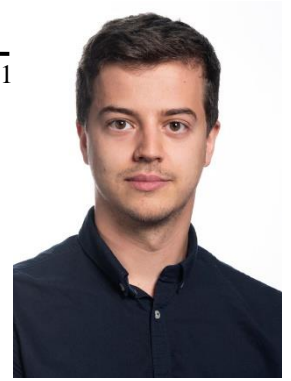


# ALEXANDER APOSTOLOV

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Rue de Moillebeau 3c, 1209 Geneva, Switzerland | +41 76 214 2838  
21.08.1996 | Swiss, Bulgarian and US citizenship | completed Swiss military obligations



## SUMMARY

- Strong interest for research in **Data Science** and **Machine Learning**.
- **Strong academical background**, EPFL Bachelor in Communication Systems and Mater in Data Science.
- **Work experience** in diverse companies for various projects.

## EDUCATION

### **Ecole Polytechnique Fédérale de Lausanne (EPFL)**

*MSc in Data Science*

- Current average: 5.8/6.0

**2020 – 2023**

*Lausanne, Switzerland*

### **Ecole Polytechnique Fédérale de Lausanne (EPFL)**

*BSc in Communication Systems; Data Science track*

- Average: 5.77/6.0; Top 1% of students
- Exchange student at the University of Toronto in 2018-2019

**2016 – 2019**

*Lausanne, Switzerland*

### **Collège Rousseau**

*Bilingual Matura; Physics and Applied Mathematics Orientation*

- Bilingual curriculum English/French, obtained with Honors

**2011 – 2015**

*Geneva, Switzerland*

## AWARDS AND HONORS

Master's Excellence Fellowship

2020, EPFL

Prize for 2<sup>nd</sup> best GPA from all graduating students from all faculties (out of 1000+ students)

2019, EPFL

Prize for best poster in Global Issues

2017, EPFL

Prizes for best GPA in Geneva and best GPA in the Physics and Mathematics orientation

2015, Collège Rousseau

## PROFESSIONAL EXPERIENCE

### **Oracle**

*Research assistant*

- Contributed to the extension of a graph machine learning library in order to train models on graphs with heterogeneous nodes and edges.
- Developed demonstration sessions of various graph machine learning algorithms for potential clients.

**2021 (3 months)**

*Zürich, Switzerland*

### **International Committee of the Red Cross (ICRC)**

*Research assistant*

- Worked with the Nutritionist team to create digital surveys to be used in communities affected by malnutrition. These surveys, compared to the previous ones on paper, can be personalized instantly according to the situation and save a lot of time for centralizing answers and analyzing the data.
- Developed a database to monitor the COVID-19 related situation in prisons where the ICRC is present. This had to be done with limited resources, as a lot of staff was relocated due to COVID-19 and in a short time frame as the collected information was used to prioritize emergency operations.

**2020 (4 months)**

*Geneva, Switzerland*

### **International Committee of the Red Cross (ICRC)**

*Project assistant in the ICT team*

- Evaluated the technical capabilities of SD-WAN products of three companies in order to choose to upgrade the WAN infrastructure of the ICRC on over 300 sites and save money by using a more modern technology.
- Ran and developed a test protocol from scratch. The ICRC needed to test that the product works properly on all their sites which have specific constraints (energy limits, slow, unreliable telecommunication, protecting the data from theft from local governments and other armed groups...).

**2019 (4 months)**

*Geneva, Switzerland*

- Advanced Information, Computation, Calculation II in fall 2018
- Algorithms in fall 2020
- Computer Networks in fall 2020
- Practical Programming in Python in spring 2021
- Applied Data Analysis in fall 2021

## **COMPETENCIES AND PROJECTS**

### **Research**

Stochastic variance reduced gradient methods for training Deep Neural Networks: semester project to in the EPFL laboratory for Machine Learning Optimization of EPFL, empirical study of ML variance reduced optimization methods and possible leads for better performance.

Automatic detection of available area for rooftop solar panel installations: computer vision deep learning research project with the Laboratory of Solar Energy and Building Physics at EPFL to detect areas for rooftop solar panels from aerial images.

### **Machine learning**

Supervised learning: linear classification, regression, neural networks. Unsupervised learning: principal component analysis, k-means clustering, and Gaussian mixture models. Controlled overfitting: Regularization, validation.

Projects in Python, TensorFlow and Keras: road segmentation, caption generator, traffic sign classifier, hand-written digit classification

### **Computer Networks**

Traffic control algorithms and performance analysis of computer networks. Network and routing protocols. MATLAB project to model real traffic in a network.

### **Algorithms**

Algorithm analysis, dynamic programming, randomization, graph theory, data structures, streaming algorithm, probabilistic algorithms.

### **Statistics and Probability**

Random vectors, random convergence, random processes, Poisson and Gaussian processes, stationarity, mean square derivatives and integrals, ergodicity, power spectrum, linear systems with stochastic input, mean square estimation, Markov chains, recurrence, absorption, limiting and steady-state distributions, time reversibility, and balance equations.

## **EXTRA PROFESSIONAL EXPERIENCE**

### **National Conference, European Youth Parliament in Switzerland**

**2016***Head Organizer**Geneva, Switzerland*

- Looking for partners and sponsors to cover a budget of 100'000 CHF and doing the accounting after the event.
- Organizing activities, catering and accommodation for 200 participants for 6 days in Geneva.
- Leading a team of 15 volunteer organizers.
- Inviting guest speakers such as the Under-Secretary-General of the United Nations, Mr. Michael Moller and the Director-General of the International Committee of the Red Cross, Mr. Yves Daccord.

### **Private tutor**

**2013 – 2021***Geneva, Switzerland*

- Prepared and ran exercise sessions and explained course material to help students from middle school to university in courses in German, English, French, Mathematics, Physics and Programming

## **LANGUAGES**

French: Native

Bulgarian: Native

English: Fluent – C2, exchange student for 1 year in Toronto and language school 3 months in Oxford

German: Good skills – B2