

# Sergei VOLODIN

sergei.volodin@epfl.ch    +41 78 732 01 34

Route de la Chocolatière 29 A / 009, Échandens, Switzerland

Birth date: 3rd October 1994 (24 years), Russian

## EDUCATION

**Swiss Federal Institute of Technology in Lausanne (EPFL)**  
*Lausanne, Switzerland* Sep 2017 – June 2020

- Master's degree in Computer Science
- Minor in Computational Neurosciences
- GPA: **5.61/6**

**Moscow Institute of Physics and Technology**  
*Moscow, Russia* June 2017

- Bachelor's degree in Applied Mathematics
- GPA: **4.84/5**

## SKILLS

Team/Project management, research paper writing, data analysis, theory, conducting experiments, scientific presentation, software debugging, design patterns, networking, parallelism

AVR microcontrollers, Arduino platform, low-level networking (tcp, udp, sockets)

Relevant courses: Machine Learning, Software Engineering, Unsupervised and Reinforcement Learning, Biological modeling of neural networks, Random graph theory, Functional Programming, Set Theory, Algorithms and Data Structures, Convex Optimization, Random Processes, Functional Analysis

**Scientific programming:** Keras, TensorFlow, Theano, scikitlearn, Brian 2, MATLAB, Mathematica, R

**Languages:** English (TOEFL iBT 112/120), French (beginner), Russian (native)

**Programming:** C/C++, Python, AVR C++, Scala, Java, nasm, C#

**Frameworks:** Qt/QML, Django, Android Studio, OpenGL/GLSL, Unity 3D


**Environment:** Git, L<sup>A</sup>T<sub>E</sub>X, Bash, Debian/Ubuntu Linux

## RESEARCH EXPERIENCE


**Swiss Federal Institute of Technology in Lausanne (EPFL), Distributed Computing Laboratory** Research Assistant  
*Lausanne, Switzerland* Sep 2018 – present

- Improved the probabilistic bound on error of a neural network in case of independent neuron failures
- Conducted experiments to test the improved theory using Keras and Tensorflow including the implementation of custom layers and regularizers


**EPFL, Computer-Human Interaction in Learning and Instruction laboratory** Research Assistant  
*Lausanne, Switzerland* Sep 2017 – Aug 2018


- Created  a library **QML-AR** for seamless augmented reality using OpenCV with competitive performance on Android and small visual negative impact
- Designed an activity for learning math using the library, tested the application in a classroom setting, analyzed the obtained data


**Skolkovo Institute of Science and Technology, Center for Energy Systems** Research Intern  
*Moscow, Russia* Sep 2016 – Jul 2017

- Characterized using numerical optimization and theoretically the structure of the set of boundary non-convexities of an image of a quadratic map in case the number of non-convexities is infinite
- Designed and implemented  **the Convexity Analysis of Quadratic Maps library** which gives approximate solutions to a number of problems involving quadratic maps


## PUBLICATIONS

A. Dymarsky, E. Gryazina, **S. Volodin**, B. Polyak.  **Geometry of quadratic maps via convex relaxation**. arXiv:1810.00896, 2018. Proofreading, rewriting, experimental section, theoretical derivations

**S. Volodin**, M. Popova, V. Strijov.  **Probabilistic prediction of nuclear receptors biological activity**. Proceedings of ITaS, 2016, *in Russian*. Experiments with the Probabilistic Classifier Chains algorithm using Python

A. Petrov, **S. Volodin**.  **Janibekov's effect and the laws of mechanics**. Doklady Akademii Nauk, 2013. Helped to create graphics for the article and provided experimental section during first year at MIPT

## WORK EXPERIENCE

 **EscapeControl** Jul 2015 – Feb 2016  
*Own b2b startup for escape rooms, Moscow, Russia*



- Created a startup selling software and hardware for real-world escape room games which allows to speed up the construction and reduce maintenance costs
- Responsible for back-end software engineering, sales and customer support
- Managed a team of two web developers until a successful launch of the web interface
- Sold more than twenty solutions which are currently running in different countries

**ITBrat** Jul 2015 – Feb 2016  
*Algorithmic trading startup, Moscow, Russia*


- Developed algorithmic trading application from initial discussion with the team to deployment and supporting
- Added low-level user-space networking to the project which allowed to decrease latency and increase profit
- Responsible for the performance of the code


## PROJECTS

**Quadcopter drone from scratch project** 2012 – 2014



- Developed  **an algorithm** in C++ for stabilization of a quadcopter drone from scratch using AVR microcontrollers, IMU sensors and PID regulators
- Managed the project consisting of 2-5 developers
- Conducted the analysis of launches to improve flying quality
- Results were published as a  **science popular article** (*in Russian*)


## SCHOLARSHIPS


 **Research Scholars**, a paid Research Assistant position, Swiss Federal Institute of Technology in Lausanne (EPFL), 2017 – 2019

 **Abramov Fund's** scholarship for excellent grades (2014)



## CONFERENCES

 **P.A.I.S.S.** (AI Summer School) (INRIA Grenoble, 2018), *participant of the practical sections given by experts like Yan Lecun*,  **selected** to receive financial help

 **DeepBayes** school on Bayesian methods in Deep Learning (Moscow, 2017), *participant of lectures and practical sessions on Bayesian Methods*

 **Information Technologies and Systems** (Saint-Petersburg, Repino, 2016), *speaker, presenting the paper*

## COMPETITIONS

 **DeepHack.RL** hackathon on Deep Reinforcement Learning for Atari games, managed the team and developed an evolutionary algorithm with an autoencoder to solve Atari games), MIPT, Moscow, Russia, 2017.  **4th place**.

## RESEARCH INTERESTS

Artificial Intelligence, Machine Learning, Artificial Intelligence Safety, Mathematical Optimization, Robotics

## INTERESTS

Effective Altruism, Philosophy, Running (1/2 marathon 2018), Snowboarding, Swimming

## VOLUNTEERING

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### **Anti-corruption foundation**

2017

*A non-profit aimed at investigating corruption, Moscow, Russia*

Conveyed the results of the investigations by talking to people on the streets