

Eduardo Dadalto, PhD Candidate in Machine Learning

I am a PhD Candidate working towards safer artificial intelligence algorithms and committed to making AI a beneficial technology for all.

Eduardo Dadalto Câmara Gomes (he/him)
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Research interests: Safety AI, Deep learning, Computer vision, NLP.

Education

CentraleSupélec, L2S, Université Paris-Saclay, CNRS

November 2020-

PhD in Machine Learning.

Paris, France

- Title: Safety in Artificial Intelligence: the Role of Out-of-Distribution and Misclassification Detection.
- Keywords: Safety AI, Out-of-distribution detection, Uncertainty estimation, Computer Vision, NLP.
- Supervised by Prof. Pablo Piantanida and Prof. Florence Alberge.

Institut de Mathématiques de Toulouse, Université Toulouse III

Sep. 2019 - Oct. 2020

MSc. in Applied Mathematics and Operations Research.

Toulouse, France

Dissertation: “Training Binarized Deep Neural Networks” supervised by Franck Mamalet and François Malgouyres.

ISAE-SUPAERO

Sep. 2018 - Apr. 2020

Diplôme d'Ingénieur (double degree), major in Data and Decision Science.

Toulouse, France

Instituto Tecnológico de Aeronáutica (ITA)

Feb. 2015 - Jul. 2018

BE (double degree) in Aerospace Engineering.

São José dos Campos, Brazil

Dissertation: “Machine Learning Applied to Communication Channels” supervised by Meryem Bennamar and Manish Sharma.

Experience

MILA - Quebec AI Institute, International Laboratory on Learning Systems

Oct. 2022 - Jan. 2023

Graduate Research Intern.

Montreal, QC, Canada

- Subject: Misclassification Detection for Medical Image Segmentation.
- Directed by Pablo Piantanida and Jose Dolz.

IRT Saint Exupéry, DEEL Team

Apr. 2020 - Oct. 2020

Undergraduate Research Intern.

Toulouse, France

- Six months internship working on binarizing the weights of neural networks.
- Supervised by Franck Mamalet and co-supervised by François Malgouyres and Adrien Gauffriau.

Publications

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

1. [Eduardo Dadalto](#), Marco Romanelli, Georg Pichler, Pablo Piantanida. *A Data-Driven Measure of Relative Uncertainty for Misclassification Detection*. **NeurIPS 2023 Workshop on Mathematics of Modern Machine Learning**. [ARXIV] [PDF] [CODE]
2. [Eduardo Dadalto](#), Pierre Colombo, Guillaume Staerman, Nathan Noiry, Pablo Piantanida. *A Functional Perspective on Multi-Layer Out-of-Distribution Detection*. Recently Submitted. [ARXIV] [PDF] [CODE]
3. [Eduardo Dadalto](#), Marco Romanelli, Federica Granese, Siddharth Garg, Pablo Piantanida. *Trusting the Untrustworthy: A Cautionary Tale on the Pitfalls of Training-based Rejection Option*. Recently Submitted.

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]

Teaching

CentraleSupélec, Université Paris-Saclay

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

2020-2023

Gif-sur-Yvette, France

Services

- **Reviewer:** Neural Information Processing Systems (NeurIPS 2022, 2023), Computer Vision and Pattern Recognition (CVPR 2023), International Conference on Learning Representations (ICLR 2024).

Awards and Scholarships

Nordic Probabilistic AI School (ProbAI)

Norwegian University of Science and Technology.

June 2023

Trondheim, Norway

- Summer school on probabilistic modeling, variational inference, generative models, sponsored by DeepMind.

Globalink MITACS Scholarship

Research visitor at the International Laboratory on Learning Systems (ILLS) at MILA.

Oct. 2022 - Feb. 2023

Montreal, QC, Canada

- Partnership between MILA, ETS, McGill, Inria, CNRS, and Université Paris-Saclay.

BCG Gamma Data Science Hackathon

Hackathon for BCG Gamma and Instituto Tecnológico de Aeronáutica.

February 2020

São José dos Campos, Brazil

- Fine tuning a YOLOv3 model for object detection on infrared drone footage.
- Best presentation award. Placed 2/10. Advised by Filipe Verri.

Open Source

Detectors

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

May 2023

Todd / ToddBenchmark

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

February 2023

Skills and tools

- **Languages:** English (Cambridge C2 Proficiency), French (Fluent), Portuguese (Native), German (Notions).
- **Programming:** Python (Numpy, PyTorch, Pandas, Scikit-Learn, Transformers, etc.), Distributed computing, Java, C, JavaScript, HTML, SQL, L^AT_EX, SvelteKit.
- **Tools:** neovim, git, Linux, tmux, Slurm, zsh, Docker, GCP, rsync, ssh, mutagen, etc.