

EXPERIENCE

Research Fellow **Russian Quantum Center** **January 2018 — Present**

- Responsible for Quantum Computing, Machine Learning.
- Developed a series of seminars concerning Quantum Computing. They include jupyter notebooks with basics of linear algebra, quantum mechanics and also work with QISKit (IBM), pyQuil (Rigetti) and Q# (Microsoft) was demonstrated.
- Supervised research student's bachelor degree diploma "Precision-Guaranteed Single-Qubit Process Tomography".

Teaching Assistant **Laboratory of Neural Networks and Deep Learning** **March — December 2017**

- Responsible for preparing practical and theoretical assignments for the course of Reinforcement Learning and theoretical assignments for the course of Natural Language Processing with the number of 100+ enrolled students each.

Research Assistant **Laboratory of Functional analysis of the Genome** **June 2016 — December 2017**

- Research on protein function analysis.
- Text mining, Natural language processing, Keyword extraction, Machine learning algorithms. As an intermediate result the new method of keywords extraction using Information Theory proposed (ResearchGate).

Data Scientist **Sberbank-Technology** **August — October 2017**

- Responsible for Natural Language Processing projects.
- Participated in preparing the datasets and building baselines for competition Sberbank Data Science Journey which is based on SQuAD.
- Developed an analogue of Amazon Mechanical Turk to improve experience of colleagues who evaluated the quality of collected datasets (Python, Flask).

R&D Data Scientist **HiQE Group** **March — June 2017**

- Negotiated with IBM engineers and applied some of the IBM Watson's services in tasks of signal processing.
- The system of baby cry recognition was built.

EDUCATION

Moscow, Russia **Moscow Institute of Physics and Technology** **September 2014 — August 2019 (expected)**

- B.Sc. in Computer Science and Physics, Department of Innovation and High Technologies
- Coursework for the state qualification exam in Physics at MIPT: "Molecular dynamics" [Code]
- Undergraduate Coursework: TBA

TECHNICAL EXPERIENCE

Projects

- **Frontopolar** (2017). Applied Reinforcement Learning for Stock Trading. State of the art results were reached. Different approaches were tested including Q-learning and Recurrent Reinforcement Learning.
- **Reverse Engineering in Dispersion Engineering** (2018). With my friend from EPFL we have a project on Dispersion Engineering. Our model predicts parameters of resonator system's simulation.
- **Quantum Keypad** (2018). This keypad allows to easily compose quantum circuits of different kinds. Besides keypad itself, Quantum Keypad consists of a power bank and Raspberry Pi Zero W. As a simulator I used QISKit package for Python. Inspired by Model Q.
- **Quantum Computing Bot** (2018). Monitoring the load of IBM Q processors from IBM Quantum Experience. Bot is already available inside QISKit workspace in Slack (soon it will be uploaded here: <https://github.com/Qiskit/qiskit-bot>). And it's available on Telegram: <https://t.me/QuantumComputingBot>.

Contributed to Open source

- **QISKit** - PR #366
- **pyQuil** - PR #371
- **Gensim** - fixed issue #671
- **yandexdataschool/Practical_RL** - PR #12
- **My projects on GitHub**

SKILLS

- **Russian:** native, **English:** fluent, **German:** basics (A2)
- **Programming languages:** Python, C/C++, bash, R, experienced with SQL
- **Python libraries:** numpy, sklearn, pandas; **for NLP:** NLTK, Gensim; **for Deep Learning:** TensorFlow, PyTorch; **for Quantum Computing:** QISKit, pyQuil, Q#
- Experimented with RaspberryPi and Arduino. Projects
- Started "MIPT Deep Learning Club" to discuss and share ideas on deep learning topics. Led a few seminars on topics such as "Introduction to bayesian methods"

TEACHING

Programming Existing Quantum Computers

May 8, 2018

Cryptography course at Yandex School of Data Analysis

Deep Reinforcement Learning

October — December 2017

course at MIPT, based on rl.berkeley.edu/deeprlcourse/
Practical assignments

Deep Learning in Natural Language Processing

March — December 2017

course at MIPT, based on cs224n.stanford.edu
Practical assignments

PUBLICATIONS

"Neural Network Quantum State Tomography"

July 30 — August 3, 2018

Superconducting Quantum Technologies (SQT)

Poster

"Precision-guaranteed quantum process tomography: Application to IBM Quantum Experience"

May 21 — 25, 2018

Central European Workshop on Quantum Optics (CEWQO)

Poster

Medium Story

"Advanced Parser for Biomedical Texts"

July 27 — 30, 2017

Moscow Conference on Computational Molecular Biology (MCCMB)

Poster, Thesis

ADDITIONAL EDUCATION

"Quantum Computing" course at Skoltech

Quantum Computing

February 1 — March 16, 2018

Final Project - Quantum walks and Variational algorithm for 3- and 4-level systems.

"Summer school on Bayesian Methods in Deep Learning"

DeepBayes Summer School

August 26 — 30, 2017

"Big Data in Bioinformatics"

Bioinformatics Summer School

July 31 — August 5, 2017

"Natural Language Processing" course (based on cs224d.stanford.edu)

DeepHack Lab

September — December 2016

"Supercomputer technologies for atomistic modelling" course

Igor Morozov (IHED RAS)

September — December 2015

Final Project - Molecular Dynamics is a program written in C using OpenMP framework for parallel computing. Used VMD for visualisation.

HACKATHONS

Volkshotel, Amsterdam

Quantum Internet Hackathon

**October 13 — 14, 2018
(expected)**

- (expected)

Skoltech, Moscow

Quantum Hackathon

May 18, 2018

- 1st place
- There were problems on (1) quantum process tomography and (2) solving 3-SAT problem with QAOA
- Python, Quantum Information Toolkit (QIT)

Aalto University, Helsinki

Junction

November 24 — 26, 2017

- LegalEngine - [website/telegram chat-bot/email notification system](#), "qqmbr" team member, challenge by [Castrén & Snellman](#)
- Our solution makes the client-attorney interaction easier with the use of telegram chat-bot and email notifications, the attorney's work and billing more transparent to the client.
- Python, Flask library, html, css

EPFL, Lausanne

LauzHack

November 11 — 12, 2017

- 1st place in challenge by [SGS](#), "NN:Nerds" team member, Presentation
- Solution allows quick access to the main concepts found in documents.
- Responsible for development of telegram-bot and processing documents using IBM Watson service for Natural Language Understanding. Devpost.
- Python, IBM Watson API, Telegram API

- 4th place, "App in the Restaurant" iOS application, [Demo](#), [Presentation](#)
- App allows to recognise entities from restaurant menus using smartphone's camera and translates them. ABBYY Real-Time Recognition SDK, ABBYY Lingvo API and Spoonacular API were used.
- Python, Flask library

- 2nd place, [@SenseOfSpeech_bot](#) telegram-bot, [Presentation](#)
- Solution allows to extract emotions from user's recorded speech. Also it helps to train selected emotion with samples from TED talks.
- Speech Emotion Recognition (SER) module by [Vokaturi](#) was used as a core for telegram-bot based system to help users improve speech during performances.
- Python, Telegram API

- "Prediction of Experimental Metadata from Gene Expression"
- Used Machine learning algorithms to predict phenotype by gene expression. Distinguish with high accuracy samples of male and female tissues of [Mus musculus](#) organism. Datasets from Gene Expression Omnibus were used. [Project](#).

- Text Mining, parsing the records from [PubMed](#) and [UMLS](#).
- Analysis of research trends of chemical compounds and diseases during period of 1990-2015 using parsed information from PubMed database. [Project](#).
- Python

- Used a python wrapper around the Twitter API and Topic Modeling of tweets (gensim).