Geoffrey Négiar

Dual citizenship: France and USA
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Scholar
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Education

August 2017 – Present **PhD Student advised by Laurent El Ghaoui** *UC Berkeley, EECS*

- Design of fast algorithms for Constrained Optimization (Frank-Wolfe), modelling under uncertainty, Natural Language Processing
- TA for EE227BT: Convex Optimization and EE16b: Designing Information Devices and Systems

October 2016 – Present **MSc: Mathematics, Vision, Learning (MVA)** *ENS Cachan, France*

- Founded in 1996, it is the oldest and most prestigious Masters' program in Machine Learning in France
- Full Fellowship from French Ministry of Defense (Ingénieur de l'Armement Program)
- Coursework: Convex Optimization, Sparse Representations and Wavelets, Graphs in Machine Learning, Reinforcement Learning, Object recognition, Geometry and Shape Spaces, Computational Statistics, Kernel Learning, Advanced Learning for Text and Graph Data

September 2013 – August 2016 **Graduate student – Data Science Track** Ecole polytechnique, France

- Founded in 1794, the Ecole polytechnique is the most prestigious Science and Engineering university in France, with a strong focus on Applied Mathematics.
- Full Fellowship from French Ministry of Defense (Ingénieur Polytechnicien Program)
- Machine Learning & Statistical models: regression models, hypothesis testing and confidence intervals and dimensionality reduction
- Select coursework: Markov Chains, Statistical Learning and non-parametric Estimation, Operations Research, Distributions, Quantum Physics, Relativity, Measure Theory

2011-2013 **Preparatory Classes: Bachelor level** *Lycée Louis le Grand, Paris*

- MPSI/MP*: Math, Physics - Linear and General Algebra, Topology, Analysis
- Rank: 5th at the national entrance examination for the École polytechnique

Experience

April – November 2018 Bloomberg LP *New York, New York*

Machine Learning Research Intern, Pattern Recognition Team

- Regression on 10-K/10-Q financial reports.
- Implemented baselines, adapted transformer models (NLP) to beat previous state of the art.
- Mentors: Ryan T. Hoens, PhD and Kang Sun

Apris – August 2017 UC Berkeley, El Ghaoui Lab *Berkeley, California*

Research Internship

- Unsupervised Kernel Learning
- Lifted Neural Networks

April – August 2016 Shift Technology *Paris, France*

Data Science Research Intern

- Fraud detection R&D: time series representations and clustering, outlier detection, feature engineering. Unsupervised setting. Conclusion: representations matter more than clustering algorithms.
- Reviewed, designed and implemented several time-series clustering algorithms adapted to the data
- Mentors: Alice Schoenauer-Sebag, PhD and Eric Sibony, PhD

June – August 2015 French Embassy in Russia *Moscow, Russia*

Science and Technology section

- Analyzed Russian research to improve France's scientific cooperation policies
- Tutor: Alexis Michel, PhD

September 2014 – June 2015 Ministry of Education *Lycée Condorcet, Paris*

Teacher Assistant in Preparatory Classes, Mathematics

- Tutored and tested 6 students weekly in Mathematics
- Coached them for nationwide examinations

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Publications and Pre-prints

AISTATS 2020 Conference

- Linearly Convergent Frank-Wolfe Without Back-Tracking Line-Search

NeurIPS 2019 OPT-ML Workshop

- Linearly Convergent Frank-Wolfe without Prior Knowledge (talk + poster)

NIPS 2017 OPT-ML Workshop

- Lifted Neural Networks for Weight Initialization (poster)

arXiv Pre-prints

- Askari, A., Negiar, G., Sambharya, R., & El Ghaoui, L. (2018). Lifted Neural Networks
- Negiar, G., Dresdner, G., Tsai, A., El Ghaoui, L., Locatello, L., Pedregosa, F. (2020) Stochastic Frank-Wolfe for Constrained Finite Sum Minimization

Projects

October 2016 – Present **During Msc at ENS Paris-Saclay: Research**

- Project with Laurent El Ghaoui: Kernel Learning for NLP
- Data Challenges for M Vazirgiannis's Text and Graph Learning (1st place), S Mallat's Sparse wavelet representations and classification (top 10), J-P Vert's Kernel Learning
- Inverse Reinforcement Learning with constraints on the Reward function for Michal Valko's Graphs in Machine Learning course
- Perceiving Physics by integrating a Physics Engine with Deep Learning for Jean Ponce's Object Recognition and 3D vision course
- Actor-Mimic approach to transfer previous knowledge to new situations: Deep Q-transfer-learning for Alessandro Lazaric's Reinforcement Learning course
- See GitHub for implementations

2013-2016 **During Graduate program at Ecole polytechnique: Implementation**

- AXA Data Challenge for Michalis Vazirgiannis's Data Science - Learning from Data course: focus on time-series (Python)
- Project using IBM Watson: Music recommendation based on YouTube comments
- Group C++ project (~25): Transforming audio files into sheet music. Implemented the output, using LilyPond. Good results for simple inputs.
- Group (2) Implementation of RANSAC algorithm (C++)
- Group (2) Implementation of Ray Tracing for rendering (C++)
- Group (2) Implementation of Symmetry detection (C++)
- Group (5) research project on designing an optimal social place for students (PSC: Pour un nouveau BôBar)

November 2015 **Futurapolis Start up Launcher Camp**

- Team placed 3rd; theme: "Internet of Things" in the City of Tomorrow
- Idea: using connected lights to suppress noise nuisance in student housing

2012-2013 **Bachelor Level**

- Personal project on Linear Representations for Compact Groups
- Grade: 20/20

Extra-curricular interests

Languages: bilingual in English and French, intermediate Russian, academic Spanish, basic Japanese

Travel: North America, Asia (Japan and China), Russia, Europe

Sports:

- Martial arts: jiu-jitsu, boxing, aikido, self-defense (competitions)
- Tennis