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
- Minor in Computational Neurosciences
- Research Assistant position
- GPA: **5.68**/6

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 ML

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

Programming languages: C/C++, Python, AVR C++, Scala, Java, nasm, 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, TCP/IP networking, design patterns, concurrent and distributed systems, AVR microcontrollers, Arduino platform

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

RESEARCH EXPERIENCE

Swiss Federal Institute of Technology in Lausanne (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
- Wrote and submitted a paper to ICML: arXiv:1902.01686

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

PUBLICATIONS

El Mahdi El Mhamdi, R. Guerraoui, **S. Volodin.** Fatal Brain Damage. arXiv:1902.01686, 2019. Experiments, theory, proofs, writing. Submitted to ICML 2019

A. Dymarsky, E. Gryazina, B. Polyak, **S. Volodin.** Geometry of quadratic maps via convex relaxation. arXiv:1810.00896, 2018. Experimental section, theoretical derivations, writing. Submitted to 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 my 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, 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)*

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

Applied Machine Learning Days (Lausanne, Switzerland, 2019), *participant of workshops*

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

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

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

INTERESTS

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

VOLUNTEERING

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