

# Aleksandr Avdiushenko

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I have diverse experience in science, industry and organization of educational projects. I love machine learning and working with people.

## Work experience

2019 — present

**Saint Petersburg State University, Department of Mathematics and Computer Science, Associate Professor and head of the educational program in «Data Science»**

- 2019 — head of the new educational program for bachelor's degree «Data Science», created in cooperation with Yandex at the Mathematics and Computer Science department of St. Petersburg State University.

The program combines fundamental mathematics education with the study of modern programming and machine learning. Students are offered research topics related to the developments of leading companies in IT. It immediately became popular among motivated applicants: in 2019, the competition was about 25 persons per position, almost all budget positions were filled with winners of Olympiads in mathematics and computer science, including the final stage of the All-Russian Olympiad for schoolchildren and the International Olympiad in Mathematics (IMO).

- 2019-2020 — I created from scratch the International Scientific and Methodological Center of St. Petersburg State University (Russian Ministry of Education grant)

In 2019-2020, I led the team of the Mathematics and Computer Science Department in a joint project with the Graduate School of Management of St. Petersburg State University of the International Scientific and Methodological Center of St. Petersburg State University (ISMC).

The ISMC concept was to create teaching materials and implement advanced training and retraining programs for teachers, with active involvement of the best Russian and foreign experts at all stages of work and, as a result, the formation, support and development of a professional community of university teachers.

In total, 123 persons were involved in the implementation of the project, including 61 Candidates of Sciences or PhD (50%) and 24 Doctors of Sciences (20%). The project team not only successfully coped with the challenges that arose in the context of the COVID-19 pandemic, quickly restructuring and fulfilling the planned, but also turned them to the benefit of the project, carrying out intensive training of scientific and pedagogical workers and graduate students of Russian educational organizations from all over the country.

In 2020, within the framework of the ISMC, two advanced training programs, two internship programs, one professional retraining program and one school in mathematics and computer science were conducted for teachers at universities in the Russian Federation. In total, more than 1,500 persons from more than 50 cities and 60 universities in Russia were trained at the events of the ISMC. The events received a warm response from the community, and the graduates of the center are happy to use the acquired knowledge and methodological materials in their work.

- 2020-2021 — co-director and teacher of the traditional «January Scientific School of Mathematics and Programming» in Sirius
- 2021 — all budget positions of the Data Science program are filled with winners of All-Russian Olympiads, including two winners of the International Olympiad in Mathematics
- 2021-2022 — I created and teach one year machine learning course with modern ML approaches. The average student's evaluation of teaching is 4,78 out of 5,0

2015 — 2018	<b>Yandex, data scientist</b> <ul style="list-style-type: none"> <li>• I implemented a daily calculation of the attribute-metrics (existence, name, address, working time etc.) of accuracy of the Yandex organizations database</li> <li>• I automated and optimized data update processes in call centers and in Yandex.Toloka. In particular I improved the effectiveness of updating by 20%, using catboost to predict the likelihood of closing an organization</li> <li>• I increased the accuracy of the organizations database twice by 2% and 3%, highlighting the largest problems from the losses and correcting them. Firstly, fixed companies with inaccessible phones. Secondly, increased the accuracy of the time of work of organizations by their priority updating</li> </ul>
2013 — present	<b>Yandex, CS center/Yandex Data School, Academic Programs Manager</b> <ul style="list-style-type: none"> <li>• 2013 — I launched a branch Yandex Data School in Novosibirsk</li> <li>• 2017 — in cooperation with JetBrains, I expanded the Yandex Data School branch to Computer science center</li> <li>• 2019 — co-leader and lecturer at «Intensive project workshop for developers from Sirius, Yandex and the HSE CS»</li> <li>• 2019 — I organized open Machine Learning training sessions for Kaggle competition participants</li> </ul>
2009 — 2015	<b>Institute of Computational Technologies SB RAS, graduate student, researcher</b> <ul style="list-style-type: none"> <li>• I generalized to non-stationary geometry the method of solving the three-dimensional Reynolds equations of motion of an incompressible fluid</li> <li>• I accelerated calculations by 16 times, parallelizing the algorithm across blocks of the computational domain using MPI for processes with distributed memory (improvement of the Fortran software package available in the laboratory, ~ 30 thousand lines of code)</li> <li>• I accelerated another 7 times, parallelizing the algorithm in one block using OpenMP-threads with shared memory</li> <li>• I published 19 scientific papers (4 articles, 13 theses, 2 patents), eventually defending a PhD thesis «New numerical models of hydrodynamics of turbomachines» (in Russian)</li> </ul>
2008 — 2014	Specialized Educational and Scientific Center NSU, math teacher
2006 — 2017	organizer and member of the Jury of Mathematical Olympiads: All-Russian, All-Siberian, Tournament of cities
2010 — 2013	math club «Sovenok», organizer and teacher

## Skills

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| • Python (numpy, scikit-learn, matplotlib) | • machine learning (catboost, neural nets)                 |
| • Java (spring, hibernate), SQL            | • algorithms, data structures                              |
| • linux, git, ipython notebook             | • math: analysis, numerical methods                        |
| • MapReduce, MPI, OpenMP                   | • Russian: native, English: intermediate, French: débutant |

## Education

2013 — 2016	Yandex Data School	machine learning, programming	graduate
2009 — 2014	Graduate School of ICT SB RAS	math modeling, numerical methods	PhD
2003 — 2009	NSU, Department of Mechanics and Mathematics	math	master

## Online courses

2017	Coursera, University of Washington	Programming Languages, parts A, B, C	certificate
2019	Coursera, HSE University	How to Win a Data Science Competition: Learn from Top Kagglers	certificate

## Out of work

I like to spend time with my wife and two daughters.