Nadezhda Voronova

Postdoctoral researcher at IRIF (CNRS and Université Paris Cité)

https://voronova.research.st/
voronovank@gmail.com

Education

PhD| ***Computer Science*** 2019 – 2025
Boston University Boston, MA, USA
- Advisor: Mark Bun
- Research interests: quantum computation, computation with bounded memory, sublinear-time algorithms, streaming algorithms, approximating polynomials

Master degree | ***Theoretical Computer Science*** 2016 – 2018
Saint Petersburg Academic University Saint Petersburg, Russia
- Advisor: Alexander Kulikov
- Thesis: Algorithms for the problem of certain specific graphs coloring

Bachelor degree | ***Applied Mathematics*** 2012 – 2016
Lomonosov Moscow State University Moscow, Russia
- Thesis: Universal functions with two arguments

Experience

Postdoctoral researcher January 2026 – present
IRIF (CNRS and Université Paris Cité) Paris, France
- Working on quantum computation with limited resourses such as memory, access, and communication

Research Intern June 2024 – September 2024
JPMorgan&Co New York, NY
- Conducted theoretical research on quantum query complexity, focusing on proving lower bounds for optimization problems.
- Conducted research on quantum streaming complexity.

Software Engineering Intern May 2022 – August 2022
Google LLC Sunnyvale, CA
- Was creating data pipelines for the Google Cloud testing and benchmarks' data and visualizing this data through the internal visualization tool.
- Redesigned the pipeline process to become more extendable, sustainable and reusable.
- Tech stack: SQL, Shell, C++.

Software Engineering Intern May 2021 – August 2021
Google LLC Remote
- Worked on improving the performance of distributed learning in TensorFlow
- Performed experiments on a distributed system to compare the ways to change current implementation
- Sped up the performance of collectives 4 times
- Tech stack: Python, C++

Data Engineer January 2019 – August 2019
Glowbyte Consulting Moscow, Russia
- Developed ETL pipelines between DWH and data marts for one of the biggest banks in Russia (top-3)
- Tech stack: SQL, Python

Publications

How to Design a Quantum Streaming Algorithm Without Knowing Anything About Quantum Computing
J. Kallaugher, O. Parekh, N. Voronova; *SOSA 2025*

Exponential Quantum Space Advantage for Approximating Maximum Directed Cut in the Streaming Model
J. Kallaugher, O. Parekh, N. Voronova; *QIP (Quantum Information Processing) 2024, STOC 2024*

Approximate degree lower bounds for oracle identification problems
M. Bun, N. Voronova; *TQC (Theory of Quantum Computation, Communication and Cryptography) 2023*

Existence of Universal Functions for the Class of Linear k-Valued Functions with Moderate k
Voronenko, A.A., Voronova, N.K., Il'yutko, V.P.; *Comput Math Model (2017) 28: 78.*