

Gleb Rusyaev

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EDUCATION

Letovo School

Moscow, Russia

Mathematics and Computer Science

Aug 2020 – Present

- Completed elective courses in Number Theory, Advanced Algorithms and Electrical Engineering

Winter School in Combinatorics and Algorithms

Moscow, Russia

Phystech (MIPT)

Feb 2021 – Mar 2021

- Took courses in Abstract Algebra, Geometry of Numbers, Cryptography, Deep Learning Networks, and a course based on the *Lovász Local Lemma* at Combalg '21

Sirius Cybersecurity Camp

Sochi, Russia

Rostelecom, MEPhI, Sirius Center

Multiple times

- Participated as a part of National Technological Olympiad finale
- Enhanced my skills in Cryptography, Binary Exploits and Reverse Engineering

EXPERIENCE

R&D Group Leader, Data Scientist/Engineer, Developer

Oct 2021 – Dec 2021

Automated Planning Lab, Letovo

Moscow, Russia

- Led 3 people on an R&D project about “ML-based automated time management” (Presentation): technology for personalized scheduling taking into account inter-correlations between tasks using ML-predictor and permutation generator. Can use up to 256 overlapping task tags and can optimize up to 17 tasks per day.

Space Mission Designer

Sept 2021 – Nov 2021

Keldysh Institute of Applied Mathematics (Russian Academy of Sciences), MIPT

Moscow, Russia

- I was a selected participant in a team composed of science and engineering students who planned a deep space research mission to Neptune and its moon Triton (MINATAVR) with the goal of studying magnetic field, atmosphere, and surface mapping at Advanced Mission Analysis, Design, and Optimization School (AMADEOS). Planning included trajectory calculations, mass, instrument design, budget calculation, and scientific objectives
- Worked on space probe design, its scientific equipment, and separation procedures
- Received group award “Best Tour in The Neptune System”

Junior Scientist

June 2021 – July 2021

Russian Quantum Center (RQC), Skoltech

Moscow, Russia

- Calibrated terminals of 50 km long quantum tunnel, did optical plate engineering, solved 3-Rooks Problem using 23 qubits and Grover’s algorithm

HONORS AND AWARDS

International Olympiad in Cryptography: 1st Place

2021

- Won world’s biggest competition in cryptography with research-level problems (some of them unsolved to this day). I was a captain of leading team in school section. We also met co-author of 3-DES standard

National Science and Engineering Fair “ROST-ISEF”: 1st Place

2020

- I have won National Science and Engineering Fair (part of Intel ISEF qualification) with federalized trusted computing protocol and was selected to national team short-list.

Digital Skills (World Skills) in IoT: 4th Place

2021

- I was a team captain representing my school on nationwide Digital Skills (World Skills) championship. We were designing algorithms governing automated manufacturing and testing for modern factories using ThingWorx

PicoCTF

2020

- I was a captain leading “cyberpunk hacker catgirls” – one of several teams, which solved hardest cryptography problem “Clouds” about multiplicative differentials on biggest international school CTF organized by Carnegie Mellon University

Innopolis Open Olympiad in Mathematics: 5th Place

2020

National Technological Olympiad: Top 10

2021

National Olympiad in Informatics: Semi-finalist

2022

CTF competitions: GoCTF (1st), ShadowCTF (6th), Innopolis CTF (Top 10), ...

2019–2022

PROJECTS

- ML-based automated time management** ([Presentation](#)) Oct 2021 – Present
- Technology for personalized scheduling taking into account inter-correlations between tasks using ML-predictor and permutation generator. Can use up to 256 overlapping task tags and can optimize up to 17 tasks per day.
- Topological Data Analysis for Biological Docking** ([Presentation](#)) Jan 2021 – Mar 2021
- Used Gradient-Boosted Decision Trees and Mapper Algorithm for Biological Docking with 65% precision rate
 - Here's [Jupyter Notebook](#) and [dataset](#)
- Salieri: Federated and Transparent Trusted Computing Protocol** ([Submitted Preprint](#)) Sept 2020 – Present
- I have developed a transparent, user-aimed, and federated protocol for trusted computing that tries to answer the following questions: Why users are supposed to trust the RoT-chip manufacturers? Why several RoT-chip manufacturers unified in one trusted network should trust each other? I have also created the concept of an oracle – an explicit and verifiable open-source program for operations on encrypted data. In order to show the demo of the protocol applications, I solved the “Secure Multi-Party Computation” problem using a custom oracle. Also, here's repo: [GitHub](#)
- Security research in backdoored OpenWRT firmware** ([Repo](#)) Feb 2020 – Mar 2020
- Traced, reverse-engineered and hot-fixed backdoor in modified OpenWRT firmware
- Bug bounty and penetration testing** Sept 2019 – Present
- Found critical vulnerability in the infrastructure of regional internet provider
 - Found medium level vulnerability in one of the largest gaming marketplaces
- Lossless compression based on perfect powers** June 2019 – Present
- Proposed lossless compression algorithm based on perfect powers with 4-21% efficacy by $O(\log^2 n)$
 - Working on reducing complexity to $O(\log n)$ based on optimization function prediction

SKILLS AND KNOWLEDGE

Interests: Discrete Mathematics, Group Theory, Geometry of Numbers (and similar ”visual-spirit“ fields), Cryptography, Machine Learning, Decentralized Networks, Physics, Engineering

Programming Languages: Python, C/C++, Haskell, Bash, Wolfram Language

General skills: Sage, Mathematica, LaTeX, UNIX, ThingWorx, Jupyter, Arduino, Optical/Electrical Board Assembly, scikit-learn, Kepler Mapper

Problem solving: Security Research, CS Research, Olympiad Mathematics, Competitive Programming, IoT Automation

Languages: English (C1-C2), Russian (native), Bashkir (native)