

Danil Neverov

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Education

- 2008–2013 **Saint Petersburg State University,**
Faculty of Applied Mathematics and Control Processes,
Specialist degree in Applied Mathematics and Computer Science,
Department of Computer Modeling and Multiprocessor Systems.
Diploma with distinction
- 2005–2008 **Academic Gymnasium of St. Petersburg State University.**

Thesis

- Title *Stochastic optimal control approach to machine learning*
- Supervisor D.Sc., Professor S. N. Andrianov
- Description The specific algorithm of reinforcement machine learning has been developed using methods of stochastic optimal control theory and functional integrals. Algorithm has been tested on both emulated virtual dynamic system and real robotic system.

Skills

- Programming Languages and Tools Professional practice:
C++17, Visual Studio, Git, basic knowlage of **G-Code** and **CAD/CAM** Soft;
Hobby and Scientific practice:
Python, TensorFlow, Keras, OpenCV, Matlab, Processing (Arduino), L^AT_EX;
- OS Linux family, MS Windows
- Other Large arsenal of numerical and analytical methods of applied mathematics, experience and skills of solving complex problems. Experience in industrial programming. The ability to design and construct real compound systems.

Languages

- English Full Professional working proficiency. FCE certificate: CEFR C1 level.
- Russian Native.

Experience

Vocational

- 2013–Present **Software Developer - Mathematician,**
CIMCO Software,
Saint Petersburg, Russia / Copenhagen, Denmark.
Development of mathematical core for CAD/CAM software.
- Support and expansion of functionality of 2D CAD editor:
 - Development of geometric library for working with splines;
 - Development of geometric library for working with ellipses.
- Information: cimco.com/software/cimco-cnc-calc/strategies
- 2014–Present **Software Developer - Mathematician,**
RapidCam,
Saint Petersburg, Russia / Copenhagen, Denmark.
Development of mathematical core for CAD/CAM software.
- Working on the large project of NC machine toolpath generation software. Within the framework of this project I have implemented several 3-axis milling machining strategies:
 - Parallel;
 - Contour;
 - Scallop/Constant Stepover. This strategy is the most advanced among 3-axis strategies. In the process of development of the necessary functionality numerous nontrivial algorithms and solutions were implemented and applied:
 - custom triangulator of flat polygons;
 - 3d offset manifold calculation and triangulation;
 - numerical solving of specific PDE on the given triangulation;
 - slicing the manifold by contour lines of the given field.
 - Cutting edge machining strategies that don't have commercial name yet;
- Information: mastercam.dk/hsm-performance-pack/product/machining-strategies
- 2018 **Pet project,**
MiniFlow,
GitHub of the project : github.com/sayhey/miniflow.
The goal of this personal self-educational project is to create a dataflow framework for working with computational graphs, designing and training of neural networks, similar to simplified TensorFlow framework from google. Written on C++17. Planning to port tensor math library to CUDA in the near future.

Academic competitions and Additional education

- A repeated winner and participant of local and state-level mathematical and physical competitions among students, competitor of the Young Physicists Tournament;
- An active user of online educational resources. Graduated Deep Learning Nanodegree and Self-Driving Car Engineer Nanodegree on Udacity. Graduated Deep Learning Specialization on Coursera. Took several tens of other courses;
- A student of Data Mining Track education programm by Data Mining Labs. Took part in several hackathons and Kaggle competitions;
- A participant of the seminar on calculational aspects of higher nervous activity of SPBSU, A participant of the summer school "White Nights of Computational Neuroscience";
- Completed with distinction several elective courses during education period such as Neural Networks, Quantum Computations, Mathematical modeling of complex systems etc.;
- A participant of the seminar on calculational and differential geometry, topology and mathematical physics of St.Petersburg Department of Steklov Institute of Mathematics, Russian Academy of Sciences;

Projects

- I am an active enthusiast of DIY (Do it yourself) culture, robotechnics, Arduino and other microprocessor platforms. I have launched several projects such as two flying robot-copters (a large tricopter and a micro quadcopter), Led cub etc.;
- Machine Learning and Data Science in general and Deep Learning particularly are of a great interest for me. I implemented a lot of minor projects from standard image classifiers to such projects as end-to-end convolutional deep learning agent for self driving car, deep reinforcement learning agent for quadcopter control, GAN face generation, recurrent network text generator, time series regression based on LSTM;
- Within the framework of my thesis project the special algorithm of reinforcement machine learning has been developed using very sophisticated methods of theoretical physics. Algorithm is currently being tested on the robots, mentioned above;
- An interest in quantum computers had lead to successfully realized project of mathematical synthesis of optimal control of quantum register model using complicated mathematical apparatus of control theory on Lie groups;
- In collaboration with students from department of biology I was engaged in the project of biological neural network activity modeling covering mathematical and technical aspects.

Fields of Scientific and Professional Interests

- Computational and Differential geometry; Bioinformatics; Machine Learning; Robotechnics; Artificial Intelligence; Neurosciences; Quantum Computing; Mathematical modeling of complex systems (including economic and financial systems, physical systems, human brain).