FEDOR KUYANOV

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Education

HSE University   **September 2020 – July 2024**
Bachelor in Computer Science, GPA 9.8/10, rank 1/260   *Moscow, Russia*

Summer schools
- Contemporary Mathematics (2019)
- Harbour.Space Tech Scouts (2019, advanced technical track)
- Summer Conference of the International Mathematical Tournament of Towns (2018)
- Summer Computer School (2014 – 2017, levels C', B', B, A)

Work experience

HSE, project group "Combinatorial and numerical problems on lattices"   **January 2023 – now**
Research assistant   *Moscow, Russia*
- Research in Mathematical Physics and Number Theory: Feynman checkers.

HSE, Laboratory of Theoretical Computer Science   **September 2022 – now**
Research assistant   *Moscow, Russia*
- Research in Linear Algebra and Complexity Theory: minimizing the number of operations for matrix multiplication.

Moscow State School №57   **September 2022 – December 2022**
Teaching assistant   *Moscow, Russia*
- Assisted math analysis and programming lessons in Moscow State School №57, one of the top math schools in Russia.

Huawei   **June 2022 – December 2022**
Software Engineer   *Moscow, Russia*
- Member of the graph computing team focused on fluid and gas processes simulation using discrete lattices.
- Implemented distributed versions of the algorithms such as the Conjugate gradient method and Lanczos algorithm.

Yandex   **May 2021 – August 2021**
Software Engineer Intern   *Moscow, Russia*
- Worked in the team responsible for the quality of Yandex voice assistant Alice.
- Enhanced scenario classification by adding new factors and adapting the learning process for different devices.

Summer informatics workshop   **June 2020**
Coach   *Moscow, Russia*
- Prepared practice contests and tutorials for Russian national team candidates.

Publications

- Feynman checkers: number-theoretic properties (Reviews in Mathematical Physics, 2023, arXiv)

Conferences

- 29th International Scientific Conference "Lomonosov" (2022), Number-Theoretic Properties of the Wave Function in Feynman Checkers Model
- Satellite mini-workshop (Haifa, 2023), Feynman checkers: number-theoretic properties

Projects

MatrixMultiplication | *Python, PyTorch*   **October 2023**
- Python scripts generating optimal matrix multiplication algorithms for small sizes (up to 3).
- Uses modern optimization techniques from Machine Learning and performs greedy rounding to get rational coefficients.

Wordle | *C++, JavaScript*   **August 2022**
- The goal of this game is to guess a 5-letter word in 6 tries based on the information about each letter.
- Implemented a strategy (using B&B algorithm and information theory) that achieves the world record of 3.42 tries.

Fejudge | *Python, Linux kernel*   **September 2021**
- This is a management system for programming contests with a convenient web interface.
- Uses various Linux kernel features (such as cgroups) and supports simultaneous evaluation on different machines.

TheTrueHat | *JavaScript, Vue*   **August 2021**
- This project allows playing the Hat (Alias) game from the browser.

Kotline | *Kotlin, React, JavaScript*   **January 2021**
- Geometric puzzle where one must build the longest non-self-intersecting polygonal chain from start to end.

Skills & interests

- **Programming languages:** C/C++, Python, Kotlin, HTML/CSS, JavaScript, Bash, SQL
- **Libraries & frameworks:** QT, NumPy, matplotlib, pandas, PyTorch, Flask, React, Vue
- **Tools:** CI/CD, git, docker, gdb, cmake
- **Interested in:** Quantum Computing, Complexity Theory, Linear Algebra, Discrete Math, Combinatorics

Awards

- Ilya Segalovich Scholarship, the top award of Computer Science Faculty, HSE (2022, 2023)
- Tinkoff Scholarship (2022)

Olympiad achievements

- Three times gold medal at IMC (2021 – 2023)
- Silver medal at Semifinal ICPC 2020, NERC
- Winner of several inter-university math competitions: NCUMC, OMOUS, MIPT, OSAM Comp'21
- Prize-winner of the All-Russian Olympiad in Mathematics (2018, 2019, 2020)
- Winner of the All-Russian Olympiad in Informatics (2018), prize-winner in 2017, 2019, 2020
- Six times winner of the International Mathematical Tournament of Towns (2014 - 2019)

Languages

- English: C1 (IELTS 7.0)
- Russian: Native speaker

Hobbies

- Railway modeling, Lego
- Chess, speed-cubing (3x3, 36 secs), ping-pong
- Classical piano – finished 8-year Gnesin music school and performed with the orchestra, YouTube, winner of Moscow and international piano competitions