

# Mohammed Amine Bennouna

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## EDUCATION

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### Massachusetts Institute of Technology

Cambridge, MA

*Ph.D candidate in Operations Research*

*Aug 2019 – Present*

- Coursework includes: Mathematical programming, Statistical Learning, Probability, Robust Optimization, Reinforcement Learning, Semidefinite Optimization, Mathematical Statistics. GPA: 5.0/5

### Ecole Polytechnique

Paris, France

*Bachelor of Science and Master of Science in Applied Mathematics*

*Aug 2016 – May 2019*

- Coursework includes: Operations Research, Statistics, Stochastic Processes, MonteCarlo Methods, Game Theory, Advanced Algorithmics, Numerical Approximation and Optimization. GPA: 3.9/4 - Major GPA: 4.0/4

### Lycée Louis-le-Grand

Paris, France

*Classes préparatoires, Mathematics, Physics, Computer Science*

*Aug 2014 – May 2016*

- Admitted to ENS ULM Paris program and Ecole Polytechnique (4th). Coursework includes: Real and Complex Analysis, Probability Theory, General Topology, General Algebra, Linear Algebra. GPA: 4.0/4

## RESEARCH & INDUSTRY EXPERIENCE

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### Massachusetts Institute of Technology

Aug 2019 – Present

*Doctoral Research Assistant*

*Cambridge, MA*

- Advised by Prof. Bart Van Parys. Research interests: Data-driven Decision Making, Dynamic Optimization, Reinforcement Learning, Statistical Learning.

### Columbia University

May 2019 – Aug. 2019

*Visiting scholar at the IEOR department*

*New York, NY*

- Worked with Prof. Vineet Goyal on designing new policies for dynamic robust optimization problems

### Ecole Polytechnique

Sep. 2018 – Apr. 2019

*Research Assistant at the CMAP department*

*Paris, France*

- Worked with Prof. Stephane Gaubert & Prof. Xavier Allamigeon on the complexity of interior point methods, with Prof. Igor Korchemski on random factorizations and with Prof. Emmanuel Gobet on rare events simulation

### Crédit Agricole CIB

Summer 2018

*Data scientist intern*

*Singapore*

- Designed and implemented a prediction-based optimization and pattern detection tool for budget optimization

## PAPERS

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Learning and Decision-Making with Data: Optimal Formulations and Phase Transitions  
*with Bart Van Parys. Working Paper.*

Learning the Minimal Representation of a Dynamic System from Transition Data  
*with Dessislava Pachamanova, Georgia Perakis & Omar Skali Lami. Submitted.*

The Representation Power of Neural Networks: Breaking the Curse of Dimensionality  
*with Moïse Blanchard. Submitted.*

The Power of Analytics in Epidemiology for COVID-19: Prediction, Prevalence and Vaccine Allocation  
*with Georgia Perakis et al. Minor Revision MSOM.*

**Finalist of INFORMS Doing Good with Good OR 2021**

**INFORMS ICSS Best Conference Paper 2021**

Near Optimal Tractable Threshold Policies for Two-stage Robust Optimization Problems  
*with Omar El Housni & Vineet Goyal. Working Paper.*

**Winner of Ecole Polytechnique's 1st prize of research internship in Applied Mathematics.**

Complexity of Interior-point Algorithms: Tropical Computations  
*with Yassine El Maazouz, Stéphane Gaubert & Xavier Allamigeon. Research project.*

## TEACHING EXPERIENCE

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<b>Massachusetts Institute of Technology, Teaching Assistant</b> <i>Optimization Methods 15.093/6.255, Graduate, 170 students</i>	Fall 2021 Cambridge, MA
<b>Massachusetts Institute of Technology, Teaching Assistant</b> <i>Optimization Methods 15.093/6.255, Graduate, 125 students</i>	Fall 2020 Cambridge, MA
<b>Mathematical Olympiad, Instructor</b> <i>Morocco's national team IMO training</i>	2016 – 2019 Rabat, Morocco
<b>Institut Bossuet, Instructor</b> <i>Advanced mathematics for undergraduate students of top french classes préparatoires</i>	Fall 2017, Spring 2018 Paris, France

## SKILLS

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**Languages** — *Fluent:* English. *Native:* French, Arabic.

**Programming** — *Proficient:* Python. *Prior experience:* Julia, SQL, Maple, Java, C++, OCaml, HTML.

## COMMUNITY WORK

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<b>Moroccan Mathematical Olympiad Society</b> <i>President and co-founder</i>	Nov 2016 – Nov 2019 Casablanca, Morocco
<ul style="list-style-type: none"><li>• NGO, Math&amp;Maroc, dedicated to the preparation of Moroccan high school students to international mathematical competitions in partnership with the Ministry of education</li></ul>	

## AWARDS

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1st prize of research internship in Applied Mathematics, <i>Ecole Polytechnique</i> .	2019
Chanoine Pierre Garand award for outstanding undergraduate pathway, <i>Institut Bossuet</i> .	2016
Moroccan merit scholarship for outstanding results in entrance examination.	2016
Honorable Mention in national French national Physics Olympiad.	2016
Honorable Mention in <b>International Mathematical Olympiad IMO</b> , Cape Town, South Africa.	2014

## OUTSIDE ACTIVITIES

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Soccer, Piano, Biking, Reading, Hiking, Debating.

## REFERENCES

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Prof. Bart Van Parys	<a href="mailto:vanparys@mit.edu">vanparys@mit.edu</a>
Prof. Georgia Perakis	<a href="mailto:georgiap@mit.edu">georgiap@mit.edu</a>
Prof. Patrick Jaillet	<a href="mailto:jaillet@mit.edu">jaillet@mit.edu</a>