

Eduardo Dadalto

Eduardo Dadalto Câmara Gomes
Paris, Île-de-France, France

Email: edadaltocg@gmail.com
Website: edadaltocg.github.io/
Github: github.com/edadaltocg/
LinkedIn: linkedin.com/in/edadaltocg/

Research interests: deep learning, computer vision, NLP, human-centric AI & robustness.

Education

CentraleSupélec, L2S, Université Paris-Saclay, CNRS & IBM Research Nov. 2020 - Mar. 2024
PhD in Machine Learning, Computer Science Department Paris, France

- Thesis: Improving artificial intelligence reliability through out-of-distribution and misclassification detection.
- Keywords: Safety in AI, Out-of-Distribution Detection, Uncertainty Estimation, Computer Vision, NLP.
- Advisors: Pablo Piantanida and Florence Alberge. Committee Members: Nicolas Vayatis, Yann Chevaleyre, Yves Grandvalet, and Nicolas Thome.

Institut de Mathématiques de Toulouse, Université Toulouse III Sep. 2019 - Oct. 2020
MSc in Applied Mathematics Toulouse, France
Dissertation: "Training Binarized Deep Neural Networks." Advisors: Franck Mamalet and François Malgouyres.

ISAE-SUPAERO Sep. 2018 - Apr. 2020
Diplôme d'Ingénieur, Major in Data & Decision Sciences Toulouse, France
Selected Coursework: Supervised, Unsupervised, Deep, and Reinforcement Learning with Emmanuel Rachelson.
Double Degree with a full tuition fee waiver scholarship.

Instituto Tecnológico de Aeronáutica (ITA) Feb. 2015 - Jul. 2018
BE in Aerospace Engineering São José dos Campos, Brazil
Dissertation: "Machine Learning Applied to Communication Channels." Advisor: Meryem Bennamar.

Professional Experience

Future Frame Apr. 2024 - Nov. 2024
Co-founder San Francisco, CA, USA & Paris, France

- Adapted transformer models to scale on structured data, eliminating the need for feature engineering.
- Released an API platform for data scientists to fine-tune and run inference with our model (B2B SaaS).
- Raised a pre-seed fund from Transpose VC and Entrepreneur First (EF), ran by Alice Bentinck, Matt Clifford.
- Acquired a deep understanding of aligning product development with customer needs.

Mila - Quebec AI Institute & International Laboratory on Learning Systems Oct. 2022 - Jan. 2023
Graduate Research Intern Montreal, QC, Canada

- Developed misclassification detection algorithms for medical image segmentation to improve diagnostics.
- Advised by Pablo Piantanida and Jose Dolz, in collaboration with Federica and Balamurali.

IRT Saint Exupéry, DEEL Team & Airbus Apr. 2020 - Oct. 2020
Undergraduate Research Intern Toulouse, France

- Six-month internship where I trained neural networks with binary weights for embedded computer vision.
- Supervised by Franck Mamalet and co-supervised by François Malgouyres and Adrien Gauffriau (Airbus).

Publications

For an up to date list of publications, please visit my Google Scholar page.

1. [Eduardo Dadalto](#), Marco Romanelli, Georg Pichler, Pablo Piantanida. *A Data-Driven Measure of Relative Uncertainty for Misclassification Detection*. **ICLR2024**. [ARXIV] [PDF] [CODE]
2. [Eduardo Dadalto](#), Florence Alberge, Pierre Duhamel, Pablo Piantanida. *Combine and Conquer: A Meta-Analysis on Data Shift and Out-of-Distribution Detection*. **TMLR2024**. [ARXIV] [PDF] [CODE]
3. Maxime Darrin, Guillaume Staerman, [Eduardo Dadalto](#), Jackie CK Cheung, Pablo Piantanida, Pierre Colombo. *Unsupervised layer-wise score aggregation for textual ood detection*. **AAAI2023**. [ARXIV] [PDF]
4. Pierre Colombo, [Eduardo Dadalto](#), Guillaume Staerman, Nathan Noiry, Pablo Piantanida. *Beyond Mahalanobis Distance for Textual OOD Detection*. **NeurIPS 2022**. [ARXIV] [PDF]
5. [Eduardo Dadalto](#), Florence Alberge, Pierre Duhamel, Pablo Piantanida. *Igeood: An Information Geometry Approach to Out-of-Distribution Detection*. **ICLR 2022**. [ARXIV] [PDF] [CODE]
6. Meryem Bennamar, [Eduardo Dadalto](#), Pablo Piantanida. *CSI-aided Robust Neural-based Decoders*. **IEEE ISTC, 2021**. [PAGE] [PDF]

Preprints

1. [Eduardo Dadalto](#), Marco Romanelli. *Optimal Zero-shot Regret Minimization for Selective Classification With Out-of-Distribution Detection*. 2024.
2. [Eduardo Dadalto](#), Marco Romanelli, Federica Granese, Siddharth Garg, Pablo Piantanida. *Trusting the Untrustworthy: A Cautionary Tale on the Pitfalls of Training-based Rejection Option*. 2023.
3. [Eduardo Dadalto](#), Pierre Colombo, Guillaume Staerman, Nathan Noiry, Pablo Piantanida. *A Functional Perspective on Multi-Layer Out-of-Distribution Detection*. 2023.

Workshops

1. [Eduardo Dadalto](#), Marco Romanelli, Georg Pichler, Pablo Piantanida. *A Data-Driven Measure of Relative Uncertainty for Misclassification Detection*. **NeurIPS Workshop on Mathematics of Modern Machine Learning**. 2023.
2. [Eduardo Dadalto](#), Florence Alberge, Pierre Duhamel, Pablo Piantanida. *Igeood: An Information Geometry Approach to Out-of-Distribution Detection*. **NeurIPS Workshop on Distribution shifts: connecting methods and applications (DistShift)**. 2021.

Teaching

CentraleSupélec, Université Paris-Saclay

Teaching Assistant (TA) for the course *Introduction to Deep Learning (3SQ2050)*.

2021-2023

Gif-sur-Yvette, France

Awards and Scholarships

Nordic Probabilistic AI Summer School (ProbAI)

Norwegian University of Science and Technology, Trondheim, Norway

June 2023

- Coursework on probabilistic modeling, variational inference, and generative models, sponsored by DeepMind.

Globalink MITACS Scholarship

Awarded for a winning project in a four-month full mobility scholarship program, Montreal, QC, Canada

Oct. 2022 - Feb. 2023

- Partnership between Mila, ÉTS, McGill, Inria, CNRS, and Université Paris-Saclay.

BCG Gamma Data Science Hackathon

February 2020

Organized by BCG Gamma and Instituto Tecnológico de Aeronáutica, São José dos Campos, Brazil

- Fine-tuned a YOLOv3 model for object detection on infrared drone footage.
- Received the Best Presentation Award. Advised by Filipe Verri.

Services & Volunteering

- **Reviewer:** Neural Information Processing Systems (NeurIPS 2022, 2023), Computer Vision and Pattern Recognition (CVPR 2023), International Conference on Learning Representations (ICLR 2024), Conference on Artificial Intelligence (AAAI 2023).
- **Teaching:** Volunteered as a high school math teacher at a Brazilian public school (2011).

Research Grants

- Compute research grant (AD011012803R) at Jean-Zay a French HPC/AI cluster. 2021 - 2024
- PhD funding from the PSPC AIDA project (2019-PSPC-09) granted by BPI-France. 2020 - 2024

Open Source

Detectors

May 2023

Open source package to accelerate research on out-of-distribution (OOD) detection for computer vision applications.

Todd / ToddBenchmark

February 2023

Open source package to accelerate research on out-of-distribution (OOD) detection for textual applications.

Skills & Tools

- **Languages:** English (fluent), French (fluent), Portuguese (native language), German (notions), Spanish (notions).
- **Programming:** Python (PyTorch, Numpy, Tensorflow/Keras, Scikit-Learn, Transformers, etc.), distributed computing (Slurm), Go, C, CUDA (basics), JavaScript, HTML, SQL, \LaTeX , git, Linux, Docker, cloud (Terraform IaC, AWS, GCP), etc.

Miscellaneous

- **Certificates:** Cambridge C2 Proficiency.
- **Academic contests:** Brazilian Astronomy Olympiad ($3\times$ gold medalist); UN mock debating at FAAP/SP.
- **Side projects:** Co-created Prompt Riddle, an online indie enigma-solving game with 5k+ players.
- **Sports:** brazilian jiu-jitsu, futsal.
- **Rocketry:** Launched and recovered a rocket that reached a 10,000 ft apogee as part of the ITA's Rocket Design team during the 2017 IREC competition (placed 7th/109 teams) in Las Cruces, NM, USA, which was sponsored by Virgin Galactic. I was responsible for the aerodynamics of the rocket and helped build the GPS localization module.
- **Personal interests:** Traveling, trying new food, board games & puzzles.