Ivan Ogloblin — Curriculum Vitae

Education

Bachelor of Science in Computer Science and Software Engineering **Sept 2019 - July 2023**
Saint-Petersburg State University

Master of Science in Mathematics **Sept 2022 - April 2025**
Pontifical Catholic University of Rio de Janeiro

Work Experience

Quantum Software Engineer **February 2024 - current**
I am working in a growing startup QC Design for over a year and managing up to 4 people's work integration into the software. I implemented a modest algorithm for dealing with qubit's possibility of being leaked from the computational system. I brought a new infrastructure that allowed implementing algorithms in c++ and calling them from Python using CPython. I achieved more than a 10000x speedup for simulations of challenging noise models in the circuit. I added support for Bosonic system's noise and Spanning technique that allows for the simulation to converge not to an approximation but to a precise value of the Logical Error Rate for any coherent noise. I also worked on the belief-propagation decoders as well as matching decoders, which were challenging to implement efficiently.

Huawei Assistant Engineer, Developer **October 2021 - January 2022**
Worked on backend C#/.netASP/EntityFramework/Autofac + frontend 3js/react/VR. Developed a system of package communication with no delay that alternates between http and signalR requests.

Yandex Developer Intern **July - Sept 2021**
Worked in two teams on backend C++/Python/SQL. Developed a support system for training scripts to work with stored variable logs. Wrote tests for components that were used to prepare data for a neural network that makes recommendations.

Projects

Simulation of photonic quantum computing **2023**
Developed a web service dedicated to simulation of linear and non-linear optics for quantum computational models using Python and Django. Used Strawberry fields as an underlying engine. (github)

Undergraduate Thesis **2022-2023**
I did research on optimal schemes of entangling transformations in linear quantum optics using a genetic algorithm with GPUs on Pytorch. New schemes were obtained for finding the maximum entangled state, as well as for implementing gates equivalent to CX in the KLM protocol. Presentation.

Study of the Effect of Noise on Efficient Quantum Search Algorithms **2022**
Implemented improved Grover's search algorithm with Qiskit and tested it's performance with different noise models. Presentation.

Quantum Algorithms for VRP and VRPTW Problems **2021**
Worked on the problem of finding routes for drilling machines for oil production in collaboration with GazpromNeft. Found a reduction of this problem to QUBO. Used Qiskit to solve it using VQE and QAOA.

Teacher Assistant **2023**
Created homework and course notes on the course "Introduction to Quantum Computation", for prof. Sergey Tikhomirov.

Quantum Computing and Quantum Information via NMR **2022**
I operated an NMR device encoding and entangling two qubits at the School of Experimental Physics of CBPF earning a certificate.

Qiskit Global Summer School 2022 - Quantum Excellence **2022**
I excelled at Qiskit Global Summer School 2022 which was dedicated to quantum simulations, earning a badge on Credly.

Programming Skills and Languages

- C++, Python, CPython, C#, C, Java, JavaScript, HTML, CSS, Kotlin, Haskell, Scala, SQL, Lean
- Pybind, ASPnet, EntityFramework, Microsoft SQL Express, React, three.js, postgreSQL, Django, Bootstrap
- Git, Linux, Unity3D, SVN, Blender(3d modeling), protobuff, Shiny, Docker
- Russian (Native), English (Fluent), Portuguese (Speaking)

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