

Abdellah Aznag

<https://github.com/abdellahAznag/Projects-reports> • [✉ abdellah.aznag@polytechnique.edu](mailto:abdellah.aznag@polytechnique.edu)

Application for a PhD in Operations Research

Education

- **École Polytechnique - Cycle Ingénieur Polytechnicien** Palaiseau, France
2017-Present
Third year, One of France's leading universities in engineering
Master's level program in Applied Math and Computer Science, GPA: 3.8/4.0, Major GPA: 3.94/4.0
Relative Coursework: Operations Research - Game Theory - Statistics - Algorithm Design and Analysis - Monte Carlo Methods and Stochastic processes
- **Preparatory program - Lycée Pierre de Fermat** Toulouse, France
2015-2017
MPSI-MP/Computer Science, GPA 4.0/4.0*
A 2-year program leading to competitive entrance examinations to the Grandes Ecoles for scientific studies
- **High School - Lycée Ange Bleu** El Jadida, Morocco
2015
Baccalaureat in Sciences awarded with highest honors - Valedictorian

Project/Research Work

- **Studying the bit complexity of logarithmically-homogeneous barriers Interior Point Methods** Palaiseau, France
Applying Tropical Geometry to study bit-complexity of IPM for log-hom barriers
-Proved that Entropic-Barrier IPMs are not strongly polynomial
-Trying to generalize the result to the universal barrier
Research Project under the supervision of Profs Stephane GAUBERT, Xavier ALLAMIGEON 2019-Ongoing
- **Estimating the stability number of stochastic power law graphs using copositive programming relaxations** Paris, France
2019-Ongoing
Investigating on potentially tractable exact relaxations using sum-of-squares
Research Project under the supervision of Prof. Georgina HALL
- **Studying of the robustness of spectral clustering applied to the Block Stochastic Mode** Palaiseau, France
Implemented rare events simulation techniques to estimate the robustness of spectral clustering
-Compared the performance of the spectral clustering algorithm under different parameters
-Estimated the probability with confidence regions of rare events using Importance Sampling/MCMC on the BSM Model 2019
Experimental project under the supervision of Prof. Emmanuel GOBET
- **Determining the attention/focus state of students during class** Palaiseau, France
2018-2019
Implemented statistical decision models which output the focus state of students in a classroom
Research Project under the supervision of Prof. Jérôme SACKUR
- **Studying a Wirtinger-based Exponential Stability for Time-Delay Systems** Toulouse, France
2016-2017
Implemented a LMI-Based algorithm for time delay systems
Experimental Research Project under the supervision of Prof. Guillaume BREVET and Matthieu BARREAU

Internship Experience

- **Novade - Data scientist intern** Singapore
Summer 2019
Built a RNN model that predicts future workload and accordingly allocates human resources
- **Apprentis d'Auteuil - Middle school Educator** Meudon, France
2017-2018
Worked in a team of educators and overhauled the structure of a middle school for unprivileged students

Teaching experience

- **Ecole Polytechnique Féminine - Teacher Assistant in University** Paris, France
2017-2019
Assisted the professor in lectures and taught the recitation class
Directed Problem-Solving sessions to second and third year undergraduates
Topics: Linear Algebra, Topology, Probability, Real Analysis
- **National Moroccan Olympiads - Tutor** Morocco
2017-2019
Participated in designing and teaching the current Moroccan olympiad training curriculum
Topics: Combinatorics, Number Theory

Skills

- **Programming:** C++ (1 course + 1 project), Java (2 courses + 2 projects), Python (2 projects + 1 internship)
Matlab (Taught to 2nd year undergraduates)
- **Languages:** Arabic (native) French (fluent) English (TOEFL Score: 108) Japanese (Basic)

Outside activities

- **Math&Maroc, NGO. Promoting Olympiad mathematics - Treasurer** Palaiseau, France
2017-2019
Directing Moroccan training program for International Mathematical Olympiad and maths competitions
- **XProjets, Junior Enterprise of Ecole Polytechnique** Palaiseau, France
2017-Ongoing
Designed the quality transition plan of the association and oversaw its implementation and its ISO9001 certifying

- **X-Finance - Member of the quantitative division** **Palaiseau, France**
Organises large scale events and university workshops related to quantitative trading *2018-Ongoing*

Notable awards and honors

- **International Mathematical Olympiad** **Chiang Mai, Thailand**
Competitor, National rank: 3 *July 2015*
- **Morocco National Olympiad** **Rabat, Morocco**
Prize Winner, National rank: 3 *April 2015*
- **Concours Général** **Rabat, Morocco**
National rank: 3 *July 2015*
- **OCP Foundation Merit Scholarship for Outstanding Performance in Entrance Examinations** **Morocco**
Rank: 3rd out of 500 *August 2017*