Cyrille Kone

Computer Science and Applied Mathematics student

Details

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Links

Medium articles
ActuIA review account
Kaggle account
Github portfolio

Kaggle challenge

Data Challenge - Kernel methods (2nd / 52)

Skills

Jax, PyTorch
Python (NumPy, pandas, HuggingFace, matplotlib, SciPy, plotly, skimage, OpenCV, Django etc.)
NoSQL (MongoDB & Redis)
C/C++, Java
Probability Theory (Markov chains, Learning theory, etc.)
Algebra (Linear Algebra, Tensor Theory etc.)
JavaScript & TypeScript (intermediate)
Python (advanced)
C++ (intermediate+)
Matlab (beginner)
React JS (intermediate)
Git
AWS & Azure Cloud

Languages

French

English

Hobbies

Profile

Computer Science enthusiast with a huge interest in applied and fundamental topics around Bandit and Reinforcement Learning theory.

Education

Master MVA, **M**athématiques **V**ision **A**pprentissage - *Mathematics Vision Learning*
École Normale Supérieure de Paris-Saclay, University of Paris-Saclay, Computer Science and Mathematics
Sep 2021 - Aug 2022 Paris, France

Reinforcement Learning (Matteo Pirotta), Computational Optimal Transport (Gabriel Peyré *et al*), Deep Learning (Vincent Lepetit et al.), Probabilistic Graphical Models, Bayesian Machine Learning, Deep Learning in Practice etc.

Ecole Polytechnique Fédérale de Lausanne, EPFL, master's degree, Computer Science and Applied Mathematics. *Exchange student*
Dec 2020 - Aug 2021 Lausanne, Switzerland

Natural Language Processing (Martin Jaggi *et al*), Computer Vision (Pascal Fua et al), Pattern Recognition (Jean-Philippe Thiran et al), Reinforcement Learning (Gerstner Wulfram et al), Convex Optimization (Martin Jaggi *et* al.), Machine Learning Theory (Macris Nicolas, Urbanke Rüdiger et al)

Ecole Normale Supérieure de Rennes, Institute of advanced scientific studies, master's degree, Robotics, Computer Science, and Applied Mathematics.
Sep 2020 – Aug 2022 Rennes, France

Linear Algebra, Differential Equations, C&C++ Programming, Papers Writing Guidelines, Project Versioning, Electrical Engineering, etc.

University of Aix-Marseille, first year master's degree, Fundamental and Applied Mathematics,
Sep 2019 - Jul 2020 Marseille, France

Focus on Integration Theory, Calculus, Ordinary Differential Equation, Numerical Calculus and Linear Algebra, Calculus, Advanced Probability Theory, Functional Spaces, Hilbert Theory etc.

Internships

Research Intern, INRIA Scool Lab (Sequential COntinuous Online Learning)
Apr 2022- Aug 2022 Lille, France
Full-time
Under the supervision of Emilie Kaufmann, I am working on Bandit algorithms for multi-dimensional distributions (also called arms). We rely on the Pareto ordering to define the set of optimal arms as the Pareto frontier of the distributions' means. This work has applications in clinical trials, where a study measures a set of indicators which could be conflicting (e.g reactogenicity, immunogenicity etc.) to determine best candidate vaccines.

Research Intern, Machine Learning and Optimization Lab (MLO @ EPFL)
Feb 2021- Aug 2021 Lausanne, Switzerland
Part-time
Under the supervision of Prof. Martin Jaggi, I have trained a BART-distilled model for summarizing EPFL's scientific news. I have been implementing 1) a new way of topic conditioning to produce summaries of a given text, but tailored to a particular chosen topic aspect, and 2) Allowing the transformer model to produce text summaries of different text readability levels, i.e., easy language vs technical language.

Boxing
Guitar
Coding

Research Intern, IRISA Research Lab
May 2020-Jul 2020 Rennes, France
Full-time
Develop a Java multiplatform application for gesture recording on tablet and smartphones. The tool is used for studying musculoskeletal disorders (ongoing thesis).

Projects

A Variational Analysis of Stochastic Gradient Algorithms .
Feb 2022- March 2022 Massy, France
This project is based on a reseach paper. The idea is to interpret SGD as a stochastic Ornstein-Ulhenbeck process and derive convergence properties to perform variational inference, hyper-parameter tuning etc. An implementation and a report of the project can be found by clicking on this link (or visit my github; done with a colleague).

Cards game detection and classification model
Feb 2021- Jun 2021 Lausanne, Switzerland
Coupling tradinal Computer Vision tehniques (Hough transform, template matching, thresholding etc.) with a Deep Learning model,we (togheter with one colleague) have implemented a cards game detection and classification model. Achieving a 98% accurary on test set.

Mixing Adam and SGD to improve learning
Mar 2021- Jun 2021 Lausanne, Switzerland
Together with two other colleagues, we have been testing some strategies for mixing Adam and SGD to improve the training of a DNN model with CIFAR10. The idea is to take advantage of Adam acceleration while preserving the generalization capability of SGD.

Medium and ActuIA writer in Deep Learning Topics
Since Nov 2019 Paris, France
Write some tutorials about Deep Learning and related topic published on well-known TowardsDataScience.com and in the top French AI review ActuIA (actuia.com), see links section.

Challenges

Kaggle Data Challenge, Kernel Methods
Mar 2022- Apr 2022 Massy, France
The challenge was organized for the validation of the course on Kernel Methods (MVA). We were restricted to kernel methods and not allowed to use any kind of Automatic Differentiation nor computer vision library. I have implemented HoG features from sratch, coupled with a kernel classifier plus some heuristics to achieve 67% accuracy (2^{nd}/ 52).

Publications

Authors: Jianshun Guan, Penanklihi Kone (me) et al. A study of fish undulatory swimming based on merged CFD and experimental video of mosquito fish, presented in OCEANS *2021 Conference*