Fedor Kuyanov

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Education

HSE University **September 2020 – July 2024**
Bachelor of Science majoring in Theoretical 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, Laboratory of Theoretical Computer Science **September 2022 – present**
Research assistant *Moscow, Russia*

- Research in mathematical physics and number theory: Feynman checkers.
- Research in linear algebra and complexity theory: minimizing the number of operations for matrix multiplication.

EPFL, Laboratory of Theoretical Computer Science **July 2023 – September 2023**
Research assistant *Lausanne, Switzerland*

- Research in randomized sublinear algorithms on graphs such as bipartiteness testing.

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 on lattices.
- Implemented distributed versions of the Conjugate gradient method and Lanczos algorithm.

Yandex **May 2021 – August 2021**
Software Engineer Intern *Moscow, Russia*

- Enhanced scenario classification of the voice assistant Alice by 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, algorithms and complexity theory, linear algebra, discrete math

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