Charles Corbière

+33 6 21 00 04 64 charles.corbiere@gmail.com chcorbi.github.io chcorbi charlescorbiere

Postdoctoral researcher in multimodal AI for safety-critical systems.

Education

Ph.D. in Computer Science 2019 – 2022
Conservatoire National des Arts et Métiers *Paris, France*
Advisors: Prof. Nicolas Thome (Cnam) and Dr. Patrick Pérez (valeo.ai).
- Thesis: *Robust Deep Learning for Autonomous Driving*.
- Topics: uncertainty estimation, domain adaptation, robustness to distribution shift.

2 top-tier publications: NeurIPS (>350 cit.), TPAMI + 2 workshops publications: ICML, ECCV.

M.Sc. in Applied Mathematics 2016 – 2017
École Polytechnique, Université Paris-Saclay *Paris, France*
- Thesis: *Leveraging Weakly Annotated Data for Fashion Image Retrieval and Label Prediction*.
- Coursework: machine learning, optimization, deep learning, big data analytics, graphical models, statistical learning, computer vision, compressed sensing. Full course list here.

1 workshop publication: ICCV (>100 cit.)

M.Eng. in Computer Science 2012 – 2016
École Centrale de Lille *Lille, France*
- Major: Software Engineering, Minor in Entrepreneurship.
- Solid foundations in mathematics and engineering (electronics, embedded systems).

Classe Préparatoire aux Grandes Ecoles - MPSI/MP 2010 – 2012
Lycée du Parc *Lyon, France*
Two-year intensive program preparing for nationwide competitive exams to enter French's elite Grandes Ecoles in science. Coursework: mathematics, physics, chemistry, computer science.

Work Experience

Postdoctoral Researcher Nov. 2022 – present
École Polytechnique Fédérale de Lausanne (EPFL) *Lausanne, Switzerland*
Visual Intelligence for Transportation (VITA) Lab, led by Prof. Alexandre Alahi.
- Collaborative project with the NLP Lab to leverage vision-language models for autonomous driving.
- Project lead for a 6-person team building a dataset for depth estimation from omnidirectional cameras.

1 top-tier publication (CVPR) + 2 on-going submissions to ICCV 2025 and IROS 2025.

Junior Research Scientist Jan. 2019 – Feb. 2022
valeo.ai *Paris, France*
- CIFRE PhD fellow researching on reliability, domain adaptation and robustness.
- Published peer-reviewed papers in top-tier AI conferences and journals.
- Collaborated with internal industrial teams to integrate my research into automotive solutions.

Computer Vision Engineer Oct. 2017 – Nov. 2018
Safran.AI (ex-Preligens) *Paris, France*

- Developed and deployed a semantic segmentation pipeline for detecting small and numerous objects in satellite imagery.
- Conducted exploratory research on semi-supervised and weakly supervised learning.

Research Intern Apr. –Sept. 2017
Heuritech *Paris, France*
Developed a weakly learning framework to improve feature representation for fashion and e-commerce images.

Publications

J. Endres, O. Hahn, **C. Corbière***, S. Schaub-Meyer, S. Roth, and A. Alahi, "Omni-DFI-Stereo: Leveraging a depth foundation model for omnidirectional stereo matching," 2025. *Under submission at ICCV*.

C. Corbière*, S. Roburin*, S. Montariol*, A. Bosselut, and A. Alahi, "DrivingVQA: Benchmarking visual chain-of-thought reasoning with driving theory tests," 2024. *Under submission at ICCV*.

M. Zayene, J. Endres, A. Havolli, **C. Corbière**, S. Cherkaoui, A. Kontouli, and A. Alahi, "Helvipad: A real-world dataset for omnidirectional stereo depth estimation," in *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2025.

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 (TPAMI)*, 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 (NeurIPS)*, 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)*, 2017.

Skills

Programming Languages: Python, Bash/Shell, SQL

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

Tools: Linux, Docker, git, Jupyter, PyCharm, Notion

Languages: French (native), English (fluent), Spanish (conversational)

Teaching and Academic Services

- **Reviewer** at NeurIPS, ICCV, ICLR, TPAMI, UnCV Workshop, Transportation Research Part C.
- **Project Supervisor** *(2023, 2024)*: Supervised master's students for their semester projects.
- **Supervising Assistant** *(2023)*: Guided master's students on group projects for Deep Learning for Autonomous Vehicles (DLAV) course at EPFL.
- **Teaching Assistant** *(2020, 2021, 2022)*: Conducted practical sessions on Bayesian modeling for 60 students in the Master's program in Data Science (RDFIA) at Sorbonne Université, in collaboration with my supervisor Prof. Nicolas Thome.

Others Activities

- President of a 500-person electronic music festival, leading a core team of 19 people and managing 80+ on-site staff.
- Active member of a theatre company, participating in performances and creative projects.
- Co-founder of a blog focused on ethics in artificial intelligence and data science, active until 2019.