Mohammed Amine BENNOUNA

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Education

2016 –   **Ecole Polytechnique**, *Palaiseau*, France.
One of France's top universities for science and engineering. Majoring in Applied Mathematics.
Degrees awarded: Bachelor of Science (2018) and Master of Science (2019).
Coursework includes: *Operations Research, Statistics, MonteCarlo Methods and Stochastic Processes, Game Theory, Algorithmic.*
GPA: 3.9/4 - Major GPA: 4.00/4

2014–2016   **Preparatory program**, *Lycée Louis-le-Grand*, Paris.
A two-year post secondary program in advanced mathematics and physics leading to nationwide entrance examinations to the *Grand Ecoles* for scientific studies.
Admitted to ENS ULM Paris program and Ecole Polytechnique (4th).
GPA: 4.00/4

2014   **Baccalaureate in mathematics**, *AlJabr School*, Fès, Morocco.
Awarded with highest honors.

Research experience

Sep 2018 –   **Exotic barrier functions and interior point methods complexity**, *Department of Applied Mathematics*, Ecole Polytechnique.
Advisors: Stéphane Gaubert & Xavier Allamigeon
- Working on a counter-example of strong polynomial complexity for log-barrier primal-dual interior-point methods.
- Extending the result to other *exotic* barriers.

Apr 2018 – **June 2018**   **Simulating rare events on Hawkes processes applied to twitter**, *Department of Applied Mathematics*, Ecole Polytechnique.
Advisors: Emmanuel Gobet & Martin Bompaire
- Modeled and simulated the arrival times of tweets as modified Hawkes processes.
- Estimated rare event probability using Importance Sampling and Monte Carlo Methods.
- Estimated the model parameters using likelihood maximization.

Sep 2017 – **Apr 2018**   **Traffic flow optimization**, *Ecole Polytechnique - Aimsun*.
Advisors: Flore Nabet & Aimsun
- Implemented a simulation-based optimization algorithm that optimizes traffic flow by adjusting traffic control devices.
- Combined approaches based on meta-models, queuing models and Aimsun traffic simulations.

Sep 2015 – **Apr 2016**   **Prince Rupert's Drop**, *Lycée Louis-le-Grand*.
Using high speed cameras 150kfps to study and suggest possible explanations to the properties of a special drop of glass, the Price Rupert Drop.

Working and teaching experience

Oct 2017 – **June 2018**   **Data Analyst Intern**, *Crédit Agricole CIB*, Singapore.
- Implemented a machine learning solution on SQL server for budget optimization.
- Worked on prediction-based optimization and pattern detection.

Oct 2017 – **June 2018**   **Oral examiner in mathematics**, *Institut Bossuet*, Paris.
Examiner for undergraduate students seeking admission to top college programs.

Oct 2017 – **June 2018**   **Mathematics courses supervisor**, *Ecole Polytechnique*, Palaiseau.
Math courses supervisor for undergraduate students seeking admission to top college programs.

Oct 2016 – **Apr 2017**   **Teacher and specialized educator**, *Apprentis d'Auteuil Foundation*, Meudon.
Math teacher and specialized instructor for 150 underprivileged students with special needs. Part of Ecole Polytechnique's first year curriculum.

Skills

Languages	English (*full proficiency*), French (*native*), Arabic (*native*).
Programming	*Proficient*: Python. *Prior Experience*: SQL, Maple, Java, C++, OCaml.

Community work

Nov 2016 –   **President and co-founder of Math&Maroc.**
First Moroccan NGO that aims at training and supporting talented students for international competitions.
http://www.mathemaroc.com/
- Directing Moroccan training program for International Mathematical Olympiad and math competitions.
- Published the first Moroccan mathematical journal for the Math Olympiad.
- Working closely with the ministry of education.

Sep 2017 –   **President of *X-Maroc*.**
Sep 2018   Student association gathering Moroccan students at Ecole Polytechnique.

Oct 2017   **Organizer and head of *Caravane 2017*, *AMGE* Caravane.**
Organized a nation-wide operation aimed at helping and guiding over 1000 students in Morocco for studies in French *Grandes Ecoles*.

Awards

2016   *Chanoine Pierre Garand* award for outstanding undergraduate pathway, *Institut Bossuet*.

2016   Moroccan merit scholarship for outstanding results in entrance examinations 2016 (2nd out of 500).

2015   Honorable Mention in national French Physics Olympiad.

2014   Honorable Mention in **International Mathematical Olympiad (IMO)** representing Morocco, Cape Town, South Africa.

2014   Ranked 4 at Moroccan national Mathematical Olympiad.

Outside Activities

Debating	Member of Ecole Polytechnique's debating team. Taking part in Model United Nations events.
Sports	Soccer (Member of Ecole Polytechnique soccer team), hiking.
Music	Piano (Since 2016).