# Ismail Labiad

X2020 | MVA

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## Professional Experiences

2024 — **Research Intern**, Meta (FAIR team), Paris, 6 months
Title — Fake detection and adversarial attacks on images
Description — Worked on adversarial attacks using gradient free black-box optimization and integration of their detection to detect fake images. **paper**
Proposed a new method to watermark images via quantization and recent text watermarking approaches. **report**
Supervisor — Olivier Teytaud

2023 — **Research Intern**, INRIA (Magnet Team), Lille, 5 months
Title — Fairness in fully decentralized federated learning
Description — Proposed a decentralized version of SearchFair and provided theoretical guarantees on the obtained level of fairness for the practical version of the algorithm. **report**
Supervisors — Michael Perrot and Batiste Le Bars

2022 — **Research Intern**, ReciTAL, Paris, 3 months
Description — Developing and analyzing the training of the latest NLP models on document processing.
Supervisor — Jacopo Staiano

2021 — **Software Engineer Intern**, Freterium, 1 month
Description — Developed an optimization algorithm for the 3D bin packing problem with additional constraints (rotations, weight limit and client-grouped products) and worked closely with the dev team to test it on a client dataset.

## Education & Diplomas

2023 - 2024 — **Master 2**, *Mathematics, Vision, Learning (MVA)*, ENS Paris-Saclay
*Relevant courses:* 3D computer vision, Geometric data analysis, Generative models for images, Inverse problems and imagery: statistical and stochastic approaches, Algorithms for speech and NLP, Online algorithms, Convex optimization

2020 - 2024 — **Engineering Degree**, *Diploma of École Polytechnique*, Ecole Polytechnique
Applied Mathematics Major
*Relevant courses:* Statistics, Fundamentals of CS, Operations research, Monte Carlo methods, Advanced algorithms, Robots and drones, Advanced ML and autonomous agents, Optimization, Regression and classification, 3D Computer Graphics

## Academic Projects

2023 — **Research project**, 3 months, Principal Component Analysis
Description — The theoretical aspect of PCA (perturbation theory) and some of its applications:

spectral clustering, image compression, anomaly detection.

Supervisor: Karim Lounici

2023 — **Snake Game,** group project, Reinforcement Learning

Description: Investigated the effect of state coding on the agent and proposed a trained agents that matches human performance on small boards. project report

2022 — **Research project**, 3 months, Tropical Support Vector Machines

Description: Proof of the existence of an optimal margin separating tropical Halfspace/Hyperplane and development an algorithm to compute it.

Supervisors: Stéphane Gaubert and Xavier Allamigeon

2022 — **Group project**, Acoustic keyboard eavesdropping

Description: Reconstructing typed text from keyboard taps audio recording using AI and Hidden Markov models in collaboration with "Gendarmerie Nationale".

## Personal Projects

2022 — **Chrome Dino**, Python

Description: Creating a Chrome Dino game copy and an RL agent capable of learning to play the game from visual inputs.

2021 — **Sarcastic headline classification,** Python

Description: Used GloVe word vector representation with LSTM layers to classify a dataset of news headlines.

## Computer Skills

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|---|---|
| Programming | Python, Java, C#, Dart, C/C++, R |
| Technologies | Flutter, Unity |
| Tools | SLURM, Git, LaTeX |

## Languages

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|---|---|
| French | Fluent |
| English | Fluent |
| Arabic | Mother tongue |
| Spanish | Beginner |

## Other

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|---|---|
| Software dev | Mobile/Web Apps, Games |
| Sport | Cross-training, Climbing |