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 — QC Design   **August 2024 - current**
- 5000x faster simulations in Plaquette v2024.8 news (xpauli backend optimizations).
- Real hardware imperfection support and the `full_state` simulator for exact simulations news.
- Scalable simulation of near-Clifford error-correcting circuits using Clifford decompositions and quasiprobability sampling in v2025.2 news.
- Loss-aware decoding support in v2025.4 to reduce logical error rates using qubit loss information news.

Consultant — QC Design   **February 2024 - June 2024**
- Contributed to Plaquette features leading up to v2024.8, assisting with simulator and backend improvements news.

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)

Master's Thesis   **2023-2025**
Investigated a photonic-based model (Fusion-Based Quantum Computing) to implement a topological quantum memory. Explored error models and performed threshold estimations using matching-based decoders on FBQC codes. Demonstrated how logical qubits can be reliably stored by repeatedly fusing resource states, enabling a scalable approach to fault-tolerant quantum memory.

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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