

Objective: 6-month research internship starting March 2017

EDUCATION

2014—Present **École Polytechnique**

- **M.Sc.** in Applied Mathematics, 3.95 GPA.

Specialization in Statistical Learning, Stochastic Calculus and Operations Research

- Multidisciplinary **B.Sc.** Degree, *intensive coursework in Applied Mathematics and Computer Science*
- Ranked 9th/400+ in the 2014 class.

2012—2014 **Preparatory Program, Lycée Pasteur** France

Two-year intensive program in advanced mathematics and physics in preparation for the nationwide competitive examinations to the French *Grandes Ecoles* for scientific studies.

2012 **Baccalauréat, Lycée ESL** Morocco

High School Diploma in Mathematics and Physics. Awarded with Highest Honors.

RESEARCH EXPERIENCE

2016 **Research Assistant – Operations Research**

(Sept – Present) *Supervisors: Profs. Stéphane Gaubert and Xavier Allamigeon, Department of Applied Mathematics*

- Currently studying Positivstellensatz for real multivariate polynomials
- Focusing on algorithmic complexity of positivity certificates

2016 **Twitter Feeds and Surge Modeling**

(Spring) *Supervisor: Prof. Emmanuel Gobet, Department of Applied Mathematics*

- Used Hawkes Processes to compute the probability of a surge in Twitter traffic
- Developed and implemented innovative algorithms in Python using rare-event simulation techniques

2016 **C++ Project: Protein Structure Classification**

(Spring) *Supervisor: Prof. Frank Nielsen, Department of Computer Science*

- Used clustering and classification techniques to assess protein structures
- Contributed an C++ algorithm to the CASP Project (Critical Assessment of protein Structure Prediction)

2015—2016 **Bitcoin Price Prediction**

(Sept – May) *Supervisor: Adil Reghai, Head Quant at Natixis*

- Reviewed state-of-the-art algorithms for statistical inference applied to stock price prediction
- Implemented a successful Bitcoin trading strategy in Python and validated its results through backtests

2013 **Modern Mathematics: International Summer School for Students, Bremen, Germany**

(Summer) *Supervisors: Profs. Don Zagier & John Conway*

- Conducted a 10-day research project on finite group classification
- Presented the results to leading international mathematicians during a seminar

WORK EXPERIENCE

2016 (Summer) **Data Science Intern at Keyrus Capital Markets**

- Developed a Twitter sentiment-analysis framework and implemented a new trading strategy based on it
- Presented the project to financial partners in the process of Due Diligence

2015 —present **Teaching Assistant in Mathematics at Lycée Blaise Pascal, Orsay**

Leading weekly oral examinations in Advanced Mathematics for first and second-year undergraduate students preparing for the *Grandes Ecoles* entrance exams

2014—2015 **Full time Social Educator at EPIDE Belfort**

(Sept-April) In charge of a team of 10 tutors in a rehabilitation center

- Provided social and educational support to 50 at-risk youths from underprivileged backgrounds
- Initiated new vocational activities and practiced situational leadership

SKILLS

Languages: English (TOEFL: 116/120), French (native), Spanish (fluent), Arabic (native)

Programming: Object-Oriented Programming: Python, Java, C++ **Statistics:** R

EXTRA-CURRICULAR ACTIVITIES

Piano 10 years of practice

Leadership — **President** of the Ecole Polytechnique International Amateur Piano Competition: designed the competition's website and tripled the budget and the number of contestants for the 31st edition.

— **Team Leader** of the Ecole Polytechnique Delegation in a humanitarian mission in the Philippines. Raised 2k€ and installed new water facilities for the Gawad Kalinga Mapahiusa village