

# Rémi Kazmierczak

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## EDUCATION

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### **2022-2025 | ENSTA Paris**

PhD Student

Thesis subject : *Towards Explainable Vision-Language Foundation Models : mitigating the complexity of multimodal embeddings.*

### **2021-2022 | ENS Paris-Saclay**

Year of pre-doctoral research in France (ARPF)

Year aimed to gain autonomy in conducting research which combines internship in a laboratory and courses.

Main courses : *Statistical learning, machine learning, Probabilistic graphical models.*

### **2020-2021 | Paris-Saclay University**

Master 2 Control, Signal and Image Processing (ATSI)

Main courses : *Signal and image processing, statistics and probabilities, optimization, machine learning, signal representation and sparse coding, medical imaging, deep learning, mathematical tools for control.*

### **2018-2022 | ENS Paris-Saclay**

Grande Ecole - Generalist School

Final year courses : Information Science and Technology

Main courses : *Mathematical tools for control, signal and image processing , electrical engineering, optimization, computer sciences, control system, inverse problems.*

### **2015-2018 | Lycée Louis de Cormontaigne Metz / Lycée Roosevelt Reims**

Classe préparatoire aux grandes écoles : Physique Technologie Sciences Industrielles / Physique Technologie.

*Intensive class preparing for competitive national entrance examinations to the French Grandes Ecoles. Courses in Mathematics, Physics, Chemistry, Engineering, English, and Humanities*

## SKILLS / REALTED COURSES

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Linux / Windows

Python / C++ / Matlab / Solidworks / Scilab (xcos)

Office suite / L<sup>A</sup>T<sub>E</sub>X

Lab techniques (oscilloscope, multimeter ,sensors ...)

Arduino / McuxpressoIDE  
Pytorch / Keras / Google Collaborate

## PROJECTS / WORK EXPERIENCE

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### 2015-2020 | Tutor

*Gave lessons in mathematics, physics and chemistry, from high school to bachelor level*

### 2018-2019 | Urban Orchestra

*Worked in a team (composed of 4 persons) to create a device which allows bystanders to play music together*

- Participated in the creation of 3 instruments driven by Arduino cards .
- Designed the power supply to make the display autonomous .

### September 2021-September 2022 | Research Scientist

U2IS, ENSTA Paris

My goal is to develop algorithms in Pytorch for performing Unsupervised Domain Adaptation (UDA) for semantic segmentation in the context of autonomous driving.

### April-September 2021 | Internship in anomaly detection

Safrantech, Safran

Supervisor : Nacim Belkhir ;

"Study of image synthesis techniques using generative models : for Non Destructive Testing (NDT)"

*Studied and developed tools to use Generative Adversarial Network (GAN) to learn a useful representation for anomaly detection*

### May-August 2020 | Internship in Tracking

SATIE, Paris-Saclay University

Supervisor : Gianni Franchi, Emanuel Aldea

"Extraction of pedestrian dynamics parameters for microscopic analysis of dense scenes "

Creation and implementation of original algorithms to track high-density crowd. I focused on the detection and the tracking of pedestrians in different circumstances using faster-RCNN and particle filtering. Ranked 3rd in the challenge CVPR MOT challenge 2020.

## PUBLICATIONS

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### Master Thesis

R. Kazmierczak. **"Study of image synthesis techniques using generative models : for Non-Destructive Testing (NDT)"**. Master's Thesis, ENS Paris-Saclay, September 2021.  
Committee : Antoine Girard, Thomas Rodet

### Conference Contributions

Gianni Franchi, Xuanlong Yu, Andrei Bursuc, Angel Tena, Rémi Kazmierczak, Séverine Dubuisson, Emanuel Aldea, David Filliat. **"MUAD : Multiple Uncertainties for Autonomous Driving, a benchmark for multiple uncertainty types and tasks"** Accepted at the "33rd British Machine Vision Conference (BMVC 2022)"

Rémi Kazmierczak, Nacim Belkhir, Gianni Franchi. **"Empirical evaluation of Generative Adversarial Networks for Material Inspection and defect detection"** Accepted at the "World Conference on Non-Destructive Testing (20th WCNDT)"

Marwane Hariat, Olivier Laurent, Rémi Kazmierczak, Shihao Zhang, Andrei Bursuc, Angela Yao, Gianni Franchi. **"Learning to generate training datasets for robust semantic segmentation"** Accepted at the "Winter Conference on Applications of Computer Vision (WACV)"

Rémi Kazmierczak, Steve Azzolin, Eloïse Berthier, Anna Hedström, Patricia Delhomme, David Filliat, Nicolas Bousquet, Goran Frehse, Massimiliano Mancini, Baptiste Caramiaux, Andrea Passerini, Gianni Franchi. **"Benchmarking XAI explanations with human-aligned evaluations"** Accepted at the "40th Annual AAAI Conference on Artificial Intelligence (AAAI 2026)"

### Journal Contributions

Rémi Kazmierczak, Eloïse Berthier, Goran Frehse, Gianni Franchi. **"CLIP-QDA : An Explainable Concept Bottleneck Model"** Accepted in "Transactions on Machine Learning Research (TMLR)"

Rémi Kazmierczak, Eloïse Berthier, Goran Frehse, Gianni Franchi. **"Explainability and vision foundation models : A survey"** Accepted in "Information Fusion"

Rémi Kazmierczak, Steve Azzolin, Eloïse Berthier, Goran Frehse, Gianni Franchi. **"Enhancing Concept Localization in CLIP-based Concept Bottleneck Models"** Accepted in "Transactions on Machine Learning Research (TMLR)"

## PERSONAL INTERESTS

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### Music

Brass player with 12 years of experience.

- Played in various brass bands and orchestras.
- Conductor in my school's brass band : the F[ENS]foire.

### Sports

Swimming (Advanced level )

Climbing (Regularly for 2 years )