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Antoine Bambade

Summary

Optimization and AI researcher with expertise in real-time numerical optimization, optimal control, and machine learning for decision-making (RL, CL). **Strong background in differentiable solvers, quadratic programming, and large-scale optimization**, with applications in **real-time robotics, energy systems, and autonomous decision-making**. Experience and contribution to high-impact open-source projects and industrial software applications (e.g., real-time control for robotics, energy management).

Education

2020–2023 **PhD in robotics and machine learning**, *INRIA*, Paris, France
I proposed an open source quadratic programming layer and solver for **real time robotics**. It is part of CVXPY and has been **downloaded about 1M times**. Publications at top tier robotic conferences: RSS, ICRA, IROS, ICLR (spotlight). **Advisors**: Jean Ponce, Justin Carpentier, Adrien Taylor.

2019–2020 **Master of Public Administration**, *École Nationale des Ponts et Chaussées*, Paris, France
This master follows the École Polytechnique curriculum for top ranked students entering senior civil service as "Ingénieur du Corps des Ponts, des Eaux et des Forêts".

2018–2019 **MSc in Statistical Mathematics**, *University of Cambridge*, Cambridge, UK
Tripos part III. Courseworks: Statistical learning methods. **Rewards**: Cambridge Trust Scholar Reward, Queens' College first class honors reward.

2015–2018 **BSc and MSc in Applied Mathematics**, *École Polytechnique*, Palaiseau, France
Diplôme d'Ingénieur Polytechnicien. Rank: 65th. Notable courses: Control theory, Stochastic models, PDE analysis, Monte-Carlo methods, Statistical Physics.

Experience

Sep 2023-now **Research scientist**, *EDF lab*, Palaiseau, France
Designing advanced algorithmic solutions for efficient energy management. Methods encompass machine learning (RL, CL), stochastic, distributed, mixed-integer and continuous optimization.
- **EDF numerical application award** making possible **+50M€/y gains** with an innovative algorithmic solution enabling nuclear power plants to better modulate their production.
- Driving 7 algorithmic projects, managing 3 interns.
- Reviewer: ICLR, RSS, JOTA, Math Prog.

Mar-Aug 2018 **Student Assistant**, *Lawrence Berkeley National Lab*, Berkeley, USA
I studied the VPIN model designed to predict "Flash Crashes" in high frequency trading. Achievements: **research prize by the finance department** of the École Polytechnique. Two publications in mathematical finance. **Advisor**: Pr. John (Kesheng) Wu.

Computing

C, C++, Python, PyTorch, CMake, Git, Slurm, Bash, etc.

Langages

French (native), English (proficient), Russian (advanced)

Open-Source Software

ProxSuite: Open-source quadratic programming solver and layer.

Aligator: Open-source versatile trajectory optimization library for real-time robotics.