SEBASTIEN MARTIN

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Operations Research Center,
Massachusetts Institute of Technology,
77 Massachusetts Avenue, E40-130
Cambridge MA 02139

Phone +1 (510)-229-2758
Email semartin@mit.edu
Website http://www.mit.edu/~semartin

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 at Scale, Applications in Transportation*

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, *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 *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.

2017 — **Routing Boston Public School Buses**
- **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 — **Finalist, *Doing Good with Good OR paper competition***
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.

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

Dimitris Bertsimas
MIT Sloan
(617) 253-4223
dbertsim@mit.edu

Patrick Jaillet
MIT EECS
(617) 452-3379
jaillet@mit.edu

Alexandre Bayen
UC Berkeley EECS
(510) 642-2468
bayen@berkeley.edu

John Hanlon
Boston Public Schools
(617) 635-9643
jhanlon@bostonpublicschools.org

Jack Reilly
Google Inc.
(916) 768-1755
jackdreilly@google.com