

## Education

2016 – **Ecole Polytechnique**, Paris, France.

One of France's top universities for science and engineering. Master program in Applied Mathematics. Coursework includes: *Operations Research, Statistics, MonteCarlo Methods and Stochastic Processes, Game Theory, Algorithmic.*

**GPA: 3.89/4**

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 (4<sup>th</sup>).

**GPA: 4/4**

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*

- Evaluating the possibility of strong polynomial complexity.
- Experimenting new *exotic* barriers for more efficient algorithms.

Apr 2018 – **Simulating rare events on Hawkes processes applied to twitter**, Department of Applied Mathematics, Ecole Polytechnique.

*Advisors: Emmanuel Gobet & Martin Bompaire*

- Developed a Hawkes process model to describe the frequency of twitter messages.
- Estimated rare event probability using Importance Sampling and Monte Carlo Methods.
- Estimated the model parameters using likelihood maximization.

Sep 2017 – **Traffic flow optimization**, Ecole Polytechnique - Aimsun.

Apr 2018 *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 – **Prince Rupert's Drop**, Lycée Louis-le-Grand.

Apr 2016 Studied and suggested possible explanations to the proprieties of a special drop of glass, the Price Rupert Drop.

## Internship & working experience

Oct 2017 – **Data Analyst Intern**, CA-CIB, Singapore.

- Implemented a machine learning solution on SQL server for budget optimization.
- Worked on prediction-based optimization and pattern detection.

Oct 2017 – **Oral examiner in mathematics**, Institut Bossuet, Paris.

June 2018 Examiner for undergraduate students seeking admission to top college programs.

Oct 2016 – **Teacher and specialized educator**, Apprentis d'Auteuil Foundation, Meudon.

Apr 2017 Math teacher and specialized instructor for 150 underprivileged students with special needs. Part of Ecole Polytechnique's first year curriculum.

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## Skills

Languages English (*full proficiency*), French (*native*), Arabic (*native*).  
Programming *Frequent*: Python, SQL Server, *Occasional*: Maple, Java, C++, OCaml.

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## Community work

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**.  
Helping and guiding students in Morocco for studies in French *Grandes Ecoles*.  
Nov 2016 – **President and co-founder of Math&Maroc**.  
First Moroccan NGO that aims at training talented students for international competitions.  
<http://www.mathemaroc.com/>

- Training and selecting talented students for Moroccan IMO team.
- Published the first Moroccan mathematical review for the Math Olympiad.

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## Awards

2016 Chanoine Pierre Garand award for outstanding undergraduate pathway, Paris, France  
2015 Honorable Mention in national French Physics Olympiad, Paris, France.  
2014 Honorable Mention in **International Mathematical Olympiad (IMO)** representing Morocco, Cape Town, South Africa.  
2014 Ranked 4 at Moroccan national Mathematical Olympiad, Rabat, Morocco.

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## Outside Activities

Debating Member of Ecole Polytechnique's debating team. Took part in the Stockholm Model United Nations.  
Sports Member of Ecole Polytechnique soccer team.  
Music Piano (2 years).