Country of citizenship: France.
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MAXIMILIEN BURQ

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EDUCATION

2014 – present **MIT** | Ph.D. in Operations Research *(with P. Jaillet, I. Ashlagi)*
GPA: 5.0/5 Working on dynamic matching algorithms (with applications to kidney exchange and ride-sharing).
Combinatorial Optimization, Reinforcement Learning, Online learning, Approximation Algorithms, Market Design.

2016 **Stanford University** | Visiting Student Researcher in MS&E
6 months Developed and implemented Algorithms for dynamic matching under uncertainty.
Gained 13% over state of the art by optimizing both current and future matches.

2011- 2014 **École Polytechnique** | MSc. in Applied Mathematics *(Ecole Polytechnique is a French engineering school)*
GPA: 3.89/4 *Operations Research, Statistical Inference, Machine Learning, Queueing Theory.*
Minors in Computer Science and Physics. (Ranked 1st/3000+ on the national entrance exam)

WORK EXPERIENCE

2017 **Lyft (US)** | Data Science Intern.
Developed marketplace optimization algorithms using optimization (LP) and machine learning.
- *Oversaw the project from mathematical modeling to testing to deployment to millions of users.*
- *Gradient boosting, recurrent neural networks, simplex algorithm.*

2015 **Talentoday (US)** | Data Scientist. *(Talentoday is an HR analytics startup)*
Led data science projects to predict a candidate's performance in a team *(Python, RForests, XGBoost).*
- *Implemented a predictive analytics module, leading to $300k recurring revenue.*
- *Built the Data Science team by hiring two people full time.*

2013 **Alstom Nuclear (China)** | Quality Analyst Intern
Provided qualitative and predictive analytics on reporting data for quality control of steam turbines.

2011-2012 **Paris Fire Brigade (France)** | Emergency Medical Technician
In charge of a 3-person first-aid and rescue vehicle in 24h shifts.
- *Led over 1000 missions over the course of 8 months.*

PROJECTS & PUBLICATIONS

2017 **General Matching under uncertainty.** *(Working paper)*
Using combinatorial optimization with deep reinforcement learning to explore an exponentially large action space.

2017 **Match frequency in Kidney Exchange.** *(Submitted to AJT)*
Simulation-based framework to evaluate the impact of match frequency on the number of transplants and waiting times.

2015 **Hospital Readmission Risk Prediction.** *(MIT Sloan, best project) (Scikit-learn, Text mining, Topic modeling)*
Developed algorithms in collaboration with DELL labs to predict 30-day readmission of patients.

2014 **Dynamic matching algorithms for Kidney Exchange.** *(Julia, Gurobi, JuMP, LP/MIP)*
Implemented an optimization software to match patients using data from the National Kidney Registry. Improved match rate by up to 9% through efficient priority scheme. Appeared in EC-16, under revision at Operations Research.

2013 **Minimizing travels distances for sports competitions.** *(Matlab, LP/MIP, SDP).*
Developed a tool to minimize travel distances and carbon emissions by solving large discrete optimization problems.

2012 **ECG-based prediction of defibrillator efficiency.** *(Python, SVM, Random Forests).*
Led a team of 5 students. Developed a software to predict defibrillator efficiency.

LANGUAGES & PROGRAMMING

English (Fluent)
French (Fluent)

Programming:	Python, Julia, SQL.	*(Proficient)*
	Java, Matlab, R.	*(Prior Experience)*
Optimization:	Gurobi, Mosek, JuMP.jl.	
Machine learning:	TensorFlow, Scikit-learn, XGboost.	

ACTIVITIES

Interests: *Dynamic optimization, Healthcare, Renewables.* ***Activities:*** *Piano, Scuba-Diving, Sailing instructor.*