

# Charles Corbière

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*Postdoctoral researcher in multimodal AI for safety-critical systems.*

## EDUCATION

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### 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

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### 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.

2 on-going submissions to CVPR 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

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Paris, France

Developed a weakly learning framework to improve feature representation for fashion and e-commerce images.

## PUBLICATIONS

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J. Endres, O. Hahn, **C. Corbière**, S. Schaub-Meyer, S. Roth, and A. Alahi, "Boosting omnidirectional stereo matching with a pre-trained depth foundation model," 2025. *Under submission at IROS*.

**C. Corbière\***, S. Montariol\*, S. Roburin\*, A. Bosselut, and A. Alahi, "Retrieval-based interleaved visual chain-of-thought in real-world driving scenarios," 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

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**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

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- **Reviewer** at NeurIPS, ICCV, ICLR, TPAMI, 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

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- 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.