

## EDUCATION

---

**Master of Science**                      **Moscow Institute of Physics and Technology**                      **September 2019 — July 2021**  
Moscow, Russia

- M.Sc. in Computer Science and Physics, [Department of Innovation and High Technologies](#)
- Applied Mathematics and Physics
- Master's Thesis: "[Machine Learning-based content assist for 1C:Enterprise IDE](#)" [[Presentation](#)] [[Code](#)]

**Bachelor of Science**                      **Moscow Institute of Physics and Technology**                      **September 2014 — July 2019**  
Moscow, Russia

- 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: "[Advanced Parser for Biomedical Texts](#)" [[Poster at MCCMB'17](#)]
- Bachelor's Thesis: "[Development of a mechanism for Anomaly Detection](#)" [[Presentation](#)] [[Code](#)]

## EXPERIENCE

---

**Backend Developer**                      **360dialog**                      **November 2020 — Present**  
Berlin, Germany (remotely)

- Planning, implementing, maintaining and improving software stack and its architecture for WhatsApp Business messaging.
- Managing and planning of challenging software projects.
- Solving technically complex problems to ensure a seamless messaging experience for the clients.
- Developing and designing of RESTful APIs.
- Python, Stripe API, JIRA API, Billing automation, Notification Emails automation.

**Technical Support Specialist**                      **360dialog**                      **July — November 2020**  
Berlin, Germany (remotely)

- Support clients & partners with technical aspects of Whatsapp Business API.
- Responsible for the end-to-end process from onboarding to post-setup activities.
- Support in submitting of clients & partners for WhatsApp Business Account (WABA) via Facebook Business Manager (FBM).

**Machine Learning Researcher**                      **Laboratory for Digital Business**                      **March 2019 — Present**  
Moscow, Russia (remotely)

- Responsible for research on Anomalies and Outliers Detection.
- Found and fixed a bug concerning model based on Generative Adversarial Active Learning (GAAL) in [PyOD](#) toolkit for outlier detection.
- Developed a system for anomaly detection. Used Flask and SQLAlchemy frameworks.
- Participated in organization of [Digital Capabilities for Business](#) section for [WorldSkills](#) Kazan 2019. Responsible for [Blockchain & Smart Contracts](#).

**Quantum Software Engineer Intern**                      **QuTech**                      **September — November 2019**  
Delft, Netherlands

- Delft University of Technology.
- [Professor Stephanie Wehner Group](#), development of Quantum Internet.
- Participated in development of an embedded firmware for [Hercules LaunchPad](#) microcontroller platform to control quantum physical setup via connected [ADwin-Pro](#) (to implement Physical Layer as described in "[A Link Layer Protocol for Quantum Networks](#)").
- Participated in organization of [Quantum Internet Hackathon](#) which was held in six nodes across Europe: Delft, Dublin, Geneva, Padua, Paris and Sarajevo. [Repository](#).
- Developed a Reinforcement Learning based system to control setup of lasers during the experiments with NV-center in diamonds.

**ML Engineer Intern****3-shake****August — September 2019**

Tokyo, Japan (remotely)

- R&D audience extension.
- Analysis of Japanese text data with Natural Language Processing.

**Machine Learning Researcher****OCRv****July — August 2019**

Sochi, Russia

- Laboratory of Artificial Intelligence and Neural Networks.
- Employee Turnover Prediction. EDA and implementation of ML systems in different fields of interest of Russian Railways.
- Responsible for Natural Language Processing, processing of legal documents.

**Machine Learning Researcher****ChatFirst****September 2018 — April 2019**

Moscow, Russia

- Implementing different deep learning models to improve performance of chatbots, reading papers on related topics.
- Responsible for Natural Language Processing.
- Used BERT model to improve performance of production system in multiple aspects. Fine-tuned the model for downstream tasks.

**Quantum ML Researcher****Russian Quantum Center****January 2018 — March 2019**

Moscow, Russia

- 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".
- Became a member of IBM Qiskit on GitHub.
- "Revealing quantum chaos with machine learning" — arXiv preprint.

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

Moscow, Russia

- 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**

Moscow, Russia

- 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).
- Participated in development of NLP package SciLK which was designed specifically for text-mining in natural sciences like biology and chemistry.

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

Moscow, Russia

- 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).

**ML Engineer Intern****HiQE Group****March — June 2017**

Saint-Petersburg, Russia (remotely)

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

## TECHNICAL EXPERIENCE

---

### Projects

- **API for Online Shop** (2020). Set of API methods to realize basic logic of online shop.
- **Service for Reading** (2019). Service has a web interface and an application for Android. It helps to read texts in foreign languages and easily add unknown words to the wordlist to further studying.
- **Quantum Computing Bot** (2018). Monitoring the load of IBM Q processors from IBM Quantum Experience. Bot is already available inside QISKit workspace in Slack (<https://github.com/akarazeev/qiskit-slack-bot>).
- **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](#).
- **Reverse Engineering in Dispersion Engineering** (2018). With a student at EPFL we developed a project on Dispersion Engineering. Our model predicts parameters of resonator system's simulation.
- **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.

### Contributed to Open source

- **PyOD** - PR #108
- **QISKit** - PR #366
- **pyQuil** - PR #371
- **SimulaQron** - PR#90
- **Gensim** - fixed issue #671
- **yandexdataschool/Practical RL** - PR #12
- **Projects on GitHub**

## SKILLS

---

- **AI:** Machine Learning, Deep Learning, Natural Language Processing, Computer Vision, Reinforcement Learning, System Deployment
- **Programming languages:** Python, C/C++, bash, R, SQL; experienced with JavaScript, HTML and CSS
- **Python libraries:** numpy, scikit-learn, pandas; **for NLP:** NLTK, Gensim; **for Deep Learning:** PyTorch, TensorFlow; **for Quantum Computing:** QISKit, pyQuil, Q#; **for Web:** Flask; **for databases:** peewee, SQLAlchemy
- **DevOps:** containers (Docker), cloud computing (AWS, GCP), code testing, source control (git)
- **Russian:** native, **English:** fluent (TOEFL iBT: 86/120), **German:** basics (A2)
- Experimented with RaspberryPi and Arduino. [Projects](#)
- Founded "[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"
- Experienced with **3D modeling** (FreeCAD, Blender) and **3D printing** (Ultimaker Cura, Ender 3)

## TEACHING

---

### **Blockchain & Smart Contracts**

August 17 — 21, 2020

Lecture at [WorldSkills](#), [Digital Capabilities for Business](#)

### **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/](http://rl.berkeley.edu/deeprlcourse/)  
[Practical assignments](#)

### **Deep Learning in Natural Language Processing**

March — December 2017

course at MIPT, based on [cs224n.stanford.edu](http://cs224n.stanford.edu)  
[Practical assignments](#)

## PUBLICATIONS

---

- “Revealing Quantum Chaos with Machine Learning”** February 5, 2020  
APS Physics, [arXiv preprint](#)
- “Neural Network Quantum State Tomography”** July 30 — August 3, 2018  
[Superconducting Quantum Technologies \(SQT\)](#)  
Poster (based on <https://github.com/RQC-QApp/NNQST>)
- “Precision-guaranteed quantum process tomography: Application to IBM Quantum Experience”** May 21 — 25, 2018  
[Central European Workshop on Quantum Optics \(CEWQO\)](#)  
Poster
- “Generative Adversarial Networks (GANs): Engine and Applications”** August 2017  
[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
- Participated in a hackathon during the school. [Project](#).
- “Natural Language Processing” course (based on [cs224d.stanford.edu](https://cs224d.stanford.edu))** [DeepHack Lab](#) September — December 2016
- Accepted a proposal to become a Teaching Assistant after the end of the course.
- “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.

## MOOCs

- **AI for Medical Treatment** by [deeplearning.ai](#) (2020)
- **AI for Medical Prognosis** by [deeplearning.ai](#) (2020)
- **AI for Medical Diagnosis** by [deeplearning.ai](#) (2020)
- **Sequence Models** by [deeplearning.ai](#) (2019)
- **Convolutional Neural Networks** by [deeplearning.ai](#) (2019)
- **Improving Neural Networks: Hyperparameter tuning, Regularization and Optimization** by [deeplearning.ai](#) (2019)
- **Full Stack Deep Learning** (2019)
- **Neural Networks and Deep Learning** by [deeplearning.ai](#) (2019)
- **Mathematics and Python for Data Analysis** by MIPT & Yandex (2017)
- **Molecular Biology and Genetics** by Bioinformatics Institute (2016)
- **Neural Networks** by Bioinformatics Institute (2016)

## HACKATHONS

---

<b>EPFL, Lausanne</b>	<b><u>LauzHack</u></b>	<b>November 16 — 17, 2019</b>
<ul style="list-style-type: none"> <li>• Challenge by SOPHiA Genetics, “Pathogen Identification Service”</li> <li>• <a href="#">Project</a>, <a href="#">Devpost</a></li> <li>• Python, Biopython, BLAST, Voilà</li> </ul>		
<b>CERN, Geneva</b>	<b><u>Quantum Futures Hackathon</u></b>	<b>October 19 — 21, 2019</b>
<ul style="list-style-type: none"> <li>• “QML-QEC”, <a href="#">Presentation</a></li> <li>• Developed an alternative approach for quantum error mitigation of noisy quantum hardware, inspired by variational algorithms such as <a href="#">QVECTOR</a></li> <li>• Python, Qiskit, <a href="#">Project</a></li> </ul>		
<b>Kraftwerk Accelerator, Bremen</b>	<b><u>Hackathon Bremen</u></b>	<b>September 20 — 22, 2019</b>
<ul style="list-style-type: none"> <li>• Won in nomination <a href="#">Best Implementation</a></li> <li>• Technologies used: Arduino UNO, Fusion 360 (for 3D modeling) and Node.js (for representing values received from <a href="#">device</a>)</li> </ul>		
<b>Kasárne/Kulturpark, Košice</b>	<b><u>Hack Kosice</u></b>	<b>March 30 — 31, 2019</b>
<ul style="list-style-type: none"> <li>• <a href="#">Efficient and Faster Care</a> challenge</li> <li>• Implemented <a href="#">healthcare system</a> using Zebra wristband printer and QR code scanner to identify patients easily</li> <li>• Reduced the amount of time needed to register a new patient</li> <li>• <a href="#">Presentation</a></li> </ul>		
<b>Aalto University, Helsinki</b>	<b><u>Junction</u></b>	<b>November 23 — 25, 2018</b>
<ul style="list-style-type: none"> <li>• <a href="#">Applications with Bluetooth Mesh</a> challenge</li> <li>• Worked with <a href="#">Zephyr RTOS</a> and <a href="#">reel board</a> that has built-in Bluetooth transceiver</li> <li>• Developed simple Industrial Internet of Things (IIoT) project which demonstrates the advantage of Bluetooth Mesh network</li> </ul>		
<b>Tochka Kipeniya, Moscow</b>	<b><u>Space Apps Challenge</u></b>	<b>October 20 — 21, 2018</b>
<ul style="list-style-type: none"> <li>• <a href="#">Firefighter Bot for Telegram</a></li> <li>• Implemented during <a href="#">Space Apps 2018 Challenge</a> using data from NASA including <a href="#">Active Fire Data</a> by NASA</li> <li>• Python, python-telegram-bot</li> <li>• <a href="#">Presentation</a></li> </ul>		
<b>Volkshotel, Amsterdam</b>	<b><u>Quantum Internet Hackathon</u></b>	<b>October 13 — 14, 2018</b>
<ul style="list-style-type: none"> <li>• Worked with framework for Quantum Internet called <a href="#">SimulaQron</a></li> <li>• Contributed to the <a href="#">SimulaQron project</a> on GitHub</li> <li>• <a href="#">Implemented</a> quantum leader-election algorithm</li> </ul>		
<b>Skoltech, Moscow</b>	<b><u>Quantum Hackathon</u></b>	<b>May 18, 2018</b>
<ul style="list-style-type: none"> <li>• 1<sup>st</sup> <a href="#">place</a></li> <li>• There were problems on (1) quantum process tomography and (2) solving 3-SAT problem with QAOA</li> <li>• Python, Quantum Information Toolkit (QIT)</li> </ul>		
<b>Aalto University, Helsinki</b>	<b><u>Junction</u></b>	<b>November 24 — 26, 2017</b>
<ul style="list-style-type: none"> <li>• <a href="#">LegalEngine</a> - <a href="#">website/telegram chat-bot/email notification system</a>, “qqmbr” team member, challenge by <a href="#">Castrén &amp; Snellman</a></li> <li>• 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</li> <li>• Python, Flask library, html, css</li> </ul>		
<b>EPFL, Lausanne</b>	<b><u>LauzHack</u></b>	<b>November 11 — 12, 2017</b>

- 1<sup>st</sup> 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

**Phystechpark, Moscow**

**mABBYlity**

**October 7 — 8, 2017**

- 4<sup>th</sup> 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

**Skolkovo Moscow School of Management, Moscow**

**Neurocampus**

**September 22 — 24, 2017**

- 2<sup>nd</sup> 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

**MIPT, Moscow**

**Bioinformatics Summer School**

**August 3 — 4, 2017**

- “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](#)

**ITMO, Saint Petersburg**

**BioHack**

**March 3 — 5, 2017**

- 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

**Wanha Satama, Helsinki**

**Junction**

**November 25 — 27, 2016**

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