

## RESEARCH EXPERIENCE

Research Intern	INRIA Paris Astra-Vision Team	Paris, May 2023 - Oct 2023
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*Visual Discovery of the Physical Law of Light Propagation*

- Used symbolic regression to learn the symbolic form of light propagation equation in foggy conditions from images.
- Keywords: **Symbolic regression, Physic-guided learning, Points Tracking in Video.**

Machine Learning Intern	Easyence	Paris, June 2022 - Sep 2022
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- Pre-processed image dataset using C++ and OpenCV.
- Fine-tuned pretrained self-supervised deep learning model to capture the semantic similarity of images; new model achieved good performance on the company's dataset.
- Created distributed training pipeline on Google Cloud GPU.
- Created fast and distributed inference pipeline for visual similarity search on Google Cloud GPU using [FAISS](#).
- Re-implemented 3 papers: [Local Aggregation](#), [Instance Recognition](#), [SimCLR](#) in Pytorch Lightning
- Keywords: **Self-supervised Learning, Contrastive Learning, Distributed training & inference, Pytorch Lightning.**

## PERSONAL PROJECTS

**Reproduce Challenge: Neural Optimal Transport (17/20)** | [Github](#)

- Synthesized, re-implemented and reproduced the results in the paper Neural Optimal Transport submitted at the ICLR 2023 open review.
- Keywords: **Optimal Transport, Generative Model.**

**Research project: In-depth analysis of a deep reinforcement learning algorithm (16.5/20, Rank 1 / 42)** | [GitHub](#)

- Re-implemented the [Stein Variational Policy Gradient](#) algorithm in Pytorch and [SaLinA](#).
- Studied and compared the performance with other classic policy gradient algorithms on classical benchmark environments.
- Keywords: **Deep Reinforcement Learning, Policy Gradient algorithms, Pytorch, OpenAI Gym.**

**Neural Network from scratch (16/20)** | [GitHub](#)

- Created a neural network library from scratch including forward / backward propagation mechanism of Linear / Convolution / Pooling layers, non-linear activations, loss functions using only NumPy.
- Accelerated Convolution and Pooling layers using Numba.
- Benchmarked performance on many tasks: regression, auto-encoder, MNIST classification with LeNet5.
- Keywords: **Neural Network, NumPy, Numba.**

**Online Convex Optimization (15/20)** | [GitHub](#)

- Implemented and compared the performance of several online convex optimization algorithms on MNIST problem with SVM.
- Keywords: **Online Convex Optimization.**

## EDUCATION

University of Education, Hue University	Hue, Vietnam	2018 - 2020
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- Collaboration program with Institut National des Sciences Appliquées (INSA), France; GPA: 8.9 / 10
- Main courses: **Linear Algebra, Analysis, Multivariate Analysis, Abstract Algebra, Probability, Data Structure & Algorithm**

INSA Centre Val de Loire	Bourges, France	2020 - 2021
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- Engineer's degree in Computer Science, specializing in Security, GPA: 14.82 / 20.
- Main courses: **Python / C / Java programming, Statistics, Automate Theory, Information Theory, Graph Theory & Linear Programming.**

Sorbonne Université	Paris, France	2021 - 2022
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- Master 1 in Computer Science, specializing in AI, Robotics, Operation Research; GPA: 14.4 / 20; Rank: 2 / 42.
- Main courses: **Robotics (Tabulaire Reinforcement Learning, Evolutionary algorithm, Multi-objective & randomized optimization), Graph theory & Linear Programming, Machine Learning, Game Theory.**

Sorbonne Université	Paris, France	2022-
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- Master 2 in Computer Science, specializing in Machine Learning & Deep Learning.
- Main courses: **Advanced Machine Learning, Pattern Recognition, Generative Model (GAN, VAE, Diffusion Models, Normalizing Flows), Deep Reinforcement Learning, Physic-informed Deep Learning, Non-convex and non-smooth optimization, Online convex optimization.**

## TECHNICAL SKILLS

**Programming languages:** Python, C, C++, Java, JavaScript, Assembly

**Machine Learning Frameworks:** Tensorflow, Keras, Pytorch, PyTorch Lightning, Jax, Scikit-learn

**Query languages and databases:** SQL, SPARQL, XQUERY, MySQL, Spark, GCP BigQuery

**Cloud Computing Platforms / Toolkits:** GCP, Docker

## REFERENCE

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