

Curriculum Vitae Maxim L. Kaledin

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Region: Moscow region, Odintsovo

Education

- 2019-now** PhD student in Computer Science, Doctoral School of Computer Science in Higher School of Economics
- 2019-now** PhD student in Applied Mathematics, École Doctorale de Mathématiques Hadamard, École Polytechnique (Paris).
- 2017-2019** Master in Statistical Learning Theory (taught in English), joint master program of Higher School of Economics and Skolkovo Institute of Science and Technology, GPA: 8.3 out of 10
- 2013-2017** Bachelor in Applied Mathematics and Informatics, National Research University Higher School of Economics (HSE), Faculty of Computer Science, GPA: 8.2 out of 10

Research Interests

Stochastic analysis and differential equations, stochastic optimal control, numerical methods, reinforcement learning.

Industry Experience

- Jul-Aug 2018** Research Intern in Huawei Moscow Research Center, main topics: antenna modelling, FDD systems.

Research Experience

- Apr 2018 - now** Research Intern in HDI Lab, Higher School of Economics, main topics: stochastic optimal control, high-dimensional probability theory.

Teaching Experience

- Sept-Dec 2018** Teaching Assistant on Stochastic Calculus, MS-1 course (HSE, Faculty of Computer Science, Statistical Learning Theory MS program). Responsibilities: reviewing home assignments, midterm exam and final exam, office-hours.
- Sept-Dec 2018** Visiting Scholar on Numerical Methods, third-year bachelor's course (HSE, Faculty of Computer Science). Responsibilities: seminars, course project, midterm and final exams.
- Sept-Dec 2017** Visiting Scholar on Numerical Methods, third-year bachelor's course (HSE, Faculty of Computer Science). Responsibilities: seminars, course project, midterm and final exams.
- Apr-Jun 2017** Teaching Assistant on Abstract Algebra, first-year bachelor's course (HSE Faculty of Computer Science). Responsibilities: grading home assignments and final exam, office hours for students.
- Sept-Dec 2016** Teaching Assistant on Numerical Methods in Data Analysis, third-year bachelor's course (HSE faculty of Computer Science). Responsibilities: grading midterm and final exam, helping students in preparing the course project, office hours for students, maintaining course web-page.
- Apr-Jun 2016** Teaching Assistant on Abstract Algebra, first-year bachelor's course (HSE Faculty of Computer Science). Responsibilities: grading home assignments and final exam, office hours for students.
- Apr-Jun 2015** Teaching Assistant on Abstract Algebra, first-year bachelor's course (HSE Faculty of Computer Science). Responsibilities: grading home assignments and final exam, office hours for students.

Research Projects

- Oct 2017 - July 2019** Master thesis. *Random Bellman Operators and Optimization of Complexity in Dynamic Programming for Stochastic Optimal Control* (Eng). Research Advisor: prof. D. Belomestny, Candidate of Science, HSE and University of Duisburg-Essen.
- Oct 2016 - Jul 2017** Bachelor thesis. *Application of Toric Ideals and Gröbner Bases to Integer Programming* (Rus). Research Advisor: prof. I.V. Arzhantsev, Doctor of Science, Faculty of Computer Science, HSE.
- Oct 2015 - Sept 2016** *On Applying of Perturbed Lyapunov Functions to Study of Robust Stability in Dynamic Systems* (Rus). Research Advisor: prof. M.G. Dmitriev, Doctor of Science, Senior Researcher in Institute of System Analysis (Russian Academy of Sciences).
- Oct 2014 - Oct 2015** *Compact Higher-Order Finite-Difference Schemes for Solving General Linear Partial Differential Equations* (Rus). Research advisor: prof. V.A. Gordin, Doctor of Science, Department of Mathematics, HSE.

Conference Talks

Kaledin M. *Approximate Dynamic Programming for American Options* // Data Science Summer School (DS3), Paris, École Polytechnique, June 24-29, 2019.

Kaledin M. *Approximate Dynamic Programming with Approximated Transition Density* // Winter School *New frontiers in high-dimensional probability and statistics 2*, Moscow, HSE, February 22-23, 2019.

Kaledin M., Makarov D. *On Applying of Perturbed Lyapunov Functions to Study of Robust Stability in Dynamic Systems* // Informatics, Control and Systems Analysis ICISA-2016: proceedings, 2016. vol. 1, p. 54-60.

Professional Skills

Broad mathematical background. My interests are stochastic algorithms (stochastic optimal control, markov chains) and numerical methods, however, I have learned many other fields. Some of them provided me with research opportunities: PDE, Probability Theory, Abstract Algebra, cooperative and non-cooperative Game theory, Decision theory.

Knowledge of classic algorithms and discrete optimization. Participant of programming olympiads in school.

Programming Languages: Java, Matlab, Python (with a variety of scientific libraries, among them are numpy, scipy, bemp, pandas), Sage, C (numpy extensions and experience during bachelor studies). Knowledge of databases and SQL. A minor experience in web-programming (Flask+AJAX+jQuery+MySQL). Experienced in GIT.

Experience in Statistical Data Analysis in Python, Matlab, Social Network Analysis, basics of Natural Language Processing, Machine Learning techniques during the studies.

Other Skills

Experienced Linux user for many years.

Academic experience in making documents in LaTeX.

Foreign Languages

English: Advanced (C1, Academic IELTS 7.5). Able to make presentations, carry on a dialogue, read research articles and all technical documentation. I studied many courses in English in my Bachelor's studies and Master courses were entirely taught in English.

Publications

1. *Belomestny D., Kaledin M., Schoenmakers J.* Semi-tractability of optimal stopping problems via a weighted stochastic mesh algorithm. — 2019. — arXiv: 1906.09431 [q-fin.CP].