHIEU CORD   *2022*

MixMo: Mixing Multiple Inputs for Multiple Outputs via Deep Subnetworks   *ICCV*

<u>ALEXANDRE RAMÉ</u>, 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

Google Brain   *Paris, France*
Student Researcher   *Advisor: Dr. Johan Ferret*   *Oct 2023 - Jan 2024*
- Reinforcement learning from AI feedback for large multimodal models.

FAIR Meta AI   *Paris, France*
Research Scientist Intern in the Fairness and Robustness team   *Advisor: Dr. David Lopez-Paz and Dr. Léon Bottou*   *Sep 2022 - Feb 2023*
- 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 in Machine Learning   *Sep 2015 - Dec 2015*
- Big data challenges to predict long-term purchase decision.

Teaching

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

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

Main Talks

Valeo.ai, Paris Diverse and efficient ensembling of deep networks   *Sept 2023*

INRIA THOTH, Grenoble Weight Averaging for Generalization and Alignment   *July 2023*

Samsung (SAIL), Montréal (Canada) Weight Averaging and Diversity for Generalization   *June 2023*

ECML KDD, Grenoble A Bias-Variance Analysis of Out-of-Distribution Generalization *Sep 2022*

Facebook AI Research, Paris Fishr for Domain Generalization *Oct 2021*

Valeo.ai, Paris Dice for Diversity in Deep Ensembles *Mar 2021*

Paris Deep Learning Meetup #16, Paris OMNIA Faster R-CNN for Semi-Supervised Object Detection *Jan 2019*

Paris Deep Learning Meetup #6, Paris Correlational Neural Networks for Multilingual Embeddings *Feb 2017*