Sergei VOLODIN

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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 – 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, 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, LaTeX, 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 **112**/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

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

El Mahdi El Mhamdi, R. Guerraoui, **S. Volodin.** Fatal Brain Damage, 2019. Experiments, theory, writing.

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

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

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, 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