

SEBASTIEN MARTIN

(SEPT 2018)

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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 at Scale, Applications in Transportation</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, P. Jaillet, S. Martin, Online Vehicle Routing: The Edge of Optimization in Large-Scale Applications. Accepted for publication, <i>Operations Research</i>. <ul style="list-style-type: none">• Best Presentation Award, MIT LIDS 2018 Student Conference |

D. Bertsimas, A. Delarue, P. Jaillet, S. Martin, Travel Time Estimation in the Age of Big Data. **Accepted for publication, *Operations Research*.**

D. Bertsimas, A. Delarue, S. Martin, From School Buses to Start Times: Driving Policy With Optimization. **In revision, *Proceedings of the National Academy of Science (PNAS)*.**

- 2018 Best Student Paper Award, MIT Operations Research Center
- Finalist, *Doing Good With Good OR* competition (INFORMS 2018)

TEACHING EXPERIENCE

2018 (Apr)	MIT Sloan School of Management , Cambridge, MA. Guest Lecturer for on <i>The Analytics Edge – 15.071</i> I gave the lecture: <i>Driving Policy with Optimization</i> , using my research as an example of prescriptive analytics for MBA students.
2018 (Feb)	Sloan Sports Analytics Conference , Boston. Workshop Organizer: <i>Optimization with JuMP and Julia</i> . – Rating 5/5
2017 (Fall)	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) – Rating 6.9/7
2016 (Spring)	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.
2016, 2017 (Winter)	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> .

RESEARCH IMPACT & WORK EXPERIENCE

Spring 2017 - Present	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> .
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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	<p>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.</p>
2011-2012	<p>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.</p>

MEDIA COVERAGE

2017	<p>Routing Boston Public School Buses</p> <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. - SIAM News, A school-bus trip to the crossroads of policy and optimization, Nov 21, 2017. - I also appeared on multiple websites, local TV and radio news channels.
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HONORS & AWARDS

2018	<p>Finalist, <i>Doing Good with Good OR paper competition</i> My paper "From School Buses to Start Times: Driving Policy With Optimization" is currently selected as a finalist of this student paper competition of the INFORMS 2018 annual meeting. The recipients will be disclosed during the conference.</p>
2018	<p>Best student paper, MIT Operations Research Center My paper "From School Buses to Start Times: Driving Policy With Optimization" won the yearly ORC prize of the best student paper. The prize was attributed by a jury of OR and OM faculty.</p>
2018	<p>Winning team in the "Future of Work" track, MIT Policy Hackathon The Jury of the MIT Policy hackathon selected our project: <i>Shared Responsibility: Social Forces in Response to Market Failures</i> to be the winner of the "Future of Work" track and finalist of the hackathon.</p>

2018	Best Presentation, MIT LIDS Student Conference All participants of the conference voted for the best presentation, out of 22 PhD student presentations. The presentation of my paper <i>Online Vehicle Routing: The Edge of Optimization in Large-Scale Applications</i> won the competition.
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 (fluent), Spanish (intermediate).
Skills	<p>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>.</p> <p>Co-organizer of the <i>MIT ORC Spring Seminar Series</i> (2017).</p> <p>Member of ORC REFS team (Resources for Easing Friction and Stress). Support students that face issues related to research, communication, and personal matters. I completed a semester-long conflict management and mediation training for this purpose.</p> <p>Received month-long training in first aid service.</p>
Extra-curricular	I am a general aviation pilot, long distance runner and pianist.

CITIZENSHIP

France.

REFERENCES

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