

SEBASTIEN MARTIN

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EDUCATION

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| 2014-Present | Massachusetts Institute of Technology , Cambridge, MA.
PhD Candidate in Operations Research. Expected completion in June 2019. GPA: 5.0/5.0
Thesis Advisors: Profs. Dimitris Bertsimas and Patrick Jaillet.
Thesis: <i>Optimization with “Infinite” Data.</i> |
| 2011-2014 | Ecole polytechnique , Paris, France.
Master of Science in Applied Mathematics and Computer Science. GPA 4.23/4.4
Bachelor of Science in Pure Mathematics and Physics. |

RESEARCH INTERESTS

Large-Scale Optimization, Machine Learning, Transportation, Data Analytics, Public Policy.

RESEARCH EXPERIENCE

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| 2014-Present | Massachusetts Institute of Technology , Cambridge, MA.
<i>Research Assistant.</i>
Advisors: Profs Dimitris Bertsimas and Patrick Jaillet. |
| 2014
(Apr-Aug) | University of California, Berkeley. Institute of Transportation Studies.
<i>Visiting Researcher.</i>
Advisor: Prof. Alexandre Bayen. |

PUBLICATIONS

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| Published | J. Reilly, S. Martin, M. Payer, A. Bayen (2016), Creating complex congestion patterns via multi-objective optimal freeway traffic control with application to cyber-security. <i>Transportation Research Part B</i> , 91, 366-382. |
| Completed Works | D. Bertsimas, S. Martin, P. Jaillet (2017), Online Vehicle Routing: The Edge of Optimization in Large-Scale Applications. Minor Revision (1 st round), <i>Operations Research</i> . |

	D. Bertsimas, A. Delarue, S. Martin, P. Jaillet (2017), Travel Time Estimation in the Age of Big Data. Major Revision, <i>Operations Research</i> .
Papers in Preparation	<p>D. Bertsimas, A. Delarue, S. Martin, When Large Scale Optimization for Boston Public Schools, <i>in preparation</i></p> <p>D. Bertsimas, S. Martin, P. Jaillet, Stochastic Optimal Descent.</p> <p>D. Bertsimas, S. Martin, P. Jaillet, Stochastic Optimal Descent for Non-Convex Optimization, in preparation.</p> <p>D. Bertsimas, S. Martin, P. Jaillet, The Local-Backbone Algorithm for Combinatorial Optimization, in preparation.</p>

TEACHING EXPERIENCE

2017 (Fall)	<p>MIT Electrical Engineering and Computer Science, Cambridge, MA. Teaching Assistant for <i>Introduction to Probability I/II – 6.041 A/B</i>. Enrollment 112 (Undergraduate and Graduate levels)</p>
2016 (Spring)	<p>MIT Sloan School of Management, Cambridge, MA. Teaching Assistant for <i>The Analytics Edge – 15.071</i>. Enrollment 172 (MBA Programs) – Rating 6.2/7.</p>
2016, 2017 & 2018 (Winter)	<p>MIT Operations Research Center, Cambridge, MA. Instructor for <i>Computing in Optimization and Statistics</i>. I gave lectures about <i>Network Analytics in R</i> and <i>Optimization in Julia</i>.</p>

RESEARCH IMPACT & WORK EXPERIENCE

Spring 2017 - Present	<p>Boston Public Schools, Boston, MA. I work with Boston Public Schools to design an algorithm to route their fleet of >800 school buses, together with D. Bertsimas and A. Delarue. We currently route 30,000 BPS students to their school for the 2017-2018 school year, saving \$5M per year in transportation costs, that will be re-invested in the classrooms. We are also working with them on changing the bell times of 200 schools to further optimize the bus routes, a project that combines the challenges of <i>Large-Scale Optimization</i> and <i>Public Policy</i>.</p>
Summer 2016	<p>Google, Mountain View, CA. <i>Software Engineering Intern</i> Successfully passed the Google Software Engineer coding interviews. Worked for Google Maps. Researched, experimented and implemented novel algorithms to improve maps and navigation data using large geolocation datasets (> 100Gb). Software tools: Java, MapReduce.</p>

2013	Startup SAM , Paris, France <i>Founder</i> I designed and built a smart bicycle that automatically shifts gears, using machine learning to learn the behavior of experienced cyclists. I partnered with Decathlon, the European main sports gear retailer.
2011-2012	Firefighter Officer , French Army <i>Ecole polytechnique</i> (a military university) required me to do one year of military service, to learn about leadership and decision making. I served as the leader of a platoon of 30 military firefighters.

MEDIA COVERAGE

Summer 2017	Routing Boston Public School Buses <ul style="list-style-type: none"> - The Wall Street Journal, How Do You Fix a School-Bus Problem? Call MIT, Aug 11, 2017. - Boston Globe, Boston school bus performance improves dramatically, Sept 08, 2017. - I also appeared on multiple websites, local TV and radio news channels.
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HONORS & AWARDS

2017	Boston Public Schools Transportations Challenge Winner , Phases 1 and 2. Winner of a \$30,000 contest to optimize school bus routes. This competition was the beginning of our partnership with Boston Public Schools.
2013	Zodiac Aerospace – Gerondeau Innovation Prize Won a €10,000 prize for most innovative start-up, using machine learning to build a smart bicycle that automatically shifts gears.
2012	French Medal of National Defense, Bronze level I received this French military honor for my cumulated time in external operations during my year of service as a military firefighter.

SKILLS AND ACTIVITIES

Languages	French (native), English (full pro. proficiency), Spanish (intermediate).
Skills	I try to open-source a large fraction of my research code . I use regularly <i>Julia</i> , <i>Java</i> , <i>Python</i> , <i>SQL</i> , <i>R</i> and <i>MapReduce</i> .

Extra-
curricular

Co-organizer of the *MIT ORC Spring Seminar Series* (2017).

Member of ORC REFS team (Resources for Easing Friction and Stress). Supported students with issues related to research, communication, and personal matters. Completed semester-long conflict management and mediation training.

Received month-long training in first aid service.

General aviation pilot, cycling enthusiast, piano player & classical music lover.

CITIZENSHIP

France.

REFERENCES

Dimitris Bertsimas

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Patrick Jaillet

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John Hanlon

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Jack Reilly

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