SEBASTIEN MARTIN

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EDUCATION

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: *Optimization in the Era of Big Data*

2011-2014 — **Ecole polytechnique**, Paris, France.
Master of Science in Applied Mathematics and Computer Science. GPA 4.23/4.4
Bachelor of Science in Mathematics and Physics.

RESEARCH INTERESTS

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

RESEARCH EXPERIENCE

2014-Present — **Massachusetts Institute of Technology**, Cambridge, MA.
Research Assistant.
Advisors: Profs Dimitris Bertsimas and Patrick Jaillet.

2014 *(Apr-Aug)* — **University of California, Berkeley**. Institute of Transportation Studies.
Visiting Researcher.
Advisor: Prof. Alexandre Bayen.

PUBLICATIONS

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. ***Transportation Research Part B***, 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, *Operations Research*.**

- 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 (2nd round), *Proceedings of the National Academy of Science (PNAS)***.

- 2018 Best Student Paper Award, MIT Operations Research Center
- 2nd place, *Doing Good With Good OR* competition (INFORMS 2018)

TEACHING EXPERIENCE

2018 *(Apr)*
MIT Sloan School of Management, Cambridge, MA.
Guest Lecturer for on *The Analytics Edge – 15.071*
I gave the lecture: *Driving Policy with Optimization,* using my research as an example of prescriptive analytics for MBA students.

2018 *(Feb)*
Sloan Sports Analytics Conference, Boston.
Workshop Organizer: *Optimization with JuMP and Julia. – Rating 5/5*

2017 *(Fall)*
MIT Electrical Engineering and Computer Science, Cambridge, MA.
Teaching Assistant for *Introduction to Probability I/II – 6.041 A/B.*
Enrollment 112 (Undergraduate and Graduate levels) – Rating 6.9/7

2016 (*Spring*)
MIT Sloan School of Management, Cambridge, MA.
Teaching Assistant for *The Analytics Edge – 15.071.*
Enrollment 172 (MBA Programs) – Rating 6.2/7.

2016, 2017 (*Winter*)
MIT Operations Research Center, Cambridge, MA.
Instructor for *Computing in Optimization and Statistics.*
I gave lectures about *Network Analytics in R* and *Optimization in Julia*.

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 *Large-Scale Optimization* and *Public Policy.*

Summer 2016	**Google,** Mountain View, CA. *Software Engineering Intern* 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.
2013	**Startup SAM,** Paris, France *Founder* 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 *Ecole polytechnique* (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

2018	**School start time choice in Boston** - **The Boston Globe**, *The Equity Machine*, Sept 20, 2018. - **Wired,** *What the Boston School Bus Schedule Can Teach Us About AI*, Nov. 5, 2018.
2017	**Routing school buses in Boston** - **The Wall Street Journal**, *How Do You Fix a School-Bus Problem? Call MIT*, Aug 11, 2017. - **The 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. - also appeared on multiple websites, local TV and radio news channels.

HONORS & AWARDS

2018	**2nd prize, *Doing Good with Good OR paper competition*** My paper "From School Buses to Start Times: Driving Policy With Optimization" was awarded the second prize of this student paper competition at INFORMS.
2018	**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.

2018	**Winning team in the "Future of Work" track, MIT Policy Hackathon** The Jury of the MIT Policy hackathon selected our project: *Shared Responsibility: Social Forces in Response to Market Failures* to be the winner of the "Future of Work" track and finalist of the hackathon.
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 *Online Vehicle Routing: The Edge of Optimization in Large-Scale Applications* won the competition.
2017	**Boston Public Schools Transportation 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	I try to open-source a large fraction of my research code. I use regularly *Julia, Java, Python, SQL, R and MapReduce.* Co-organizer of the *MIT ORC Spring Seminar Series* (2017). 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. Received month-long training in first aid service.
Extra-curricular	I am a general aviation pilot, long distance runner and pianist.

CITIZENSHIP

France.

REFERENCES

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