

# Sergei VOLODIN

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

## EDUCATION

**Swiss Federal Institute of Technology in Lausanne (EPFL)**  
*Lausanne, Switzerland* Sep 2017 – 2021

- Master's degree in **Computer Science**, GPA: **5.68/6**
- Minor in **Computational Neurosciences**
- Research Assistant position (2017–)

**Moscow Institute of Physics and Technology**  
*Moscow, Russia* June 2017  
Bachelor's degree in **Applied Mathematics**, GPA: **4.84/5**

## SKILLS

**Relevant courses:** **Machine Learning**, **Software Engineering**, Unsupervised and Reinforcement Learning, Convex Optimization, Distributed Algorithms, Algorithms, Random graph theory, Functional Programming, Set Theory, Random Processes, Functional Analysis, Biological modeling of neural networks, Complexity theory, Learning theory, Neuroscience: behavior and cognition, Neuroprosthetics, Theory and methods for Reinforcement Learning, Optimization for Machine Learning

**Scientific programming:** **Keras**, **TensorFlow**, Theano, scikit-learn, PyTorch, Brian 2, MATLAB, Mathematica, R

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

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

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

**Scientific skills:** **experimental** sections of research papers, working on **theoretical** problems, scientific presentation, data analysis

**Software development:** team and project **management**, agile software development (Scrum), debugging, design patterns, concurrent and distributed systems, TCP/IP networking, AVR microcontrollers, Arduino platform



**Languages:** English: TOEFL iBT **113/120**, French: A1, Russian: native

## RESEARCH EXPERIENCE


**EPFL, Distributed Computing Laboratory** Research Assistant  
*Lausanne, Switzerland* Sep 2018 – present

- Investigated fault tolerance of a neural network using **Taylor approximation**
- Conducted experiments to test the theory using Keras 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 kids for learning math using AR, 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

## RESEARCH INTERESTS


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

## 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

## PUBLICATIONS

A. Dymarsky, E. Gryazina, B. Polyak, S. Volodin.  Geometry of quadratic maps via convex relaxation, 2018. Experiments, theory, writing.

**Publish FT on arXiv and update my CV**

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 the **first year** of my BSc degree 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, servers administration, 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 across the globe and provided remote support



**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  popular science article (*in Russian*)


## CONFERENCES AND SUMMER SCHOOLS

 Reinforcement Learning Summer School, 2019 (Lille, France), **poster presenter**, *selected to receive financial help*


 Data science summer school (Paris, France), **poster presenter**



 QtDay 2019 (Firenze, Italy), **speaker**, **1h session on qml-ar**

 P.A.I.S.S. (AI Summer School) (INRIA Grenoble, 2018), *participant in tutorials given by top experts*;  *selected to receive financial help*

 Information Technologies and Systems (Saint-Petersburg, Repino, 2016), **speaker**, **poster presenter**

## COMPETITIONS




 Google HashCode Qualification round coding contest, **top 6%** (team EPFL\_Noobs), managed the team, developed algorithms and did the coding, 2019


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


## INTERESTS

**Effective Altruism**, Philosophy, Running (1/2 marathon 2018), Snowboarding, Swimming, Dancing Rock'n'Roll

## VOLUNTEERING

**Effective Altruism Lausanne** 2019  
*Local  EA community* Lausanne, Switzerland  
Co-founding the group,  introduction workshop speaker, running a  discussion group on AI safety and theory, newsletter management and writing, Facebook events announcements, managing open discussions

**Applied Machine Learning Days** 2019  
*Machine learning  conference* Lausanne, Switzerland  
Technical help for presenters, badge check

**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 as a volunteer