

# Hugo Thimonier, PhD

## Multimodal Research Scientist

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


I am a Multimodal Research Scientist at Emobot, working on ML for Audio and Video. I hold a PhD in Computer Science from CentraleSupélec focused on **deep learning for tabular data**, with a particular focus on **anomaly detection** and **self-supervised learning**.

## Employment History

- 2024 - now    📖 **Multimodal Research Scientist**, Emobot.
- 2021 - 2024    📖 **Ph.D. in Computer Science**, CentraleSupélec.  
Topics: *Anomaly Detection, Self-Supervised Learning, Deep-Learning for Tabular Data.*
- Proposed **3 novel anomaly detection** methods for tabular data: improved my **project management** capabilities.
  - Supervised an internship and group projects for final year CentraleSupélec students: improved my **management skills**.
  - Coded from scratch deep learning models in PyTorch and Python.
  - Currently working on a **representation learning** for tabular data involving a novel self-supervised approach.
- 2023    📖 **Teacher** Computer Science Department, CentraleSupélec.  
Course: *Python* (24h)  
Topics Covered: *OOP, Algorithmic, Data types...etc*
- 2021 - 2022    📖 **Teaching Assistant** Computer Science Department, CentraleSupélec.  
Course: *Artificial Intelligence* (20h)  
Topics: *Machine Learning, Search Problems (e.g. Adversarial Search Problems, Local Search Problems), Markov Decision Process, Reinforcement Learning, Logic.*
- 2021    📖 **Deep Learning Scientist Intern**, L'Oreal Research & Innovation. (6 months)  
Developed a **novel post-processing model to enforce temporal consistency in videos** which were processed frame by frame using non-transformation equivariant image-trained algorithms. (Paper: [here](#), Supplementary material: [here](#))
- Computer Vision.
  - Deep learning for CV: CNN, ConvLSTM, Temporal Warping.
  - **Team work** and Long term **project management**.



## Education

- 2021 - 2024    📖 **PhD in Computer Science, CentraleSupélec.**  CentraleSupélec
- Title:** Advancing Anomaly Detection in Tabular Data: A Case-Study on Credit Card Fraud Identification.
- Supervisors:** Bich-Liên Doan, Fabrice Popineau, Arpad Rimmel.
- Jury:** Louise Travé-Massuyès, Alain Celisse, Marius Kloft, Gaël Varoquaux and Alamir Mazen.
- 2015 - 2020    📖 **Normalien Fonctionnaire-Stagiaire, ENS Paris-Saclay.** 







## Education (continued)

2018 – 2020  **M.Sc. Engineering, ENSAE**, Statistics, Probabilities and Computer Science.





2020 – 2021  **Two-year University Diploma, Sorbonne University** Russian.  This diploma grants me A2 level and would allow me to pursue a Bachelor in Russian.

## Skills & Interests

Languages	 French (native), English (fluent), Spanish (B1), Russian (A2)
Coding	 Python, $\text{\LaTeX}$ , SLURM, Gitlab/GitHub, UNIX
Machine Learning	 PyTorch, Scikit-learn, Pandas, Numpy...
Sports	 Running, Tennis, Chess.
Other	 Electronic music production, fly fishing.
Volunteering	 Mathematics teacher at Institut Villebon Georges Charpak (2019-2020).

## Research Publications

### Conference Proceedings



- 1 H. Thimonier, F. Popineau, A. Rimmel, and B.-L. Doan, “Beyond individual input for deep anomaly detection on tabular data,” in *Proceedings of the 41st International Conference on Machine Learning, ICML 2024, Vienna, Austria*, ser. Proceedings of Machine Learning Research, vol. 235, PMLR, Jul. 2024.
- 2 H. Thimonier, F. Popineau, A. Rimmel, and B.-L. Doan, “Retrieval augmented deep anomaly detection for tabular data,” in *Proceedings of the 33rd ACM International Conference on Information and Knowledge Management (CIKM '24)*, Boise, ID, USA, New York, NY, USA: Association for Computing Machinery, 2024.
- 3 H. Thimonier, F. Popineau, A. Rimmel, B.-L. Doan, and F. Daniel, “TracInAD: Measuring influence for anomaly detection,” in *2022 International Joint Conference on Neural Networks (IJCNN)*, 2022, pp. 1–6.  DOI: 10.1109/IJCNN55064.2022.9892058.
- 4 H. Thimonier, J. Despois, R. Kips, and M. Perrot, “Learning long term style preserving blind video temporal consistency,” in *2021 IEEE International Conference on Multimedia and Expo (ICME)*, 2021, pp. 1–6.  DOI: 10.1109/ICME51207.2021.9428445.

### Preprints

- 1 H. Thimonier, F. Popineau, A. Rimmel, B.-L. Doan, and F. Daniel, *Comparative evaluation of anomaly detection methods for fraud detection in online credit card payments*, 2023. arXiv: 2312.13896 [cs.LG].


## Oral and Poster Presentations

### Oral Presentation


- 2024  **Anomaly Detection Conference - CentraleSupélec (DataIA) (2024)**, Paris (Fr). Presented a synthesis of my papers *Beyond individual input for deep anomaly detection on tabular data* and *Retrieval augmented deep anomaly detection for tabular data*.
- 2022  **IJCNN 2022**, Padova (Italy). Presented my paper *TracInAD: Measuring influence for anomaly detection*.


## Oral and Poster Presentations (continued)


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2021      **ICME 2021**, Virtual. Presented my paper *Learning long term style preserving blind video temporal consistency*.

### Poster

2024      **CIKM 2024**, Boise (ID, USA). Presented our paper *Retrieval augmented deep anomaly detection for tabular data*.

 **ICML 2024**, Vienna (Austria). Presented our paper *Beyond individual input for deep anomaly detection on tabular data*.

2023      **NeurIPS 2023**, New Orleans (USA). Presented our paper *Beyond individual input for deep anomaly detection on tabular data* in the *Table Representation Learning Workshop*.

2022      **Symposium GDR MaDICS**, Lyon (Fr). Presented current work on anomaly detection.

## References

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Available on Request