AXEL BENYAMINE

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▰ Education

ECOLE POLYTECHNIQUE, Palaiseau, FRANCE   **2021-Present**
- France's leading science and engineering university
- Third-year student specializing in a Master's level program in Applied Mathematics
- Relevant coursework includes *Operational Research*, *Statistical Learning* and *Machine Learning*

GPA: 3.91/4.00

LYCEE PRIVE SAINTE-GENEVIEVE, PREPARATORY PROGRAM, Versailles, FRANCE   **2019-2021**
- A **post-secondary** two-year program in advanced math and physics leading to nationwide entrance examinations to the Grandes Ecoles for scientific studies
- Undergraduate coursework includes *Topology*, *Linear Algebra*, *Thermodynamics* and *Electromagnetism*

GPA: 3.99/4.00

▰ Project work

TEAM RESEARCH PROJECT *(EA Recherche)*   **Sep-Dec 2023**

→ Convergence of stochastic processes – Department of Applied Mathematics – Under the guidance of Asst. Prof. **Clement Rey** – Study of dynamics in simulations of Ito processes
- Simulating Ito processes over extended time frames
- Proposing increasingly precise polynomial approximations as limits for simulated processes

EXPERIMENTAL PROJECT *(Modal)*   **Feb-May 2023**

→ Department of Applied Mathematics – Under the guidance of Asst. Prof. **Clement Rey**
- Research project on predicting the default risk of companies whose value follows a geometric Brownian motion
- Implemented statistical simulation methods for low probabilities in Python
- Simulated default risks using Monte Carlo, splitting and particle methods

SCIENTIFIC TEAM PROJECT *(PSC)*   **Sep 2022-May 2023**

→ Study of the mathematical game Dots and Boxes – Department of Applied Mathematics – Under the guidance of Asst. Prof. **Lucas Gerin**
- Designed and implemented multiple solvers for the game Dots and Boxes
- Designed an innovative solver based on the MiniMax and Monte Carlo Tree Search algorithms

EXPERIMENTAL PROJECT (*TIPE*), Lycee prive Sainte-Genevieve, Versailles, FRANCE   **Sep 2020-May 2021**

→ Undergraduate research project on a public-key cryptography system based on the properties of the braid group, a mathematical group
- Implemented on Python an end-to-end public-key cryptography system whose security relies on the non-commutativity of the braid group

▰ Internship

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge, MA, USA   **Apr-Aug 2024**
- Intern at Sloan School of Management – Infill development, design and optimization
- Developed optimization models and algorithms to support infill development in major cities, with the objective of maximizing a social welfare function
- Undertook data collection, model development, mathematical analysis, and computational activities

INFOSYS LIMITED, Bangalore, INDIA   **Jun-Aug 2023**
- Infosys Limited, EdgeVerve branch – AI branch specializing in business software development for companies
- Developed an AI tool to optimize the exchange of business information within a company
- Successfully devised an efficient system for extracting crucial information from business documents, reducing information extraction costs by 30% while maintaining quality

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- Developed the extraction tool on Python utilizing OpenAI's API and Natural Language Processing models

NATIONAL GENDARMERIE – OFFICER CADET **Sep 2021-Mar 2022**
- Part of Ecole Polytechnique's first year curriculum
- Assisted unit commander in drawing up emergency plans for riot control and prevention
- Took part in field operations (investigations, tracking of suspects, arrest of organized gang thieves)
- Dealt with cases of family abuse and battered children

Skills

- **Programming**
- Python, Java, C++, SQL, Visual Studio, LaTeX
- Machine Learning models: TensorFlow, PyTorch, Scikit-learn

- **Languages**
- French (fluent), English (TOEFL: 103), Spanish (intermediate)

Awards

Awards
- Outstanding Leadership award bestowed by Ecole Polytechnique **2023**
- Outstanding Investment award for involvement in Ecole Polytechnique's student community **2023**
- Winner of the QuantumBlack AI Hackathon at Ecole Polytechnique on Greenhouse Gas Emission Reduction **2023**

French Olympiads of Mathematics **2018**
- Gold Medal, Academy of Nice, FRANCE
- INRIA Gold Medal, Academy of Nice, FRANCE
- Ranked 41st nationally

Extracurricular activities

STUDENTS ASSOCIATIVE LIFE
- **Career Fair (X-Forum Association) – President** **2021-2023**
- President of an association organizing an annual career fair gathering 150 companies and 2000 students
- Association of 58 students with an annual turnover of €700,000
- Managed the event organization, the coordination with companies, school administration, and service providers
- Led the association's team with effective management

- **Ecole Polytechnique's Ecological Association (NeXt) – Conference organizer** **2022-2023**
- Organized monthly conferences on ecological topics with researchers, experts, journalists, or industry professionals
- Prospected potential speakers and organized the logistics of the events

- **Ecole Polytechnique's Welcome Week – Security Manager** **2023**
- Ensured a safe environment, focusing on the prevention of sexual and gender-based violence
- Made proactive measures that led to a secure and respectful event, creating a positive experience for all participants

TEACHING EXPERIENCE – **Jussieu Neighborhood Center, Versailles, FRANCE** **2019**
- Helped struggling students from less privileged districts
- Assisted 8th and 9th grade students in organizing their homework and raising their academic ambitions

MISCELLANEOUS
- Basketball, 6 hours per week at Ecole Polytechnique
- Former member of the Youth Regional Parliament for the PACA region, FRANCE (2016-2019), and the Youth City Council of Cannes, FRANCE (2016-2018)