Charles Corbière

Postdoctoral Researcher in
Deep Learning for Transport Applications

Paris, France
📱 *+33 6 21 00 04 64*
✉ *charles.corbiere@epfl.ch*
🖰 *https://chcorbi.github.io*

Research Interests

Multimodal models, vision-language learning, reliability, AI safety, uncertainty estimation, robustness, Bayesian models, domain generalization, out-of-distribution detection, applications in computer vision.

Academic

2022–now   **Postdoc. in Deep Learning for Transport Applications** ,
EPFL, Lausanne, Switzerland.
Part of the VITA Lab, working with Prof. Alexandre Alahi.
Conducting projects applying vision-language models to autonomous driving, depth estimation from omni-directional cameras and tackling the task of pedestrian action recognition

2019–2022   **Ph.D. in Deep Learning for Computer Vision**,
Conservatoire National des Arts et Métiers, Paris, France.
Subject: **Robust and multi-modal deep learning for autonomous driving.**
Under the supervision of Prof. Nicolas Thome (CNAM) and Patrick Pérez (valeo.ai).
I worked on AI safety and reliability, in particular developing methods for uncertainty estimation with deep neural networks and improving robustness to distributional shifts in computer vision tasks.
2 top-tier publications (NeurIPS, PAMI) and 2 workshops publications (ICML, EECV)

2016–2017   **M.Sc. in Applied Mathematics**,
École Polytechnique, Université Paris-Saclay, Paris, France.
Master program "Data Sciences", directed by Prof. Eric Moulines
Coursework: machine learning, optimization, deep learning, big data analytics, graphical models, statistical learning, computer vision, compressed sensing. Full course list here

2012–2016   **M.Eng. in Computer Science**,
Ecole Centrale de Lille, Lille, France.
Top 10 french engineering schools program
○ Major in Software Engineering, Minor in Entrepreneurship
○ Solid foundations in mathematics and engineering (electronics, embedded systems)

2010–2012   **Classe Préparatoire aux Grandes Ecoles**,
Lycée du Parc, Lyon, France.
Two-year intensive post-secondary program preparation for the nationwide competitive examination to the elite French Grandes Ecoles for scientific studies.

Publications

S. Roburin*, **C. Corbière***, G. Puy, N. Thome, M. Aubry, R. Marlet, and P. Pérez, "Take one gram of neural features, get enhanced group robustness," in *ECCV*

Workshop on Out-Of-Distribution Generalization in Computer Vision, 2022.

C. Corbière, M. Lafon, N. Thome, M. Cord, and P. Pérez, "Beyond first-order uncertainty estimation with evidential models for open-world recognition," in *ICML Workshop on Uncertainty and Robustness in Deep Learning*, 2021.

C. Corbière, N. Thome, A. Saporta, T.-H. Vu, M. Cord, and P. Pérez, "Confidence estimation via auxiliary models," in *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 2021.

C. Corbière, N. Thome, A. Bar-Hen, M. Cord, and P. Pérez, "Addressing failure prediction by learning model confidence," in *Advances in Neural Information Processing Systems 32 (NeurIPS)*, pp. 2902–2913, 2019.

C. Corbière, H. Ben-Younes, A. Rame, and C. Ollion, "Leveraging weakly annotated data for fashion image retrieval and label prediction," in *IEEE International Conference on Computer Vision Workshop (ICCVW)*, pp. 2268–2274, 10 2017.

Professional Experiences

Jan. 2019 – Feb. 2022
Junior Research Scientist, *valeo.ai*, Paris, France.
Participating in the lab as a CIFRE PhD fellow International research center in AI for automotive applications. Main topics are reliability, domain adaptation, self-supervised learning, multi-sensor and 3D perception.

Oct. 2017 – Nov. 2018
Computer Vision Engineer, *Preligens*, Paris, France.
Start-up applying deep learning to remote sensing imagery.
- Implemented a semantic segmentation pipeline for numerous and small object detection, from research to integration into production
- Conducted exploratory research works on semi-supervised and weakly supervised learning

Apr. –Sept. 2017
Research Intern, *Heuritech*, Paris, France.
Applying deep learning for image recognition in fashion and e-commerce.
Subject: build a learning scheme to improve feature representation for fashion image
1 workshop publication (ICCV)

Various Activities

2023 **Supervising Assistant** at DLAV course, EPFL, supervising master students for semesters project in deep learning for autonomous driving.

2020-2022 **Teaching Assistant** at Master 2 RDFIA, Sorbonne Université, along with my supervisor Nicolas Thome (60 students). Pratical work on Bayesian modelling.

2020 Attended and presented a poster at the **Mediterranean Machine Learning School**

2018–2019 **Co-Founder** at La Data en Clair, a blog about ethics in artificial intelligence and data science. `https://ladataenclair.fr`

Languages

French	**Native**	English	**Fluent**	Spanish	**Conversational**

Software Skills

Languages Python, C/C++, Matlab

Libraries pytorch, tensorflow, open-cv, scikit-learn, gdal, numpy, scipy, matplotlib

Others Docker, git, Linux, agile management, SQL

Hobbies

- Member of a collective in electronic music, organizing events in France
- Involved in a theatre company
- Travelling around the world – 2022: 5-months in South America
- Football player, former basketball playmaker.