QUENTIN BOUNIOT

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Personal page ⋄ Github ⋄ LinkedIn

EDUCATION

CEA-List, Université Paris-Saclay & Université Jean-Monnet, Saint-Étienne   2019-2023
PhD in Computer Science   *Paris, France*
Thesis : "Towards Few-Annotation Learning in Computer Vision :
Application to Image Classification and Object Detection tasks",
Advisor : Prof. Amaury Habrard
Manuscript link

CentraleSupélec, Université Paris-Saclay   2015-2019
Engineering degree - M.Sc in Computer Science and Applied Mathematics   *Paris, France*

Université de Lorraine   2018-2019
M.Sc in Computer Science and Vision - rank 1/18   *Nancy, France*

Higher School Preparatory Classes   2013-2015
Section Mathematics and Physics   *Bordeaux, France*

Baccalauréat   2013
Major in Mathematics   *Tahiti, French Polynesia*

PROFESSIONAL EXPERIENCE

Technical University of Munich & Helmholtz Munich   September 2024 - Present
Post-Doctoral Researcher   *Munich, Germany*
Explainable Machine Learning (EML) group led by Prof. Zeynep Akata.
Explainability, Mechanistic Interpretability
Supervision of PhD students.

Telecom Paris, Institut Polytechnique de Paris   February 2023 - August 2024
Post-Doctoral Researcher   *Paris, France*
Working with Florence d'Alché-Buc and Pavlo Mozharovskyi in S2A team.
Uncertainty quantification and Explainability in Deep Learning.
Organizing the weekly team meetings.

CEA-List, Université Paris-Saclay   April - September 2019
Research Intern   *Paris, France*
Working under the supervision of Romaric Audigier and Angélique Loesch.
Studying the impact of adversarial examples on person re-identification systems.
Improving the robustness of person re-identification systems using deep learning.

SmartBuild Asia   February - August 2018
Intern - NLP, Summarization, Unsupervised matching   *Kuala Lumpur, Malaysia*

Orange France   July 2017 - January 2018
Intern - Conversational Agents, Software Engineering   *Paris, France*

TEACHING

Recent Developments in Responsible AI   2023 - 2025
Institut Polytechnique de Paris   *Paris, France*

Mini-course on *Robust Machine Learning* as part of the *M2 Data Science*
Adversarial Robustness and Uncertainty Quantification.
Ressources

Algorithms and complexity   2020-2022
Teaching Assistant at CentraleSupélec, Université Paris-Saclay   *Paris, France*
First year Computer Science course for the main engineering track at CentraleSupélec.
Ressources

SELECTED PUBLICATIONS

PREPRINTS

- Mateusz Pach, Shyamgopal Karthik, **Quentin Bouniot**, Serge Belongie, Zeynep Akata. "Sparse autoencoders learn monosemantic features in vision-language models." *arXiv preprint arXiv :2504.02821*, 2025. Paper link
- Simon Roschmann, **Quentin Bouniot**, Vasilii Feofanov, Ievgen Redko, Zeynep Akata. "Time Series Representation for Classification Lie Hidden in Pretrained Vision Transformers". *arXiv preprint arXiv :2504.08641*, 2025. Paper link

INTERNATIONAL CONFERENCES

- **Quentin Bouniot**, Ievgen Redko, Anton Mallasto, Charlotte Laclau, Oliver Struckmeier, Karol Arndt, Markus Heinonen, Ville Kyrki, Samuel Kaski. "From Alexnet to Transformers : Measuring the Non-linearity of Deep Neural Networks with Affine Optimal Transport". *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2025.* Project page
- **Quentin Bouniot**, Pavlo Mozharovskyi, Florence d'Alché-Buc. "Tailoring Mixup to Data using Kernel Warping functions." *International Conference on Learning Representations (ICLR)*, 2025. Paper link
- Jayneel Parekh, **Quentin Bouniot**, Pavlo Mozharovskyi, Alasdair Newson, Florence d'Alché-Buc. "Restyling Unsupervised Concept Based Interpretable Networks with Generative Models." *International Conference on Learning Representations (ICLR)*, 2025. Project page
- **Quentin Bouniot**, Romaric Audigier, Angélique Loesch, Amaury Habrard. "Proposal-Contrastive Pretraining for Object Detection from Fewer Data." *International Conference on Learning Representations (ICLR)*, 2023.
  (**Oral - Notable top 25%**) Paper link
- **Quentin Bouniot**, Angélique Loesch, Romaric Audigier, Amaury Habrard. "Towards Few-Annotation Learning for Object Detection : Are Transformer-Based Models More Efficient ?" *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*, 2023. Paper link
- **Quentin Bouniot**, Ievgen Redko, Romaric Audigier, Angélique Loesch, Amaury Habrard. "Improving Few-Shot Learning Through Multi-task Representation Learning Theory." *Proceedings of the European Conference of Computer Vision (ECCV)*, 2022.
  Paper link Github link
- **Quentin Bouniot**, Romaric Audigier, Angélique Loesch. "Optimal transport as a defense against adversarial attacks." *2020 International Conference on Pattern Recognition (ICPR)*. IEEE, 2021.
  Paper link Github link
- **Bouniot Quentin**, Romaric Audigier, Angélique Loesch. "Vulnerability of person re-identification models to metric adversarial attacks." *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW).* 2020.
  (**DeepMind Travel Award.**) Paper link Github link

PATENTS

· **Quentin Bouniot**, Romaric Audigier, Angélique Loesch. (2020) *Méthode d'apprentissage d'un réseau de neurones pour le rendre robuste aux attaques par exemples contradictoires* (French Patent No. FR3116929A1). Institut national de la propriété industrielle (INPI). Patent link
· **Quentin Bouniot**, Romaric Audigier, Angélique Loesch. (2020) *Learning method for a neural network for rendering it robust against attacks by contradictory examples* (European Patent No. EP4006786A1). European Patent Office (EPO). Patent link

COMMUNICATIONS

· **Quentin Bouniot** & Ievgen Redko "Understanding Few-Shot Multi-Task Representation Learning Theory". *ICLR Blog Track*, 2022. Blog post link

ACADEMIC SERVICES

MEMBER OF PARIS ELLIS UNIT (MEMBERS)
· Evaluator for ELLIS Pre-screening PhD Program

PEER REVIEW
· Conference on Computer Vision and Pattern Recognition (CVPR), 2025 - *Outstanding Reviewer*
· Neural Information Processing Systems (NeurIPS), 2021-2023, 2025
· International Conference on Machine Learning (ICML), 2021-2025
· International Conference on Learning Representations (ICLR), 2022, 2024, 2025
· IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), 2023
· NeurIPS Workshop on Meta-Learning (MetaLearn), 2020-2022
· ICML Workshop on Pre-training : Perspectives, Pitfalls, and Paths Forward, 2022
· International Conference on Automated Machine Learning (AutoML), 2022
· IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2021, 2024

ORGANIZING COMMITTEE
· Workshop on *Trustworthy and Frugal ML* with Jayneel Parekh, ELLIS Unconference 2023 in Paris (Link to the event)
· Tutorial on Uncertainty Quantification : *The Nuts and Bolts of Deep Uncertainty Quantification*, with Gianni Franchi, Olivier Laurent, and Andrei Bursuc at WACV 2024. (Link to the event)
· 1st Workshop on "Explainable Computer Vision : Where are we and where are we going ?", with Robin Hesse, Sukrut Rao, Moritz Böhle, Simone Schaub-Meyer, Stefan Roth, Kate Saenko and Bernt Schiele at ECCV 2024. (Link to the event)
· 2nd Workshop on "Explainable Computer Vision : Where are we and where are we going ?", with Sukrut Rao, Robin Hesse, Sweta Mahajam, Amin Parchami-Araghi, Jayneel Parekh, Simone Schaub-Meyer, Florence d'Alché-Buc, Zeynep Akata, Stefan Roth and Bernt Schiele at ICCV 2025. (Link to the event)

OPEN-SOURCE
· Developer for torch-uncertainty : Comprehensive PyTorch Library for deep learning uncertainty quantification techniques.

ORAL PRESENTATIONS

Noah's Ark Lab, Huawei Paris 2025
Tailoring Mixup to Data for Calibration.

ENSAE, Institut Polytechnique de Paris - Séminaire Palaisien   2024
Understanding Deep Neural Networks through the lens of their non-linearity.

École Polytechnique - CMAP Seminar   2023
On Few-Annotation Learning and Non-Linearity in Deep Neural Networks

ELLIS Unconference - Plenary talk   2023
Towards Few-Annotation Learning in Computer Vision : Application to Image Classification
and Object Detection tasks

DSAIDIS Chair - Workshop Frugality in Machine Learning   2023
Towards better understanding meta-learning methods through multi-task representation learning theory.

CAp - French Machine Learning Conference   2023
Proposal-Contrastive Pretraining for Object Detection from Fewer Data.

CAp - French Machine Learning Conference   2021
Towards better understanding meta-learning methods through multi-task representation learning theory.

CEA-List, Université Paris-Saclay   2022
Factory-AI for Deep Learning Purposes.

GdR ISIS - Towards pragmatic learning in a context of limited labeled visual data   2021
Improving Few-Shot Learning through Multi-task Representation Learning Theory.

NeurIPS - Workshop on Meta-Learning (MetaLearn)   2020
Putting Theory to Work : From Learning Bounds to Meta-Learning Algorithms.

DataIA - Workshop "Safety & AI"   2020
Vulnerability of person re-identification models to metric adversarial attacks.

TECHNICAL SKILLS

Computer Languages	Python, C++, Matlab, Java, Javascript
Machine Learning	Pytorch, Keras, Tensorflow, Scikit-Learn
HPC	Slurm
Systems	Unix, Windows, SQL, Git

LANGUAGES

French	Native
English	Excellent - C1
Japanese	Studying - A2