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BAMBADE Antoine

Education

2020-2023: **PhD in numerical optimization and machine learning**, **INRIA** and **ENS Paris** (Willow and Sierra teams), thesis supervisor: Pr. Jean Ponce, co-advisors: Justin Carpentier, Adrien Taylor. I proposed a new machine learning quadratic programming layer (QPlayer) and solver (ProxQP) in C++ used for real time applications, including real time robotics. It is part of CVXPY. About 400 stars and 800k downloads within two years (with pip and conda). It uses mostly continuous and differentiable optimization techniques (e.g., proximal methods).

2019-2020: **Master's degree in public administration**, **Paris** (École Nationale des Ponts et Chaussées, AgroParisTech) entering civil service as an "Ingénieur du Corps des Ponts, des Eaux et des Forêts".

2018-2019: **University of Cambridge, tripos part III in statistical learning, United Kingdom**.

2015-2019: **École Polytechnique, Master's degree in applied mathematics, Palaiseau**.

2012-2015: **Lycée Henri IV, Paris** ("classes préparatoires" in mathematics and physics).

2009-2012: **Lycée Henri IV, Paris** ("Baccalauréat" in sciences with highest honors).

Professional experience

Sep 2023-present: **R&D Engineer, EDF optimization department, Palaiseau**. Driving the development and improvement of advanced numerical optimization solvers for diverse energy management applications, including daily unit commitment and uranium stock value estimation. Tailoring techniques based on problem structure, with solutions encompassing mixed-integer, continuous, stochastic, distributed optimization, and machine learning methods. My contributions to daily unit commitment are already in production, delivering substantial cost savings, while the uranium stock valuation project, driving significant gains in EDF's hedging strategies, is being presented at the "*Grand Trophée de l'Innovation d'EDF*".

Jan 2019- Aug 2020: **Collaborator at the French Secretary of State Office for Transportation**, **Paris**. I contributed to three initiatives: (i) developing a national strategy to enhance rail freight; (ii) advising the French Infrastructure Guidance Council on international best practices in asset management; and (iii) coordinating transportation responses during the Covid-19 crisis.

Oct 2019- Dec 2020: **Consultant in innovation for SNCF Réseau (French Railways), Paris.** Part-time consulting work (strategy for better spread of decision support tools and process digitization) for the direction of innovation.

Jun 2019- Aug 2020: **Research Associate in a FinTech (Digifolio), Paris.** Research work to design a portfolio robot advisor (based on bayesian neural networks and Black-Litterman theory).

Sep 2019- Jan 2020: **Oral examiner in Physics and Chemistry (class MP), lycée Henri IV, Paris**.

Apr 2018- Aug 2019: **Student Assistant in High Frequency Trading,** with Pr. John (Kesheng) Wu, **Lawrence Berkeley National Laboratory, California, USA**. I studied the VPIN model, designed to predict Flash Crashes. My contribution was awarded a research price by the finance department of the École Polytechnique.

Jun 2017- Aug 2018: **Consultant and Data Scientist Intern**, **working for Volkswagen Group China, Beijing**.
I worked on a mission which was to predict vehicle production from 2017 to 2028 thanks to a demand model using econometric tools.

Sep 2015- Apr 2016: **Cadet Officer in the French Navy**, Frigate Le Vendémiaire, Pacific Asia.

Languages

French (native), English (fluent), Russian (advanced notions).

Other activities

Arts: Piano (classical music).
Sports: Tennis (Vice-champion of the École Polytechnique, team member of the University of Cambridge).

Prices

2019: "Queens' College first class honors reward".
2018: "The Congratulations" of the École Polytechnique (for LBNL research work).
2018: "Cambridge Trust Scholar Reward" (full funding of student fees).
2016: Bronze Medal of Nationale Defense.