Boris Shigida

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Education

Princeton University Princeton
PhD candidate, ORFE *2021–now*

Advisors: Matias D. Cattaneo, Boris Hanin

Lomonosov Moscow State University Moscow
Specialist (=master's) degree, with honors *2014–2020*

Faculty of Mechanics and Mathematics, Department of Probability Theory

Professional Experience

Yandex Moscow
Software Engineer Intern → Junior Software Engineer → Software Engineer *Oct. 2018 — Aug. 2021*

Worked in the Advertising Network development team, programming in C++ with CUDA and Python (ML and infrastructure code), administered multiple distributed services.

Research

All authors are listed alphabetically.

[1] Cattaneo M. D., Shigida B. I. *Memory in Gradient Descent with Heavy-Ball Momentum: Fine-Grained Analysis.* arXiv:2509.08483

[2] Cattaneo M. D., Feng Y., Shigida B. I. *Uniform Inference for Nonparametric Partitioning-Based M-Estimators.* arXiv:2409.05715. Under revision: Annals of Statistics.

[3] Cattaneo M. D., Shigida B. I. *How Memory in Optimization Algorithms Implicitly Modifies the Loss.* NeurIPS 2025.

[4] Cattaneo M. D., Klusowski J. M., Shigida B. I. *On the Implicit Bias of Adam.* ICML 2024.

[5] Bulinskaya E. V., Shigida B. I. *Discrete-time model of company capital dynamics with investment of a certain part of surplus in a non-risky asset for a fixed period.* Methodology and Computing in Applied Probability, volume 23, issue 1, pages 103–121. 2021.

[6] Bulinskaya E. V., Shigida B. I. *Sensitivity analysis of some applied probability models.* English version: Journal of Mathematical Sciences, volume 254, issue 4, pages 456–468. 2021.

[7] Bulinskaya E. V., Shigida B. I. *Modeling and Asymptotic Analysis of Insurance Company Performance.* Communications in Statistics Part B: Simulation and Computation. May, 2019.

Teaching & Service

2022–now Teaching assistant for courses at Princeton University: ORF-309 Probability and Stochastic Systems, ORF-245 Fundamentals of Statistics, ORF-524 Statistical Theory and Methods.

Peer review: NeurIPS, Econometric Theory

2021 Teaching assistant for the course "Probabilistic and Statistical Methods in Machine Learning" at the Vega Institute in Moscow

2015–2020 Member of the organizing committee of the Moscow Math Olympiad, multiple stages of the All-Russian Olympiad

2015 Trained top school students in Moscow for the All-Russian Mathematics Olympiad at the Moscow Center for Continuous Mathematical Education

Awards & Competitions

- Gordon Wu Fellowship at Princeton (2021–now)
- MSU Faculty of Mechanics and Mathematics, Partial Differential Equations Contest: 2nd prize (2017)
- Moscow Math Olympiad: 1st prize (2014)
  590 participants, top 16 got the 1st prize
- Moscow Physics Olympiad: 1st prize (2014)
  3079 participants, top 42 got the 1st prize
- All-Russian Mathematical Olympiad, final stage: honorable mention (2014)
  111 invited participants, 35-38th place
- All-Russian Team Programming Olympiad, final stage: 2rd prize (2013)
  172 invited teams, 19th place
- All-Ukrainian Mathematical Olympiad, final stage: winner (2013)
  Part of the Moscow guest team; the result is equivalent to the 1st prize
- Moscow Math Olympiad: 3rd prize (2013)
  323 participants, top 48 got the 1st/2nd/3rd prize
- All-Russian Mathematical Olympiad, regional stage: absolute winner (2013)
  360 invited participants in Moscow, 1-6th place
- Moscow Math Olympiad: 3rd prize (2012)
  577 participants, top 22 got the 1st/2nd/3rd prize
- All-Russian Mathematical Olympiad, final stage: prize (2012)
  106 invited participants, 21-29th place
- All-Russian Mathematical Olympiad, regional stage: absolute winner (2012)
  362 invited participants in Moscow, 1-5th place